3 A Profile of Freight in the Region

An understanding of freight concepts, existing conditions and emerging trends is an important component of a freight strategy. This chapter provides a description of freight concepts, the regional freight task, and summarises available information on the quantities of freight and transport movements within the region, between Auckland and other regions, and through the import and export gateways of the POAL and Auckland International Airport.

3.1 What is Freight?

By definition, freight describes the process of transporting goods, the transported goods themselves, or the associated charge for goods transport. Physical transport is only one element in the myriad of processes and activities that are involved in moving goods around, to and through the region.

The life cycle of most goods involves several freight journeys – the transport of primary production to processing or manufacturing plant, distribution of wholesale goods, retail product distribution, purchase and transport by end-users, and waste disposal or recycling.

Typically, any one product may move in various forms five or more times through its life cycle. Generally, we remain blissfully unaware of the scale and complexity of the freight task required to bring everyday items within our reach. For example, there are literally scores of freight transport tasks undertaken to move milk, sugar, coffee and crockery to our kitchens or to cafes in order for us to enjoy our morning coffee.

Unlike passenger traffic, which the public understands and has views on, freight systems are largely invisible to the community. As a result, the importance of efficient freight movement is often not given the attention it deserves in planning and decision-making.

With the exception of infrastructure provision, the operation of the freight sector is almost entirely undertaken by the private sector, and is therefore subject to the financial and other constraints faced by all private sector operations.

Distribution Chains

The movement of freight involves a **distribution chain.** This is, in a physical sense, the set of nodes and linkages by which freight is transported. Components in the chain include the transport operators for road and rail, couriers, forwarders, the transfer points and their operations, such as terminals, consolidators, distribution centres and warehouses, ports, retail outlets and household vehicles.

Information flows in both directions along the chain. Orders, consignment notes, invoices, payments, export advice notices, security and quarantine clearances are all parts of the freight distribution chain. An important, but sometimes forgotten link in this chain, is reverse logistics – the rubbish contractors, recyclers, empty container parks and trailer storage facilities.

The modern supply/distribution chain is much more responsive to end-user needs than in the past. Whereas goods used to be produced in response to general demand conditions, with inventories held at points along the production and distribution chain, modern information technology allows for goods to be produced or imported as and when required by customers.

Freight logistics aim to add value along the distribution chain, from producer to purchaser, by streamlining the many processes involved in freight management – stowage, insurance, sale and resale, cleaning, labelling, tracking, packaging, fumigating, refrigerating, weighing, and any number of other processes during transportation.

Integration and Outsourcing

At various points along the distribution chain, where there are physical interfaces, or changes in ownership or responsibility for goods, there is generally an associated cost. These points of friction in the chain are the focus of efforts to either remove the interface in order to reduce cost, or make the interface as efficient as possible.

There is an increasing trend towards outsourcing the freight task to specialist logistics companies rather than relying on an internal distribution unit. This outsourcing is commonly referred to as 'third-party logistics', and is now frequently extended to 'fourth-party logistics', in which the task of coordinating the separate various suppliers of transport, handling, storage and other services into a seamless and cost-effective whole is handled by a specialist logistics company.

The integration of freight transport and logistics suppliers is the market's response to changing demands in order to continue to deliver goods at reasonable cost. Further, the evolution towards logistics requires the development of new and open alignments in the business-to-business support structures in freight logistics services, and a shift in traditional owner/regulator planning roles towards a systems approach that facilitates modal integration and coordinates land use and transport infrastructure development.

3.2 Freight Patterns and Trends

The Dominance of Road Transport

There is a need for freight movements to penetrate almost all areas of the urban fabric, including households. Even though there may be some restrictions on size of load and when deliveries are made, road is the only mode that can achieve this at reasonable cost.

While rail, air and water transport are all important freight modes over long distances, with few exceptions, the start and end of freight journeys are made by road. Road is, and will likely remain, the dominant mode of freight transport in the region.

At present, only an approximate estimate can be made of the total tonnage of road freight moving within the region, although the associated freight vehicle movements can be gauged with more accuracy, and the numbers of commercial vehicles in use is known. For 2002, it is estimated that approximately 250 million tonnes of freight is moved by road within the Auckland region and a further 10 million tonnes by road between Auckland and other regions. Heavy vehicles typically comprise 5 per cent of the traffic stream on urban arterial roads and 12 per cent on rural highways.

