PO Box 14001
Christchurch 8544
New Zealand
Telephone (+64 3) 358 5029

christchurchairport.co.nz

15 September 2023

Warren Batchelor
Email: c/- fyi-request-23882-f4079010@requests.fyi.org.nz

Dear Mr Batchelor,

OFFICIAL INFORMATION ACT 1982 (OIA) – REQUEST FOR INFORMATION - CHRISTCHURCH INTERNATIONAL AIRPORT LIMITED (CIAL)

1. We write further to our email of 21 August 2023, acknowledging receipt of your email of 19 August 2023 (via the third party public platform fyi.org.nz) in which you requested the following information pursuant to the OIA:

   "Please provide any documentation, analysis, emails etc which show the projected freight movement demand in Central Otago, including analysis of the volume and timing of such demand (eg Cherries have a very defined season of a few weeks)."

   (the "**Request**")

2. CIAL will provide you with the requested information where it is able. However, you will note within this letter that it is occasionally unable to release requested information if it would prejudice or disadvantage CIAL's commercial activities. Before we answer your specific query, it may be helpful to provide some context to this.

3. The OIA permits an organisation to refuse to release requested information it holds if the withholding of such information is necessary to enable the organisation to carry out its commercial activities or negotiations without prejudice or disadvantage (s 9(2)(i) and s9(2)(j) OIA) provided that such withholding is not outweighed in the circumstances by the public interest in making the specific information available. For example, while it may be in the public interest to understand that CIAL is investigating the feasibility of establishing an airport in Central Otago that does not mean CIAL must share every detail of its plans, analysis, work or negotiations within specific work streams.

4. As you may be aware, CIAL is a council-controlled trading organisation that has been specifically established to operate and manage its business as an independent commercial undertaking for the purposes of making a profit, and to follow generally accepted commercial practices and disciplines. CIAL is not a public body collecting and spending public funds. It operates as a wholly commercial, standalone entity. Due to the size and scale of those activities it is one of only three major airports in New Zealand regulated under Part 4 of the Commerce Act 1986.

5. As an airport, CIAL has a further overriding obligation under the Airport Authorities Act 1966, and reinforced by the Civil Aviation Act 2023, to act as a commercial undertaking. It does so in a commercially competitive environment both domestically and internationally, where its competitors

are not under corresponding disclosure requirements. The proposed Central Otago airport Project (the **Project**) is a complex commercial activity, acknowledged as being in competition with the interests of other airports within New Zealand.

6. The Project is currently in the validation and planning phase which in and of itself is a complex commercial activity. At present, CIAL is under no legal obligation to consult in relation to the Project. To assist public understanding of the context of the Project and CIAL's decisions, CIAL has committed to, and does, proactively publish information as it completes pieces of work which is likely to be in the public interest to receive on its dedicated Project web-site at https://www.centralotagoairport.co.nz/ (the Project Website). This information includes a document recently published in August 2023 titled "*Unlocking Potential: Central Otago's runway to a future-focussed airport*", which provides general information on the work and analysis CIAL has undertaken as at the date thereof in relation to the Project (https://www.centralotagoairport.co.nz/uploads/images/Unlocking-potential-31-Aug2023.pdf).

7. With respect to your Request, CIAL has obtained various reports from external advisers in relation to air freight services for Christchurch and South Island exporters. Noting the information provided publicly so far in relation to the Project, CIAL considers that release of any further, non-public information comprising projections and analysis of the type mentioned in your Request may impact on CIAL's ability to carry out its commercial activities in relation to the Project without prejudice or disadvantage. Accordingly, this information is withheld under section (9)(2)(i) of the OIA, with the exception of the following report which has previously been made publicly available and which is enclosed with this letter: *Opening up the South – A report to the Canterbury Development Corporation, PWC (September 2011)*.

8. We trust we have answered your requests for information. If you require any further information or we have in some way misinterpreted your requests, please let us know.

9. You have the right to seek an investigation and review by the Ombudsman of the decisions contained in this letter. Information about how to contact the Ombudsman or make a complaint is available at www.ombudsman.parliament.nz or freephone 0800 802 602.

