

**Final Report**

# **Economic Impact of POAL**

**Prepared for**

**POAL**

**December 2008**

Covec is an applied economics practice that provides rigorous and independent analysis and advice. We have a reputation for producing high quality work that includes quantitative analysis and strategic insight. Our consultants solve problems arising from policy, legal, strategic, regulatory, market and environmental issues, and we provide advice to a broad range of companies and government agencies.

Covec develops strategies, designs policy, and produces forecasts, reports, expert testimony and training courses. Our commitment to high-quality, objective advice has provided confidence to some of the largest industrial and governmental organisations in Australasia.

#### **Authorship**

This document was written by Fraser Colegrave, Mike Simpson and Tim Denne. For further information, please email [fraser@covec.co.nz](mailto:fraser@covec.co.nz) or phone (09) 916-1969 or (021) 346 553.

#### **Disclaimer**

Although every effort has been made to ensure the accuracy of the material and the integrity of the analysis presented herein, Covec Ltd accepts no liability for any actions taken on the basis of its contents.

© Copyright 2008 Covec Ltd. All rights reserved.



Covec Limited, Level 15 Qantas House, 191 Queen Street  
PO Box 3224, Shortland Street, Auckland New Zealand  
t: (09) 916-1970 f: (09) 916-1971 w: [www.covec.co.nz](http://www.covec.co.nz)

# Contents

---

- Executive Summary ..... 2**
  
- 1. Introduction..... 4**
  - 1.1. Context .....4
  - 1.2. Scope & purpose of this report .....4
  - 1.3. Structure of this report .....4
  
- 2. POAL Overview ..... 5**
  - 2.1. POAL locations and operations .....5
  - 2.2. Institutional arrangements.....6
  
- 3. Importance of Trade & Freight..... 7**
  - 3.1. Trade as a % of GDP.....7
  - 3.2. Seafreight as % of trade .....8
  - 3.3. POAL as % of seafreight .....9
  - 3.4. Location of (North Island) demand.....10
  
- 4. POAL Activity ..... 11**
  - 4.1. Ships and TEUs.....11
  - 4.2. Composition of POAL TEUs .....12
  - 4.3. Bulk and break-bulk cargo .....12
  
- 5. Economic Impact Methodology ..... 14**
  - 5.1. Framework.....14
  - 5.2. Approach .....14
  - 5.3. Specific multiplier tables used in analysis .....15
  - 5.4. Accounts used in analysis .....15
  - 5.5. Regional definition.....15
  - 5.6. Impact measures .....15
  - 5.7. Comparison with 2005 study .....15
  
- 6. Economic Impacts ..... 16**
  - 6.1. Overall impact.....16
  - 6.2. Direct effects.....16
  - 6.3. Flow-on effects .....16
  - 6.4. Impacts per ship call .....16
  - 6.5. Interpretation .....16

# Executive Summary

---

## Context

In 2005, Market Economics estimated the economic impact of Ports of Auckland (POAL) using input-output (multiplier) analysis. The report – which included an estimate of the ‘facilitated impact’ – estimated that POAL had a GDP impact of \$10 billion on the Auckland region alone.

Since then, the social, political and economic environments in which the port operates have changed. These include the waterfront stadium debate of 2006, the unsuccessful merger attempt with Port of Tauranga, the Auckland Waterfront Vision 2040, and the ongoing Royal Commission into Auckland Governance.

The global sea freight industry has also been in a constant state of change, with increasing trends towards hubbing, consolidation, and fewer port calls.

Coupled with POAL’s desire to align its economic impact methodology with best-practice (as established by the Australian Bureau of Transport Economics, in 2000)<sup>1</sup>, these rapidly changing local and global conditions suggested the need to re-examine the economic impact of POAL.

## Background

The report commences with some introductory information on the facilities provided by – and institutional framework underlying – POAL. Then, it outlines the national importance of trade and sea freight to add context to our economic impact estimates.

Our analysis shows that trade is hugely important to New Zealand, accounting for more than 40% of GDP. Sea freight is the dominant mode, handling 99% of trade by weight, and 82% of trade by value. Within seaports, POAL is the most significant, handling 37% of national trade by value (compared to Port of Tauranga, the next biggest port, with only 20%).

POAL is a bustling, 24-7 operation. Over the last financial year, it handled 1,766 ship calls, 841,000 TEUs (twenty foot equivalent containers), 1.5 million tonnes of break-bulk cargo, and around 175,000 vehicle imports and exports.

## Analytical Framework

As with most port impact studies, this report estimates economic impacts using input-output (multiplier) analysis. These trace POAL’s revenues and expenditures throughout the economy to capture both direct and indirect impacts.

Direct impacts relate to the initial round of output, GDP, employment and income generated by the port itself. Indirect impacts are the flow-on effects associated with this initial round of activity. The economic impact of the port is the sum of these direct and indirect effects.

There are several ways to implement a multiplier analysis. These differ both in accuracy and resource requirements. The approach that we have used provides a good balance between these factors. It works through each revenue and expenditure line item in POAL’s accounts (of which there are nearly 400), and assigns them to various industries. The end-result is a weighted-average multiplier that directly reflects the specific industries stimulated by the port.

---

<sup>1</sup> *Regional Impact of Ports*, Australian Bureau of Transport Economics, 2000

## Underlying Accounts

The analysis is based on POAL's financial accounts for the year ended 30 June 2008, a high-level summary of which is provided below.