Road Freight Estimates for the Auckland Region 2002		
Number of goods vehicles:		
Light (approx)	55,000	(Note 1)
Heavy	23,800	
Heavy trailers	6,700	
Total	85,500	
Intra-regional freight trips per day (Note 2):		
Light vehicles	350,000	(70%)
Heavy vehicles	150,000	(30%)
Total	500,000	
Intra-regional tonne-kilometres of freight p.a.(million):		
Light vehicles	175	(12%)
Heavy vehicles	1,825	(88%)
Total	2,000	
Inter-regional freight trips per day:		
Light vehicles	3,600	
Heavy vehicles	2,900	
Total	6,500	
Inter-regional tonne-kilometres of freight p.a.(million)		
Light vehicles	75	(6%)
Heavy vehicles	1,250	(94%)
Total	1,325	

Notes: (1) Light trucks vans and utilities are about 50% petrol and 50% diesel-powered.

(2) Trips are one-way, so a journey with three pick-ups/ deliveries and return to base would count as four trips

The surprising conclusion is that about 10,000 tonne-kilometres of freight movement occurs per year for every household in the Auckland region. How many freight tonnes this represents is harder to estimate. Although the average length of a goods-vehicle trip within the region is approximately 10 kilometres, many items of freight are collected and distributed as a series of linked trips, so goods do not always move directly between their origin and destination. If the average trip distance for freight is 20 kilometres, then this still represents more than one tonne of freight moved per day for every household in the region. This does not include goods moved in private cars, vans and small trailers.

Some of the sources of road freight contributing to this goods flow are:

- All import and export movements by road to and from the POAL, Onehunga and Auckland International Airport
- Freight distribution between Auckland and other regions
- Movement of aggregates, other construction materials and other building components supporting the regional growth rate of 7,500 households per year, along with the supporting commercial and infrastructure development
- Primary production goods shipment to manufacturing and further processing
- Wholesale and retail distribution of household goods consumption – foodstuffs, clothing, hardware, furnishings, pharmacy products, garden supplies, vehicles, general goods, etc
- Similar wholesale and retail supplies to commercial and industrial premises
- Waste and recycling household and industrial collections, processing and bulk disposal
- Mail and courier deliveries
- Rural carriage of stock, forestry logs, fertiliser, milk collections and farm servicing.

Rail Freight

Apart from a small amount of empty container movement, rail freight is currently all inter-regional. Rail accounts for approximately 20 per cent of freight between Auckland and other regions. Most of the 3.6 million tonnes of inter-regional rail freight in 2002 had origin or destination within the urban area, the main exception being 0.7 million tonnes of coal delivered to the Glenbrook steel mill and 0.4 million tonnes of steel exports by rail via the Port of Tauranga.

Small volumes of freight move by rail through the Auckland region, including logs for processing in Central North Island mills. The total tonnage of cross-regional rail freight is estimated to be in the order of 0.1 million tonnes per annum.

Rail Freight Estimates for the Auckland Region (million tonnes p.a.) 2002

	Inward to Region	Outward from Region	Cross-Regional	Total
Metropolitan Area:				
Ports of Auckland	0.2	0.2	-	0.4
Metroport	0.4	0.2	-	0.6
Private Sidings	n.a	n.a.	0.1	n.a.
Total	1.3	1.2	0.1	2.6
Other Regional:				
Glenbrook Steel mill	0.7	0.4	-	1.1
Total	2.0	1.6	0.1	3.7
By Direction:				
to/from Northland	0.2	0.0	-	0.2
to/from South	1.8	1.6	-	3.4
Cross-Regional	-	-	0.1	0.1

n.a. – Data not available.

Ports and Shipping

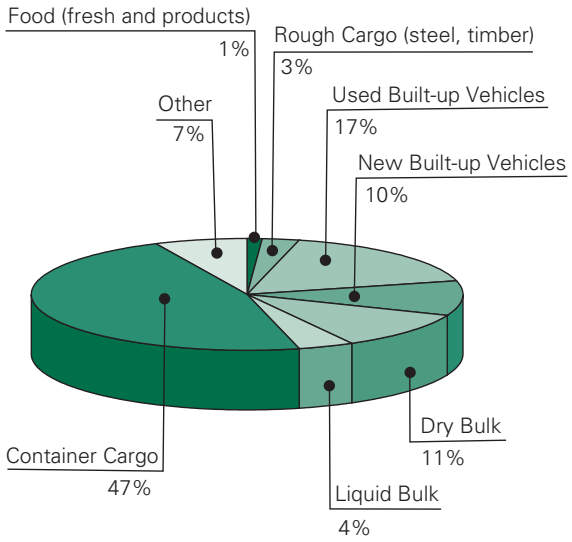
Auckland has two main ports, the Port of Auckland and the Port of Onehunga, both under the ownership and management of POAL. The POAL is the main gateway for international trade and is located on the northern Waitemata Harbour boundary of the Central Business District (CBD).