Yours sincerely

CIAL LEGAL TEAM

Email: legal@cial.co.nz

Opening up the South

A report to the Canterbury Development Corporation

Estimating the potential for increased air freight services for Christchurch and South Island exporters and importers

September 2011

pwc

Table of contents

This report is subject to the Disclaimers set out in Appendix III.

pwc

Executive summary

This project was commissioned by the Canterbury Development Corporation (CDC). Its purpose is to investigate the potential for increased air freight services through Christchurch International Airport ("Christchurch").

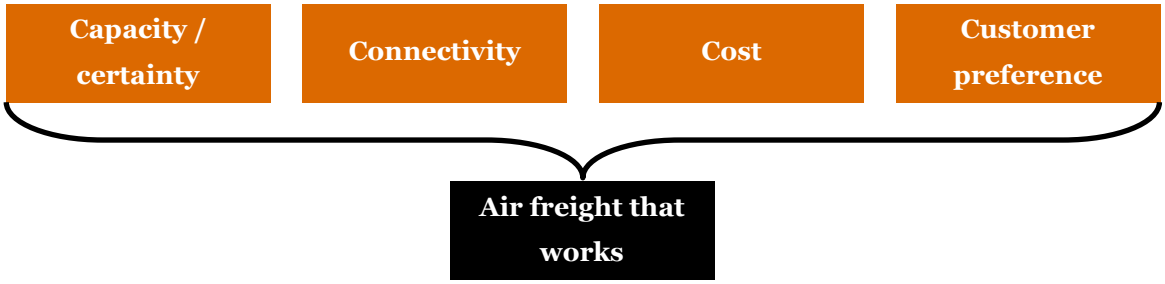
Air freight plays a strategic role

Air freight plays a small (in weight terms) but ***strategic role*** in New Zealand's international trade. Air freight creates a ***premium for our primary product*** exports by giving us access to international markets in a timely fashion. It also allows us to import componentry and spare parts for production lines more rapidly, ***reducing downtime*** and ***the lag*** between our exporters paying for high value inputs and receiving payment from their customers for finished products.

Services do not match current and future potential South Island business needs

Current air freight services through Christchurch are ***limited***. Only one dedicated freighter service serves the South Island – a Boeing 767 that has historically operated a reduced schedule over summer (December to February/March), when demand in the South Island is highest. This service is expected to be more regular in future, but although the South Island produces 48% of New Zealand Seafood, Meat, Vegetables and Fruit, it accounts for just 23% of exports of these products by air.

Our discussions with stakeholders identified four key factors that underlie uptake of air freight services, and to some extent current air freight provision through Christchurch fails in all four areas.



A successful air freight system provides sufficient ***capacity***, and reliability of service. Wide-body aircraft capacity is particularly short in supply through Christchurch.

A successful system will also allow ***connectivity*** through major hubs to more distant markets. This is one area in which Christchurch currently does relatively well, being connected to Sydney, Singapore and to a lesser degree Dubai, all of which are major hubs with connections around the world. Any new freighter services should consider other major hubs, probably in East Asia and possibly Melbourne.

The switch to narrow-body aircraft on trans-Tasman routes a few years ago, and the surplus capacity in the surface freight industry has made the ***cost of air freight less attractive***. While this is little deterrent to perishables exports, which are relatively price-insensitive because of the need to transport

them quickly, price does play a far larger role in the use of air freight for non-perishable exports and in the decision to import by air.

A recurring theme in discussions with stakeholders is the role of ***customer preferences*** in demand for air freight. While online retail growth has received a lot of attention in recent years, this is not a primary driver of air freight uptake for New Zealand. Instead, business-to-business trade, such as the need for shorter lead-times, is undergoing a change. Many producers want to store less inventory, and are happy to pay more to import higher-value components by air, given that transport costs are typically a small proportion of the overall cost of these items.