**Table 1:** Summary of 2007/08 POAL Accounts

Item	Value
Total revenue	\$ 169 million
Wages and salaries	\$ 52 million
Other expenses	\$ 59 million
EBIT	\$ 58 million
After-tax profit	\$21 million

## Geographic scope

This study analyses the impacts of POAL on the Auckland region. National-level analyses are effectively precluded by multiplier analysis, because increased economic activity in one region almost invariably means reduced activity in another. Put slightly differently, effects tend to cancel-out when considered at the national level.

## Results

The overall impact of POAL on the Auckland region (for the year ended 30 June 2008) was \$270 million of output, \$144 million of GDP, 1,002 full-time-equivalents jobs (FTEs), and \$60 million of household incomes. These impacts – and the splits between direct and flow-on effects – are tabulated below.

**Table 2:** Economic Impact of POAL (year ended 30 June 2008)

Impact Measure	Direct Effects	Flow-on Effects	Total Impact
Output (\$m)	\$169	\$101	\$270
GDP (\$m)	\$100	\$44	\$144
Household Incomes (\$m)	\$38	\$22	\$60
Employment (FTEs)	568	434	1,002

Translating these figures in to per-ship-call terms, each ship call had the following effect on the Auckland regional economy (on average):<sup>2</sup>

- Output of \$159,200
- GDP of \$84,900
- Employment for 0.6 FTEs, and
- Household incomes of \$35,400.

## Interpretation

It is important to recognise that the figures generated in this study are not exact. They rely on a number of assumptions, and reflect only the general magnitude of impacts associated with POAL. They do, however, provide some insights to the overall economic significance of POAL.

---

<sup>2</sup> Note that cruise ships calls – which totalled 70 for the year end – have been excluded.

# 1. Introduction

---

## 1.1. Context

In 2006, POAL commissioned Market Economics to estimate the economic impact of its operations. The report - which included an assessment of 'facilitated impact' - concluded that POAL had a GDP impact of nearly \$10 billion on the Auckland region alone.

Since then, the social, political and economic environments in which the port operates have changed. These include the waterfront stadium debate of 2006, the unsuccessful merger attempt with Port of Tauranga, the Auckland Waterfront Vision 2040, and the ongoing Royal Commission into Auckland Governance.

The global sea freight industry has also been in a constant state of change, with increasing trends towards hubbing, consolidation, and fewer port calls. Combined with the rapidly-changing local environment, and Ports of Auckland's desire to align its economic impact analyses with best-practice (as established by the Australian Bureau of Transport Economics), these wider pressures suggested a need to re-examine the role and impact of POAL.

## 1.2. Scope & purpose of this report

This report assesses the economic importance of POAL using an economic impact assessment. This measures the economic effects of the port using standard multiplier analysis (as in the 2005 report). However, the scope of this report is different from the 2005 report in a number of ways. See section 5.7 for further details.

## 1.3. Structure of this report

The remainder of this report is structured as follows:

- *Section two* provides a brief overview of POAL, including its locations, operations and institutional arrangements.
- *Section three* considers the importance of trade and freight to the New Zealand economy.
- *Section four* summarises various measures of POAL activity to provide context to our economic impact estimates.
- *Section five* describes the methodology we have used to estimate economic impacts
- *Section six* presents our estimates of economic impact.

## 2. POAL Overview

---

This section provides a brief overview of POAL, including its locations, operations and institutional arrangements.

### 2.1. POAL locations and operations

POAL operates two seaports – one on the CBD waterfront, and another at Onehunga – and an inland port at Wiri, South Auckland. In terms of import and export mix it is one of the most balanced ports in the country, and carries nearly 50% of the North Island container trade. It is New Zealand's largest port by value of imports and exports, and by far the country's largest container handler. It is the only New Zealand port company ranked among the world's top 120 container ports.<sup>3</sup>

POAL's main operations and services are summarised below:

- *Container handling* – POAL provides comprehensive container services, handling over 840,000 TEUs (twenty-foot equivalent units) in the year ended 30 June 2008.
- *General wharves* – general wharves handle a range of bulk, break-bulk and liquid cargo (as well as containers and imported vehicles).
- *Intermodal logistics* – the Wiri inland port services exporters and importers in the South Auckland area, providing a streamlined link between local businesses and international ports. With the completion of a planned rail link in 2009, the port will also serve as a stepping stone for businesses south of Auckland, helping them get their goods to the seaport without travelling through the Auckland CBD.
- *Engineering* – POAL's engineering arm maintains port plant and equipment, and provides a 24-hour breakdown and refuelling service.
- *Cargo consolidation* – POAL also assists with container packing and cargo consolidation for exporters, making export operations more efficient.
- *Rail & shuttle* – these help move goods both within and beyond the port.
- *Marine services* – this covers a diverse range of activities, such as pilotage, towing, navigational aids and line-handling. It also includes management of the overseas passenger terminal at Princes Wharf.
- *Logistics, sales & marketing* – provides general port-related services for import and export customers.
- *Infrastructure* – this division provides and maintains all port infrastructures, and liaises with regulatory bodies on infrastructure planning projects.

---

<sup>3</sup> *Container Management* magazine, July 2008.