The Port of Auckland is New Zealand's busiest port and handles 43 per cent of the country's container trade. Most import cargo has an immediate destination within the Auckland region, although a significant portion is transhipped, either directly or after deconsolidation, to other parts of the country.

A recent feature of trade through the port has been the large number of imported used vehicles that are landed by special car-carrying vessels. Temporary surface storage for border inspection of these vehicles occupies space.

Container cargo comprises about half of the Port's trade, and is handled almost exclusively across the Fergusson and Kings/Bledisloe container wharves.

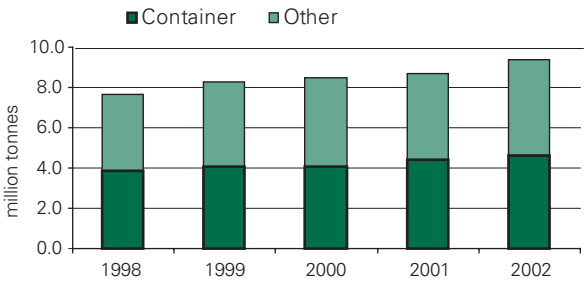
Ports of Auckland – Import Cargo 2002



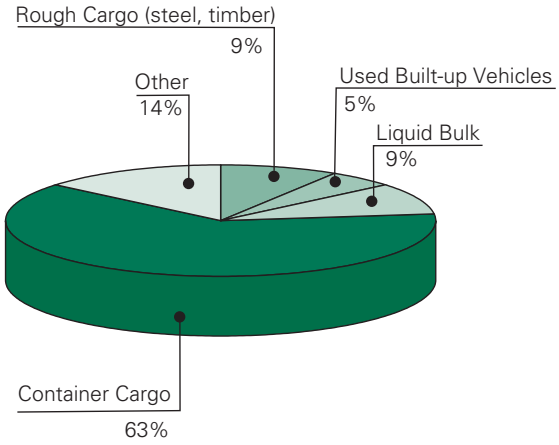
Much of the export cargo originates from outside the Auckland urban area and the region, a large contributor being chilled and frozen dairy products and meat. Most rail deliveries to the port are meat and dairy products.

The main commercial port has gradually moved eastwards as older wharves have become redundant for modern container freight-handling methods.

Ports of Auckland Cargo Volumes



Ports of Auckland – Export Cargo 2002



Dry bulk cargoes are landed at Jellicoe Wharf, although the receipt of liquid and some dry bulk cargoes remains at the Western Reclamation, so this area still forms a point of inland distribution for fuel, chemicals, sand and gravel, close to the CBD.

The Port of Onehunga lies on the Manukau Harbour, southwest of the city on the west coast. Onehunga is more oriented to coastal shipping than the Port of Auckland, and the steaming distance to South Island ports from Onehunga is much shorter than from the Waitemata Harbour. Apart from general cargo, Onehunga is also a reception point for bulk cement carriers.

Coastal shipping contributes about 20 per cent of inter-regional freight movement.

There is also a need to transport freight by ferry to a number of islands within the Hauraki Gulf, including Waiheke and Great Barrier Island. Although the volumes of freight are small, these services form a lifeline to the communities served. Barging, mainly of building materials, also plays a small but important role and efforts are being made to expand the volume of this traffic to divert heavy goods traffic away from the roads. A recent development is the inauguration of services between the Coromandel and west Auckland, supported initially by funding from Land Transport NZ. However, the environmental impacts of switching freight to barges needs to be taken into account, not just potential benefits from reduced road traffic.

Ports of Auckland – Freight Tonnages (millions) 2002

Cargo Form	Import	Export	Total
Container Cargo	3.2	1.4	4.6
Liquid Bulk	0.3	0.2	0.5
Dry Bulk	0.8	0.0	0.8
Break Bulk Cargo:			
New Built-up Vehicles	0.7	0.0	0.7
Used Built-up Vehicles	1.2	0.1	1.3
Rough Cargo (steel, timber)	0.2	0.2	0.4
Food (fresh and products)	0.1	0.0	0.1
Other	0.5	0.3	0.8
Total Break Bulk	2.7	0.6	3.3
Total million tonnes	7.0	2.0	9.0
International	3.5	2.0	5.5
Inter-regional	3.5	—	3.5

Airports and Air Transport

Auckland International Airport is the country's busiest airport in terms of passenger volumes and large aircraft movements. This is located 21 kilometres south of the Auckland CBD and 5 kilometres northwest of Manukau City Centre.

The airport is a key New Zealand infrastructure asset and plays a critical role in the Auckland regional economy. The airport plays an important national role for airfreight, accounting for 73.9 per cent of the country's air imports and 89.4 per cent of air exports in 2002. The majority of air cargo through Auckland

International Airport is international, contributing 150,000 tonnes in 2002 compared to 35,000 tonnes on domestic cargo services. In terms of the values of commodities handled, Auckland Airport is the second largest port in the country, with total trade valued at about $10 billion or 16 per cent of the national total. There are also small amounts of local airfreight movements to Great Barrier Island.