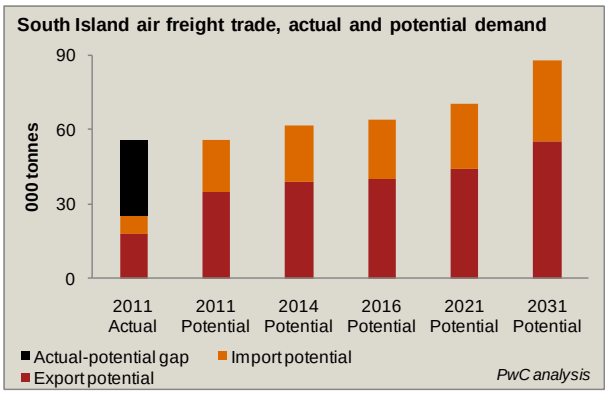
The South Island transports less than half its share by air

Using South Island production and consumption patterns, we estimate that the South Island is "under-exporting" around 17,700 tonnes, and "under-importing" around 12,000 tonnes by air. This is the equivalent of around 170 fully-laden Boeing 777 freighters bearing exports, and nearly 120 bearing imports. This gap in air freight trade evidences itself either in the form of products being air freighted through other airports in New Zealand, creating ***inefficiencies*** (time and cost) for South Island businesses, or in South Island businesses being ***less likely to trade internationally*** in the first place, meaning they do not export or import their "fair share" of products. Both observations are material in economic terms and for the attracting new businesses to the South Island.

Changes are needed to meet future demand

Based on production and consumption patterns for the South Island, demand for air freight is expected to grow strongly, if the South Island is to export and import a share of air trade weights commensurate with its role in the New Zealand economy. By 2031, potential demand for air freight trade by South Island exporters and importers is expected to reach 55,500 tonnes a year and 32,300 tonnes a year respectively.

These figures equate to around 10 dedicated freighter movements out of Christchurch each week, and six dedicated freighter movements into Christchurch. While around one-third of this need is met by existing freighter and passenger aircraft capacity, there already appears to be a substantial gap in capacity.



A range of solutions

There are a range of potential solutions to the shortage of air freight services. These range from introducing wide-body passenger aircraft on trans-Tasman routes during peak season (which coincides with peak trans-Tasman passenger travel) to a dedicated freighter service all year-round. Given the figures estimated in this study, there is potential for a dedicated freighter service flying two or three times a week, expanding to as many as five flights a week over the next 20 years.

Introduction

This project was commissioned by the CDC. Its purpose is to investigate the potential for increased air freight services through Christchurch.

The project had three stages. In the first stage, we examined the current air freight provision through New Zealand in general and Christchurch in particular, focusing on what is currently exported and imported. We matched these export and import patterns to what is produced and consumed in Canterbury, the South Island, the Lower North Island and Upper North Island. In this way we were able to ***estimate the current mismatch*** between what is produced and consumed in the natural catchment area for Christchurch – the South Island – and what is exported and imported there.

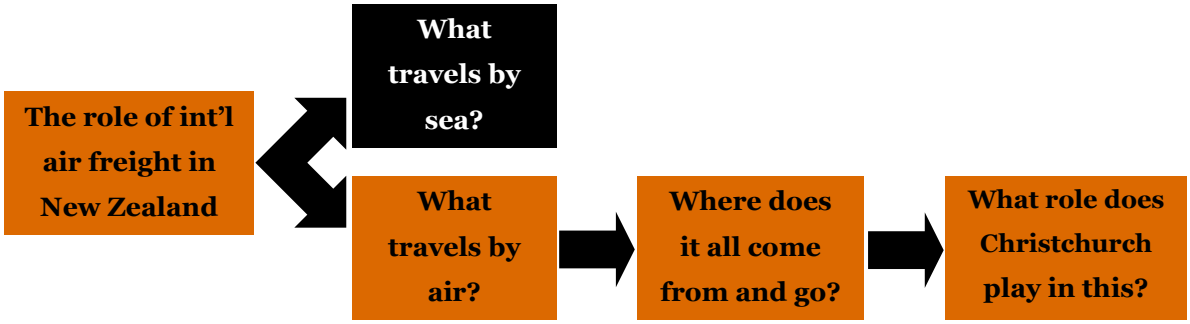
In the second stage, we ***interviewed freight forwarders and stakeholders*** in major South Island export and import industries to verify the numbers estimated in the first stage. These interviews also helped us to understand the specific risks and benefits posed or provided by current air freight provision in the South Island, and supported the projections developed in the third stage.