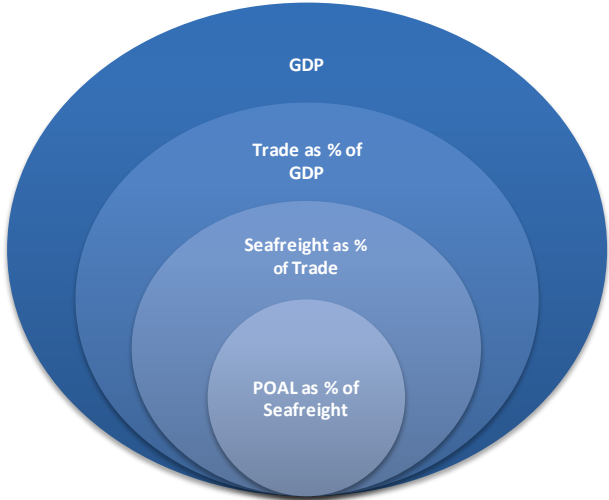
## **2.2. Institutional arrangements**

The Auckland Harbour Board was established in 1871 to provide port facilities for visiting ships. In 1988, the Board was corporatized to form POAL, with ownership retained by the Auckland and Waikato regional bodies. The company was subsequently floated on the stock exchange, with Waikato Regional Council selling its 20% share. Auckland Regional Council retained its 80% share, which was ultimately transferred to Auckland Regional Holdings (ARH). In July 2005, ARH moved to full ownership, and de-listed the company from the stock exchange.



# 3. Importance of Trade & Freight

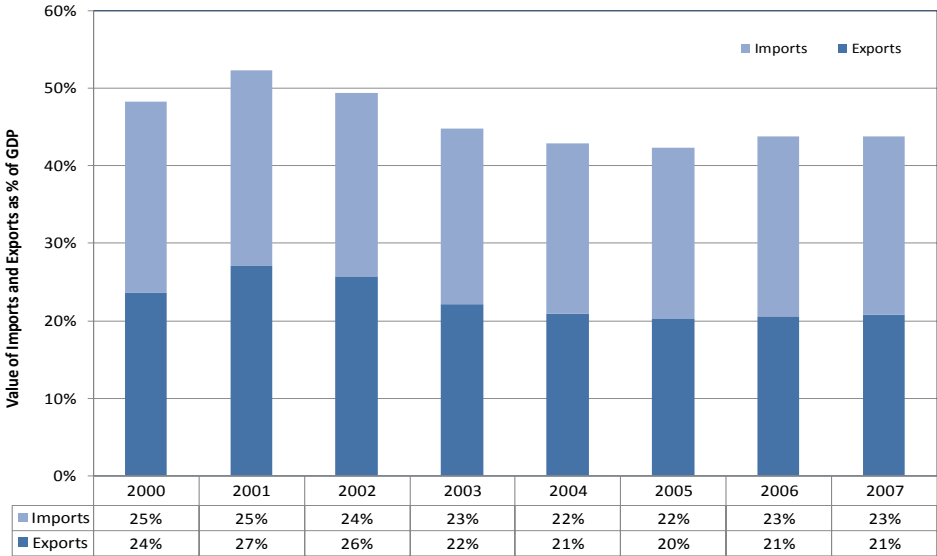
Politicians and media commentators frequently cite the importance of trade to New Zealand. This section examines the basis of those statements, and analyses the role of trade - and hence seafreight – in the New Zealand economy. The analysis is based on the hierarchy set out below:



## 3.1. Trade as a % of GDP

Figure 1 shows the value of trade as a proportion of annual GDP. Clearly, as a small and isolated nation, trade is very important. Over the last eight years, trade has equated to more than 40% of GDP, with imports exceeding exports in recent times.

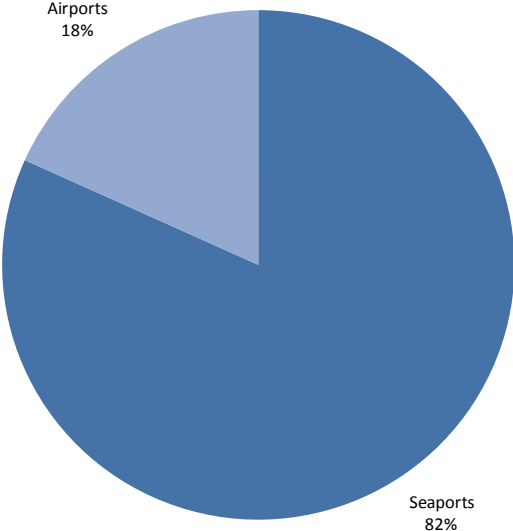
Figure 1: Trade as a % of GDP



### 3.2. Seafreight as % of trade

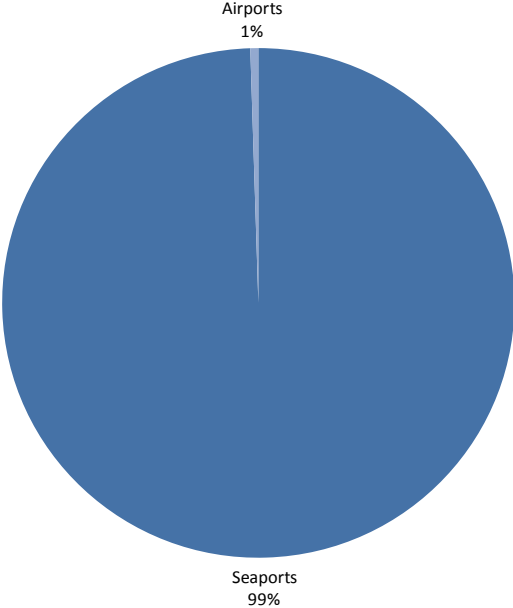
Figure 2 shows the proportion of trade handled by airports versus seaports. Seaports are noticeably dominant, accounting for 82% of total trade by value in 2007.