Both domestic and international cargo tonnages are static, but the value of the cargo throughput is increasing, indicating not only a move to higher value-to-weight goods, but also a constraint on international air cargo capacity. The introduction of larger and more efficient planes may help to reduce any capacity constraints.

Rural Freight

While the majority of freight movement within the region is concentrated within the urban area, the majority of land in the region is rural, and there is a substantial network of rural local roads and rural communities who rely on, and are affected by, rural freight transport.

The nature of freight movements and freight issues in rural Auckland is different from those of the congested urban area, and is more in common with other rural parts of New Zealand.

Local rural roads are often lightly constructed, many unsealed, and have lower geometric standards than urban roads and the main highways.

Cross-Auckland Freight Movement

The inter-regional flows include some external-to-external freight traffic between Northland and regions south of Auckland.

The extent of the road component of this movement can be gauged from the surveys carried out for the Auckland Regional Transport model. These are not true external-to-external trips, as the surveys are at Puhoi, Kumeu and Drury, but they do give an indication of through-movement across the Auckland urban area.

The total week-day flows across Auckland in 2001 were modelled at 200 vehicles per day, implying around 15 heavy vehicles per day at average traffic composition, or less than 1 per cent of inter-regional freight traffic.

Movement of logs and sawn timber from Northland forests into and through the Auckland region is an area of concern, as Northland's log harvest approaches maturity. The majority of the harvest is planned for export through Northport (Marsden Point), with only a relatively small percentage moving into and through Auckland. Other commodities transported from Northland include dairy products, cement and clay, and there is also some movement of refined petroleum products by pipeline from Marsden Point to Auckland.

Regional Freight Summary

Annual freight tonnages, broken down into international, inter-regional and intra-regional freight, are summarised below:

Regional Freight (estimated million tonnes) 2002						
	Road	Rail	Sea	Air	Pipeline	Total
International:						
Import	—	—	3.5	0.1		3.6
Export	—	—	2.0	0.1		2.1
Total	—	—	5.5	0.2		5.7
Inter-regional	9	3.2	3.5	0.0	2	17.7
Intra-regional	250	0.0	—	—		250

Inter-regional freight is estimated at 17 million tonnes per year, of which rail and coastal shipping each contribute about 20 per cent, and road about 60 per cent. Domestic air cargo, at 35,000 tonnes, accounts for only 0.2 per cent of inter-regional freight movement.

Inter-regional freight tonnage is also around three times that of international freight passing through Auckland. Furthermore, intra-regional freight tonnage is around 14 times greater than inter-regional freight, with road by far the most dominant freight mode.

3.3 Economic Impact

Industry Sectors and Employment

In 2001, the total Auckland regional product was estimated at $33,000 million.

The region's economy is dominated by three major sectors – manufacturing, finance and business services, and wholesale and distribution. These three sectors account for just under half of all economic activity in the region, compared to just over a third in the rest of the national economy, and their dominance reflects Auckland's role as the largest commercial centre in New Zealand and emphasises the importance of the region to the overall performance of the national economy. As such, it is a logical place to centre financial and business services, as well as wholesale and distribution services – the POAL handles around two thirds (by value) of the country's imports, emphasising why Auckland is such an important centre for wholesaling and distribution activities.

Two of the largest sectors are also important freight generators - wholesale and retail trade (18 per cent of GDP, 23 per cent of employment), and manufacturing (18 per cent of GDP, 17 per cent of employment), while finance and business services is the largest economic sector (23 per cent of GDP, 20 per cent of employment). The transport industry is directly responsible for 6 per cent of regional GDP and 5 per cent of employment.

In 1997, the transport and storage sector contributed to employment of 25,500 full-time equivalents (FTEs) to the Auckland regional economy (Statistics NZ). While there are a number of large freight companies, a characteristic of the industry is the large number of owner-driver, family owned small businesses employing few people and operating only one or two trucks. In many cases, individual owner-drivers are contracted to larger companies to carry their goods.

Freight Costs as Part of Prices

Various overseas studies indicate that freight logistics costs can comprise 5 per cent to 15 per cent of end-product prices. Minimising these costs is important, not only to the domestic economy, but also to New Zealand's export performance in markets where competition is increasingly differentiated by quality of service rather than quality or uniqueness of product. As the main import and export gateway, it is important to future prosperity that Auckland's transport system be fashioned to facilitate freight movement, while at the same time, ensuring that environmental and safety objectives are met.