In the third stage, we ***projected growth*** in air freight demand for the South Island and Lower North Island out to 2014, 2016, 2021, and 2031. These projections help us understand what the likely demand for air freight will be should capacity, connectivity, cost and customer preferences be met through the air freight services provided.

New Zealand freight movements today

The purpose of this section is to understand the current role of air freight in New Zealand in general, and how this has changed over the last decade. Our approach to summarising the current situation can be explained by the flow diagram in Figure 1.

Figure 1 Flow diagram of the analysis of freight movements today



First, we will show the role of international air freight in New Zealand relative to surface (sea) freight, examining how this relativity has changed over the last several years.

Second, we consider which products travel by air, whether exported or imported.

Third, we consider where our major export destinations and import source countries are, to determine whether these are short-haul or long-haul destinations.

Finally, we look at the specific role of Christchurch in this national picture, considering where its exports go and imports come from by major product and short-haul / long-haul range. Given the central role of this question, it is dealt with in a separate chapter.

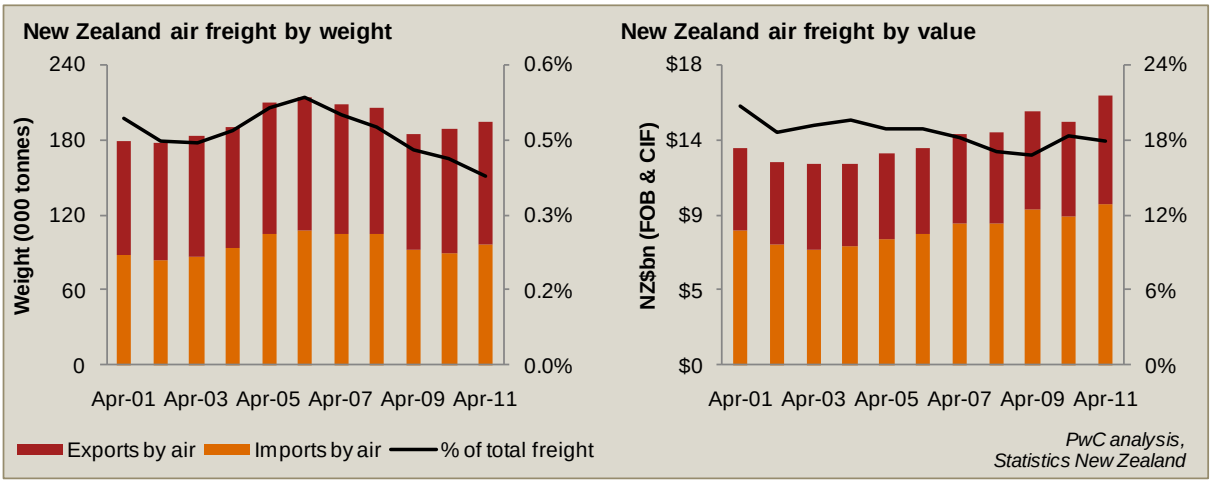
Air freight plays a small but strategic role

This section presents the role of international air freight in New Zealand relative to surface freight. We examine the share of total imports and exports accounted for by air freight in weight and value terms.

The key message is that in percentage terms, a small share of freight is transported by air. However, air plays a ***major strategic role*** in moving New Zealand's primary production quickly into overseas markets, commanding a premium as fresh rather than frozen. It also allows our High value good manufacturers to import components and spare parts for production lines quickly.

Figure 2 presents air freight import and export weights and values for the last decade for New Zealand. It also shows the share of national freight weight and value accounted for by air freight in each year. FOB refers to Free On Board values as used for exports, while CIF refers to Cost, Insurance and Freight values, used for imports. Note that values are ***nominal***, and would be expected to increase in time as prices rise.

Figure 2 New Zealand air freight weights and values, 2001 to 2011



In ***weight*** terms, New Zealand air freight has averaged around 194,000 metric tonnes over the last 10 years. This figure rose somewhat in the middle of the decade, but has remained relatively stable. The mix between imports and exports is almost equal. For instance, in the year to April 2011, total export weight was 97,430 tonnes, while imports were 96,460 tonnes.