Figure 2: Shares of Trade by Value (2007)



The dominance of seaports becomes even more apparent when shares are expressed in terms of weight. This can be seen in the figure below, which shows that seaports carried 99% of New Zealand’s annual trade by weight in 2007.

Figure 3: Shares of Trade by Weight (2007)



### 3.3. POAL as % of seafreight

Figure 4 presents the distribution of import and export values by seaport for 2007. POAL is clearly the most significant, handling 50% of imports and 24% of exports. Overall, POAL handles 37% of total annual trade by value. It is thus an integral part of the regional and national economy.

Interestingly, Tauranga also handles around one quarter of exports, but only 15% of imports. Overall, it handles 20% of total annual trade by value (just over half that of POAL).

**Figure 4:** Distribution of Import and Export Values by Seaport (2007)

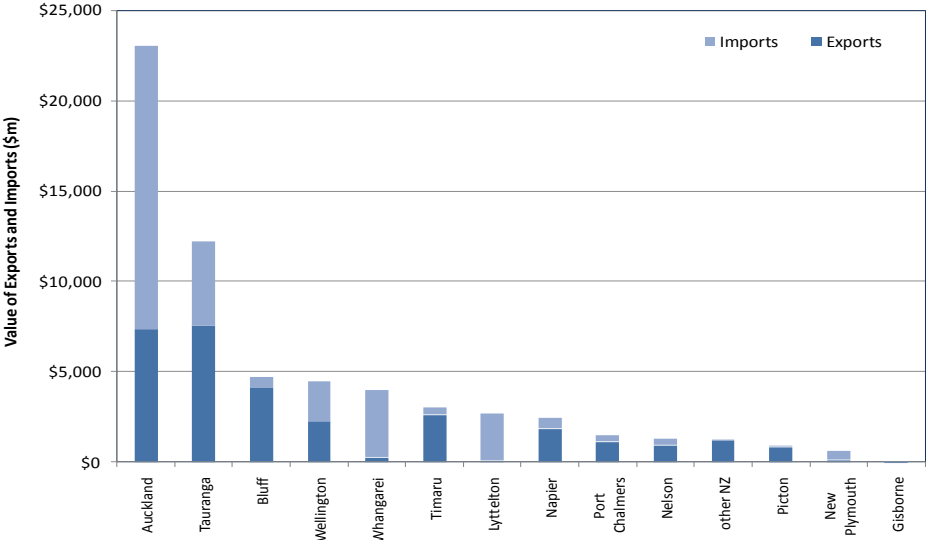
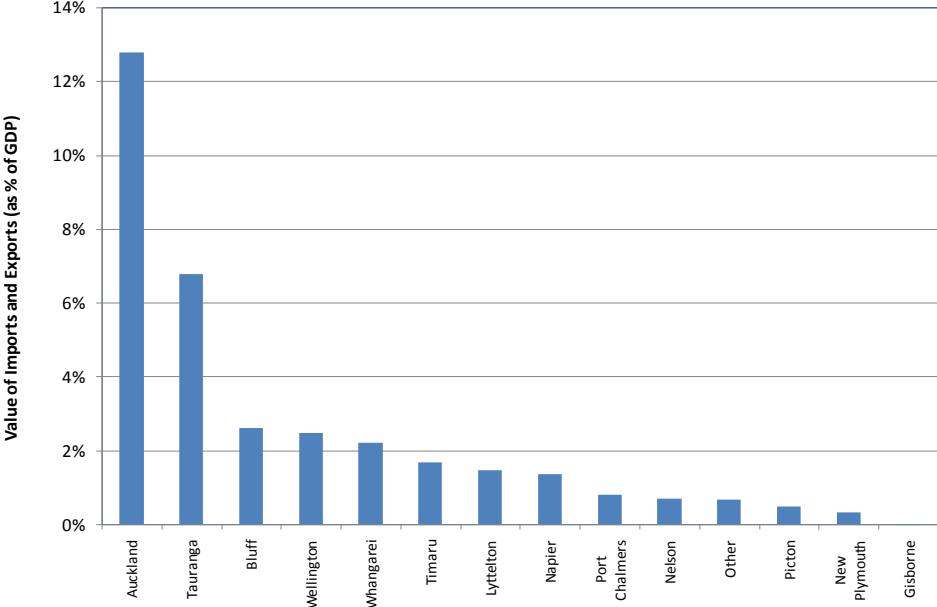