As a share of total freight coming into or leaving New Zealand, the weight carried by air has fluctuated somewhat, between 0.54% in 2006, and 0.38% in 2011, the lowest share in the last 10 years. This suggests that surface freight is growing faster than air freight across New Zealand. Our discussions with freight forwarders suggest this is the result of a number of factors including:

- reductions in the cargo capacity of aircraft servicing the trans-Tasman route, making air freight a more expensive and less reliable option, as passenger route operators have switched to narrow-body aircraft;
- increases in fuel prices accompanied by greater efficiencies in surface freight, mainly through substantial rises in average ship size;
- a surge in surface freight capacity leading to price wars in the surface freight industry.

All of these imply a relative increase in the price of surface freight.

Over the 10 years to April 2011, the total ***value*** of goods arriving into and departing from New Zealand by air rose from NZ$13.0 billion to $16.1 billion, or a 24.0% increase over the 10 years (2.2% growth per year). In value terms, however, the share of total freight entering and leaving the country by air has fallen slightly, from 20.7% to 17.8%.

Together, the figures highlight two points:

- Air freight in New Zealand has grown more slowly than surface freight over the last 10 years;
- Air freight plays a key role in transporting High value products. It accounted for just 0.38% of freight weight in the April 2011 year, but 17.8% of freight values. In other words, the average kilogram of air freight is ***47 times*** more valuable than a kilogram of surface freight;

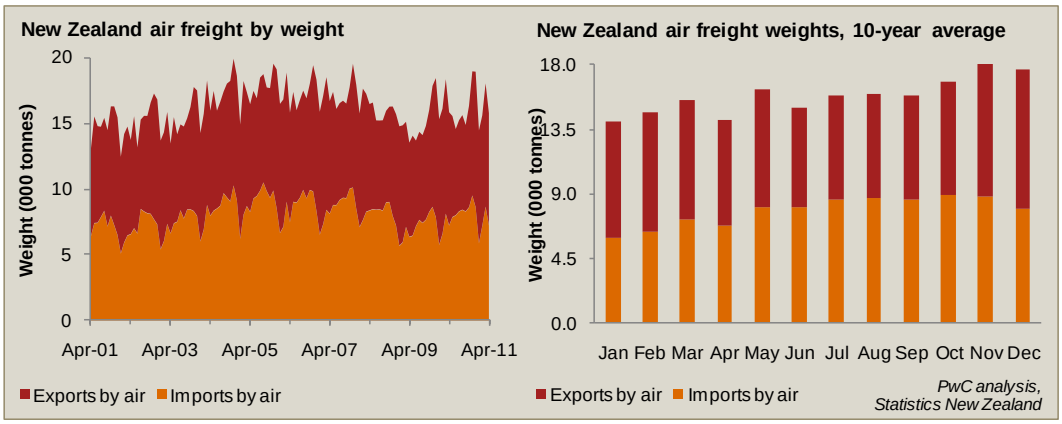
- Over the decade, the average value of goods transported by air has risen from $72 to $83 per kilogram, suggesting that air freight is increasingly the domain of High value or perishables products only.

Seasonality is mostly supply driven

A key consideration in developing an air freight route is seasonality.

Figure 3 presents the extent of seasonality in air freight weights passing through New Zealand airports over the last 10 years by showing monthly air freight import and export weights, and 10-year averages by month.

Figure 3 Seasonality in air freight weights and values passing through New Zealand airports



There appears to be clear seasonality on both the imports and exports sides, with January figures below those seen in any other month. Overall, though, with the exception of the December to April period, values have been relatively consistent on a month-to-month basis over the last 10 years although there has been more volatility in the last three years. It is likely much of this volatility is the result of the global financial crisis, which has created greater uncertainty in the market.

However, when we examine the air freight supply side, a significant further explanation for this seasonality becomes evident. Qantas has operated a Boeing 767-200 freighter service on the Sydney-Auckland-Christchurch triangle for several years, which plays a major role in total freight capacity. Over the December to March period, this service has often been reduced to fewer than four flights a week. This reduction in supply has coincided with a major surge in demand for stone-fruit and meat exports.

Between December and March, the Qantas freighter operates a reduced schedule to New Zealand, coinciding with increased demand for stone-fruit and meat exports. The reduction is when the need for air freight capacity is strongest.

Qantas has recently (March 2011) replaced the Boeing 767-200 with a Boeing 767-300 (increasing capacity by 18 tonnes per flight), and are now scheduled for five flights a week, with an additional flight (based on demand) between April and December. There is an expectation that this should provide more freight capacity on a regular basis going forward.

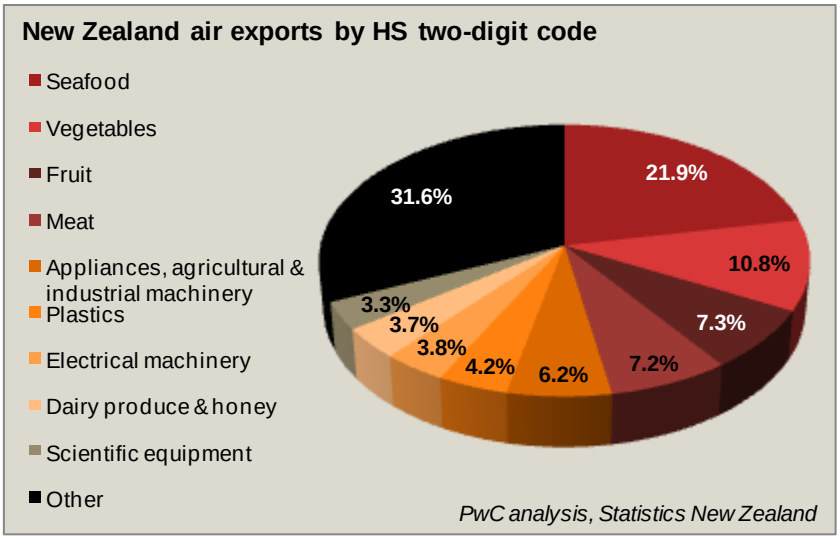
Primary exports and high-tech imports drive air trade

This section answers the question of what commodities travel to and from New Zealand by air. ***Unless otherwise indicated, all numbers refer to weights***, as it is weights that best summarise demand, and demand drives freight yields, the key decision-making factor for potential air freight service providers.

In this analysis, we use the international Harmonised System (HS) codes. These codes divide all merchandise products into 98 high-level codes.

Figure 4 presents the most important ***export*** product categories (two-digit HS codes) by weight over the last three years. Three-year averages are used to lessen the impact of one-off transactions.

Figure 4 Key exports by air, two-digit HS commodity



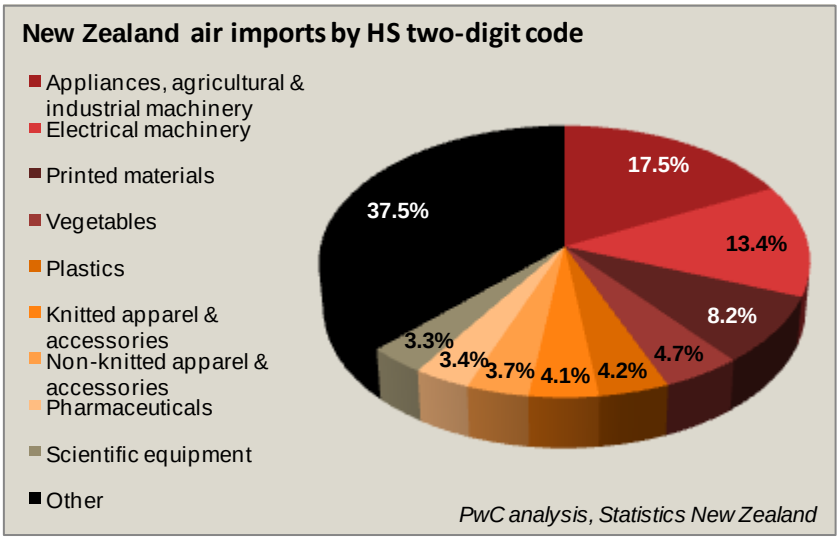
Seafood accounted for nearly 22% of all air export weights over the three years. The second most important export was Vegetables, at 10.8% of export weights, followed by Fruit and Meat, all primary sector commodities.