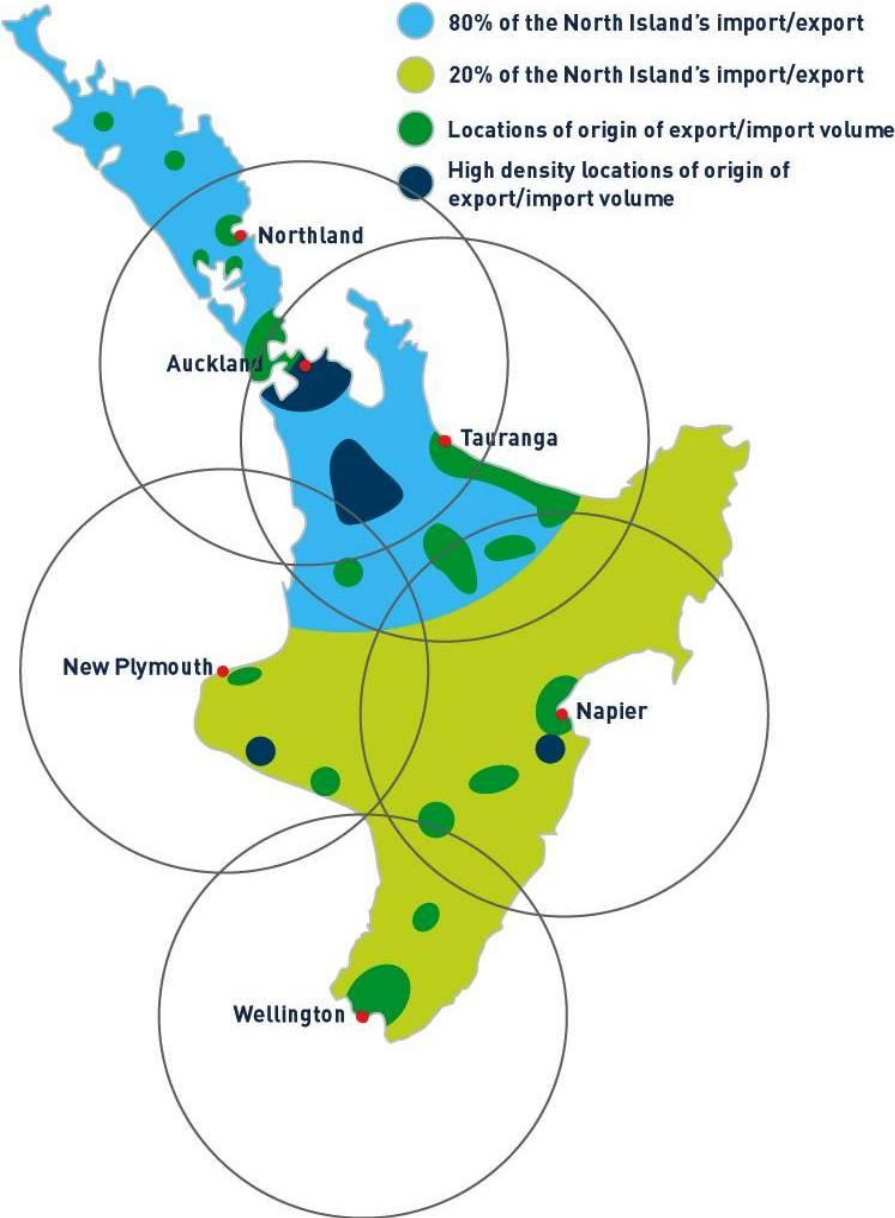
Figure 5 expresses each port’s combined import and export values as percentages of national GDP. It shows that POAL’s annual trade equates to nearly 13% of national GDP, while Tauranga’s is around 7%.

**Figure 5:** Total Trade Value as % of National GDP



### 3.4. Location of (North Island) demand

Finally, as an additional matter of context, the following map shows the location of import and export demand within the North Island. South Auckland and Waikato are significant hotspots, with smaller pockets of demand scattered elsewhere.



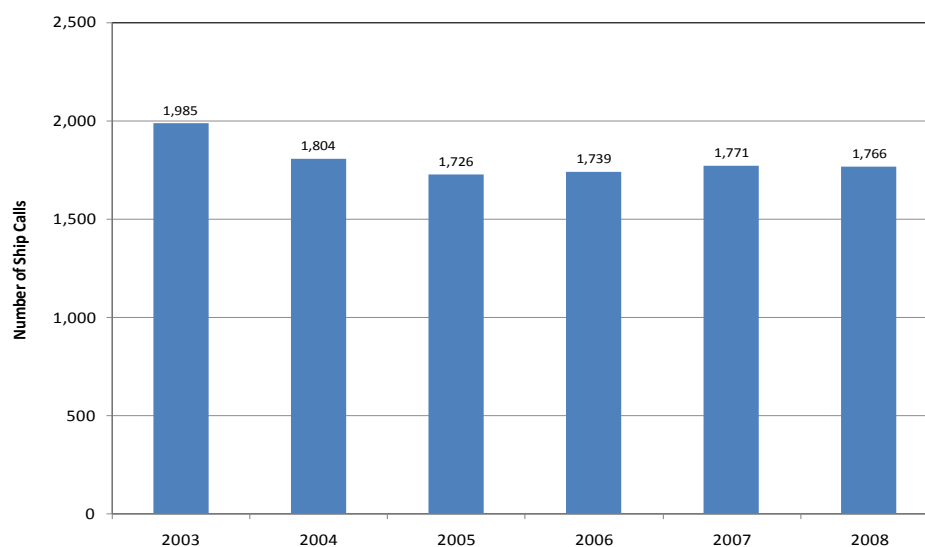
## 4. POAL Activity

This section presents several measures of POAL activity to provide context to our estimates of economic impact.