Appliances, agricultural and industrial machinery rounds out the top five export products by weight. This broad product category consists of a mix of final products used by households, and capital goods used by primary and manufacturing businesses in producing final goods.

The top nine product categories as presented in the figure account for more than two-thirds of export weights.

Figure 5 presents the most important ***import*** product categories (two-digit HS codes) by weight over the last three years. Three-year averages are used to lessen the impact of one-off transactions.

Figure 5 Key imports by air, two-digit HS commodity



The picture for imports is one of greater spread than for exports. Appliances, agricultural and industrial machinery; and Electrical machinery account for nearly one-third of imports by weight between them. However, a large range of other product codes supply significant shares of total air freight import weights.

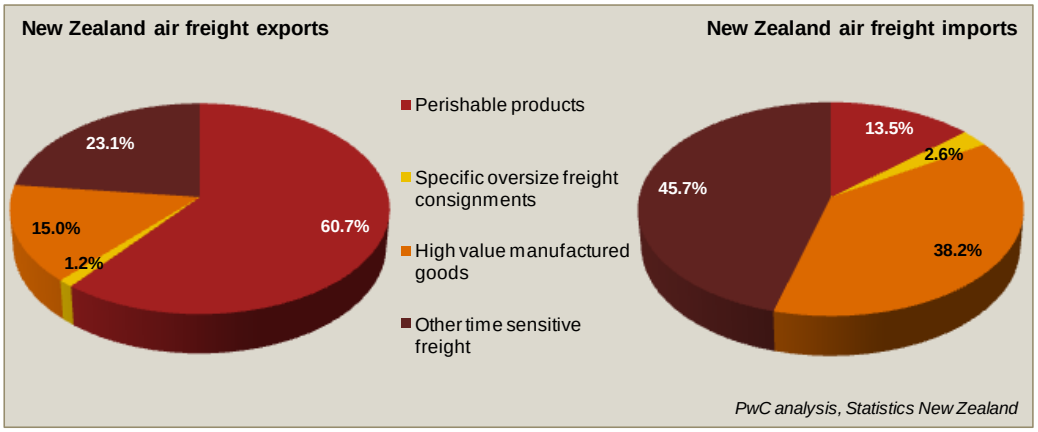
Perishables lead exports, while imports are more varied

This section summarises New Zealand's exports and imports by air in terms of four broad cargo categories:

- ***Perishable products***: mostly primary commodities such as Seafood; Fruit; Vegetables; and Meat.
- ***Specific oversize freight consignments***: Railway vehicles; Non-railway vehicles; Aircraft and aircraft parts; and Ships and boats. In New Zealand overall, around 23% of air freight weights in this category are accounted for by Aircraft & aircraft parts, but in the case of Christchurch, Aircraft and aircraft parts account for roughly 50% of the category, given the presence of Christchurch Engine Centre.
- ***High Value Manufactured Goods***: defined in this report as commodity groups worth over $150 a kilogram, and including: Pharmaceuticals; Precious stones and minerals; Appliances, agricultural and industrial machinery; Electrical machinery; and Scientific equipment.
- ***Other time sensitive freight***: all other air freight, which is assumed to be transported by air for time or convenience' sake.

Figure 6 presents New Zealand's air freight export and imports by these broad categories.

Figure 6 New Zealand air freight exports and imports by broad cargo category



Export weights consist overwhelmingly of perishable goods, such as Seafood (22%); Vegetables (11%); Fruit (7.3%); and Meat (7.2%). High value manufactured goods including Appliances, agricultural and industrial machinery (6.2%) and Electrical machinery (3.8%) together account for 15.0% of export weights.

New Zealand's air freight exports are primary sector-led (perishables). Imports are mostly non-perishable, high value commodities.

On the ***imports*** side, weights are more evenly spread between High value manufactured goods and Other time sensitive freight. New Zealand's competitive advantage as a producer of primary commodities is highlighted by the fact that only 13.5% of imports are perishables, while 60.7% of exports are.