### 4.1. Ships and TEUs

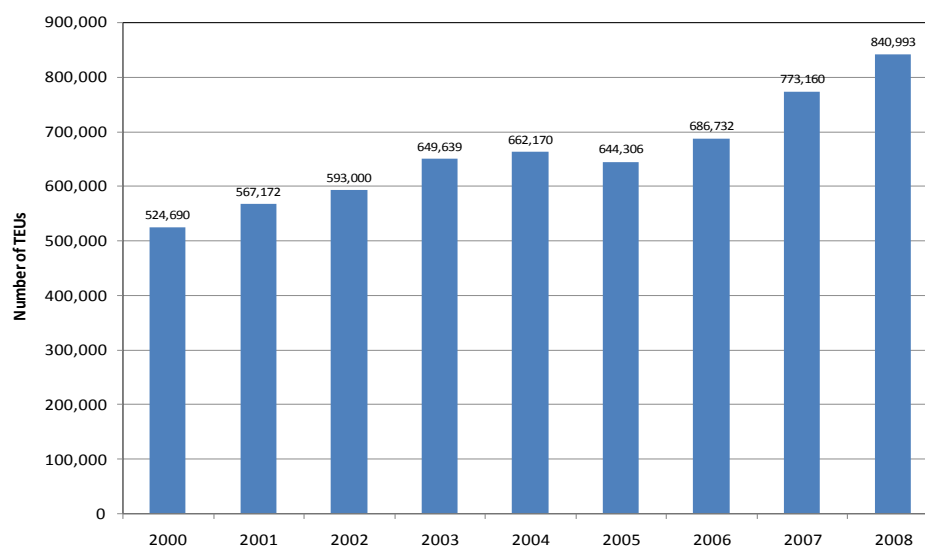
Figure 6 shows the number of ship calls (by financial year). These fell between 2003 and 2005, but have been fairly stable ever since.

**Figure 6:** Number of Ship Calls (Waitamata + Manukau)



Despite fewer ship calls, container volumes have increased steadily. This is shown in Figure 7, which plots TEUs (twenty-foot equivalent units) by financial year from 2000 to 2008.

**Figure 7:** Number of TEUs (twenty-foot equivalent units)

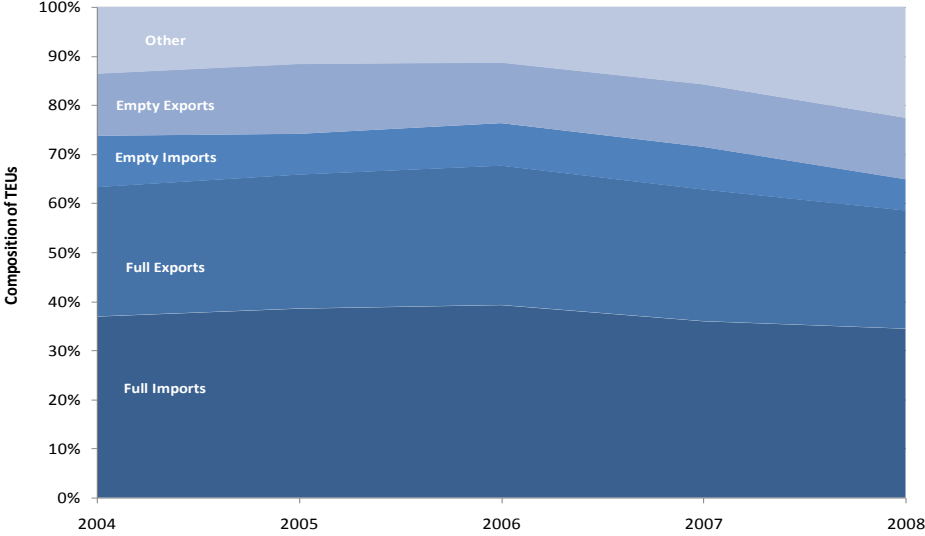


According to Figure 7, TEUs increased 60% between 2000 and 2008. This translates to a compound growth rate of 6.1% p.a.

**4.2. Composition of POAL TEUs**

Not only has the volume of TEUs evolved over time, so too has their composition. This is shown in the figure below, which plots the share of TEUs that are either full or empty imports and exports. A catch-all category ('other') has also been included.

**Figure 8: Composition of TEUs by Financial Year**



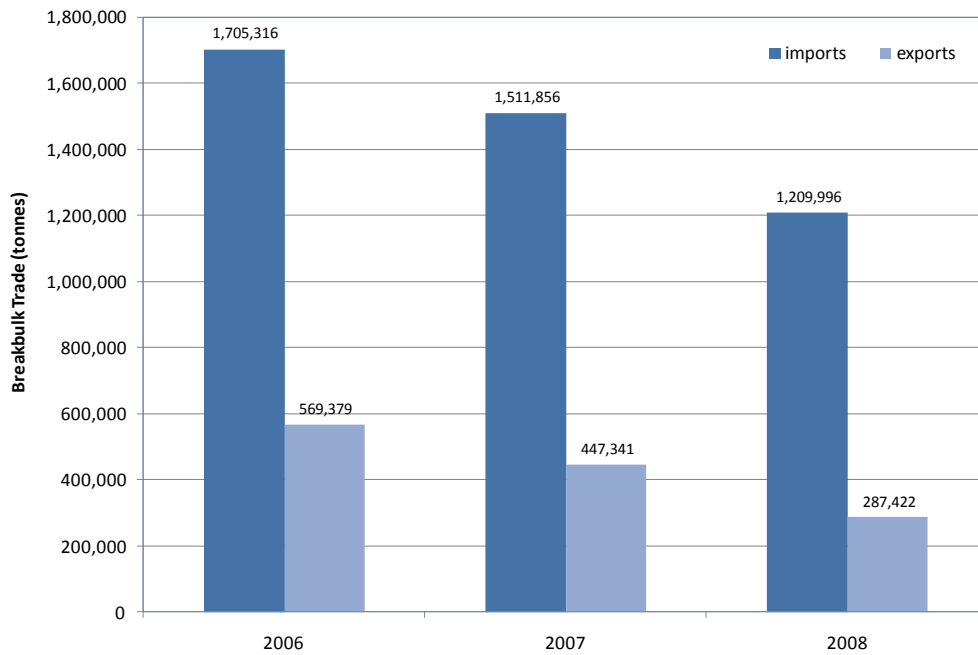
The proportion of TEUs that were either full imports or full exports decreased slightly between 2004 and 2008 (from 63% to 57%), while the proportion described as 'other' increased (from 14% to 23%). Empty exports have hovered around 13% of TEUs, while empty imports have fallen from 10% to 6%. The latter implies increased logistical efficiency.

**4.3. Bulk and break-bulk cargo**

In addition to its container trade, POAL also handles significant volumes of bulk and break-bulk trade. This is shown in the two charts below.

*Note:* In March 2007 POAL transferred Wynyard Wharf - and associated break-bulk volumes of some 650,000 tonnes per annum - to shareholder ARH as part of the Sea+City precinct redevelopment project. This explains the apparent fall in volumes in the following chart. Wynyard Wharf cement and bunker fuel volumes will revert to Ports of Auckland following the relocation of Golden Bay Cement to the Port, and the building of a planned bunker barge.

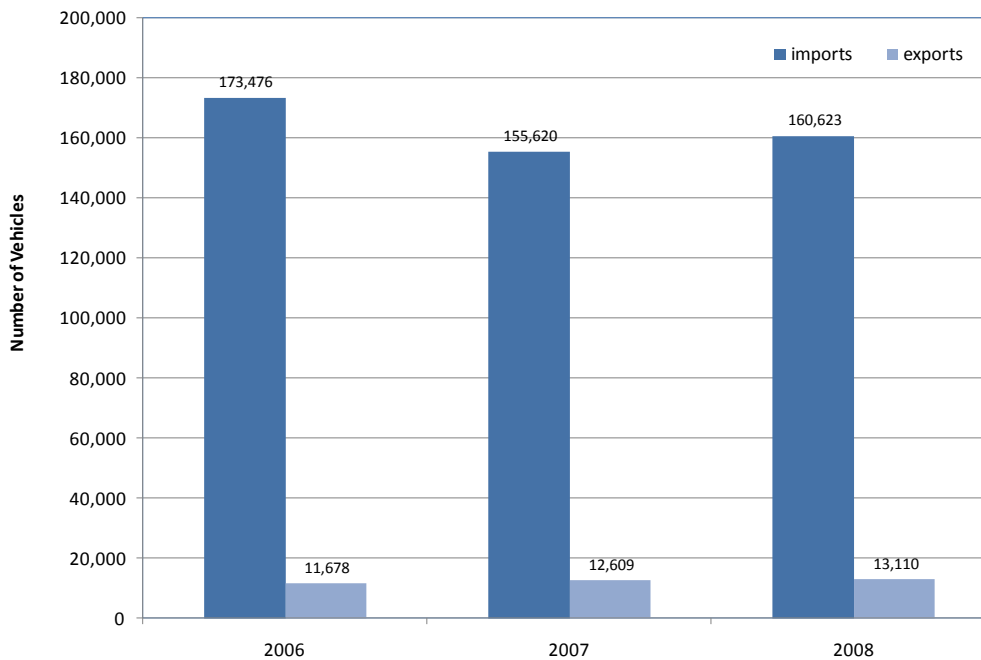
**Figure 9: General Break-bulk Imports and Exports (tonnes) – year ended June 30**



Break-bulk imports are dominated by five products – sand, steel, fuel oil, gypsum and cement – which account for over 70% of total imports by weight. Break-bulk exports are even more concentrated, with the top five products (tallow, diesel, flat steel, coil steel and fuel oil) accounting for 86% of total exports by weight.

POAL also handles a large number of vehicle imports – and some exports – each year, as shown in the figure below.

**Figure 10: Vehicle Imports and Exports - year ended June 30**



## 5. Economic Impact Methodology

---

This section outlines the methodology that we have used to calculate economic impacts. For ease of reading, it is divided into several subsections.

### 5.1. Framework

As with most port impact studies, this report estimates economic impacts using input-output (multiplier) analysis. These trace POAL's revenues and expenditures throughout the economy to capture both direct and indirect impacts.

Direct impacts relate to the initial round of output, GDP, employment and income generated by the port itself. Indirect impacts are the flow-on effects associated with this initial round of activity. They comprise two parts:

- *Indirect effects* – the day-to-day today operation of the port requires inputs from a number of other industries. These suppliers, in turn, draw on the goods and services of other industries to produce their own output. The sum of all these interdependencies is the indirect effect. For example, the port relies heavily on transport operators to convey goods. These transport companies, in turn, rely on tyre manufacturers to maintain their fleet. Tyre manufacturers, in turn, place significant demands on rubber processing plants to produce their output (and so on).
- *Induced effects* – these capture the effects of additional spending by people employed as a result of the direct and indirect effects. For instance, staff at the tyre and rubber processing plants will purchase a range of goods and services to support their households, which further stimulates the regional economy.

The economic impact of the port is the sum of these direct, indirect and induced effects.

### 5.2. Approach

There are several ways to implement a multiplier analysis. These differ both in accuracy and resource requirements. The simplest approach is to apply industry multipliers to an organisation's revenues to derive flow-on effects. However, this produces fairly coarse results. For instance, seaports are grouped under "Air transport, and services to transport and storage" in New Zealand multiplier tables, which is a very broad category indeed. As a result, the associated multipliers do not reflect the unique characteristics of seaports (or any of the other underlying industries), and hence the results are fairly unreliable.

At the other end of the spectrum lies a highly-sophisticated approach, where the organisation in question is added to the multiplier tables as a distinct industry. This allows very specific multipliers to be derived, but is extremely time-consuming and resource intensive.

The approach that we have used in this report falls between these extremes. It works through each revenue and expenditure line item in POAL's accounts, and assigns them to various industries. The end-result is a weighted-average multiplier that directly reflects the specific industries stimulated by the port. It provides a good balance between time and accuracy.



### 5.3. Specific multiplier tables used in analysis

The national multiplier tables produced by Statistics New Zealand have not been updated since 1996. Consequently, they do not reflect the current state of the economy. In order to overcome this, we commissioned Butcher Partners Limited (who are leading experts on multiplier analysis) to generate a set of updated tables for the Auckland region. The tables produced by Butcher Partners span 53 industries.

### 5.4. Accounts used in analysis

The analysis is based on POAL’s financial accounts for the year ended 30 June 2008, which spanned over 400 line items. A high-level summary is provided below.

Table 3: Summary of 2007/08 POAL Accounts

Item	Value
Total revenue	\$ 169 million
Wages and salaries	\$ 52 million
Other expenses	\$ 59 million
EBIT	\$ 58 million
After-tax profit	\$21 million

### 5.5. Regional definition

This study analyses the impacts of POAL on the Auckland region. National-level analyses are effectively precluded by multiplier analysis, because increased economic activity in one region almost invariably means reduced activity in another. Put slightly differently, effects tend to cancel-out when considered at the national level.

### 5.6. Impact measures

This report considers the impacts of POAL on the following economic indicators:

- output (gross revenue)
- GDP
- Employment (FTEs), and
- household income

### 5.7. Comparison with 2005 study

Unlike the 2005 study by Market Economics, this report does not consider trade facilitation effects. This is because, although the port is an important facilitator of trade, we consider it tenuous to assign the underlying value as a port impact. Indeed, while the port provides critical infrastructure via which goods are traded, the port itself is not responsible for their production (and hence any associated impacts). This position is consistent with the port impact framework established by the Australian Bureau of Transport Economics.<sup>4</sup>

This study also does not ascribe the economic impact of cruise ships to the port. This would be akin to assigning the economic impacts of air-bound tourists to airports, which is clearly erroneous. Consequently, the numbers generated in this report are much smaller than – and are not directly comparable with – the 2005 report.

<sup>4</sup> *Regional Impact of Ports*, Australian Bureau of Transport Economics, 2000

## 6. Economic Impacts

---

This section presents our estimates of economic impact, which are based on the methodology described in the preceding section.

### 6.1. Overall impact

Table 4 presents our estimates of the overall economic impact of POAL.

**Table 4:** Economic Impact of POAL (year ended 30 June 2008)

Impact Measure	Direct Effects	Flow-on Effects	Total Impact
Output (\$m)	\$169	\$101	\$270
GDP (\$m)	\$100	\$44	\$144
Household Incomes (\$m)	\$38	\$22	\$60
Employment (FTEs)	568	434	1,002

In short, the overall impact of POAL for the year ended 30 June 2008 on the Auckland region was \$270 million of output, \$144 million of GDP, 1,002 full-time-equivalents (FTEs) jobs, and \$60 million of household incomes.

### 6.2. Direct effects

POAL port-related activities generated *direct* output of \$169 million, GDP of \$100 million, employment for 568 FTEs, and household incomes of \$38 million. These incomes translate to nearly \$67,000 per FTE, which is well above the national average.

### 6.3. Flow-on effects

Based on the direct effects described above, and using multipliers derived specifically for this study, we have calculated the flow-on effects of POAL's activities. Overall, the port generated *flow-on* output of \$101 million, GDP of \$44 million, employment for 434 FTEs, and household incomes of \$22 million. The latter equates to nearly \$51,000 per FTE, which is lower than the average for direct effects, but still well above the national average.

### 6.4. Impacts per ship call

Recall from section 4.1 that there were 1,766 ship calls for the year ended 30 June 2008 (of which 70 were cruise ships). Putting these 1,696 freight-related ship calls in context implies that each generated the following impacts on the Auckland regional economy (on average):

- Output of \$159,200
- GDP of \$84,900
- Employment for 0.6 FTEs, and
- Household incomes of \$35,400.

### 6.5. Interpretation

It is important to recognise that the figures generated in this study are not exact. They rely on a number of assumptions, and reflect only the general magnitude of impacts associated with POAL. The results also do not indicate technical efficiency, competitiveness, trade facilitation

effects or the contribution of port infrastructure to regional development. Nor do they indicate the net effects to the national economy. This is because, as noted earlier, effects tend to cancel out at the national level - increased activity in one region typically means reduced activity in another.