Australia is key, while Asia rises

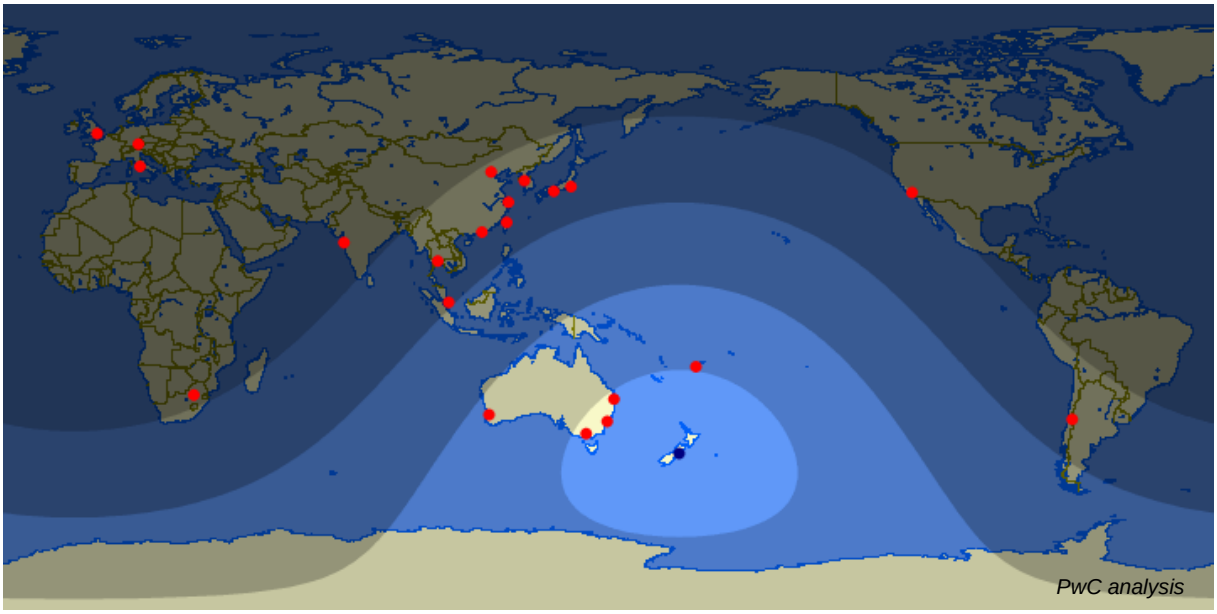
This section considers major trading partners from a short-haul and long-haul perspective.

Australia is New Zealand's only major short-haul destination

Flights are usually classed as short-haul or long-haul. Short-haul is generally considered to be anything up to 3.5 hours by jet aircraft (2,750 km). Long-haul is technically anything further away than this although sometimes medium-haul is separated out as anything up to around 7 hours by plane (5,500 km).

Figure 7 shows which of our major trading partners, and emerging and second-tier destinations, fall within each flying range from Christchurch. The range bands given are 2,750 km (short-haul), 5,500 km (medium haul), 8,250 km (the range of a fully-laden Boeing 747-F), and 11,000 km (within the range of the Boeing 777-F at around 84% of maximum payload).

Figure 7 Distance ranges from Christchurch to major and emerging trading partners



New Zealand's distance from major markets and origins is evident from the map. The east coast of Australia is the only origin / market within short-haul range of direct flights from Christchurch. Western Australia and Fiji are the only additional major destinations within medium-haul range of Christchurch, while Singapore is within range of the Boeing 747-F at near to maximum take-off weight.

Most major Asian economies are within range of the Boeing 777-F, while American markets are just beyond this range, and could be reached direct at a slightly lower payload. It is worth noting that with smaller payloads (in the order of 57 metric tons rather than the maximum payload of 102 metric tons) the Boeing 777-F can fly significantly further, up to around 14,800 km, which would allow direct access to all of North America. However, a lower payload increases the cost per kilogram.

Given payload considerations, this means that likely routes from Christchurch will be direct to Sydney or a major hub in Asia (Hong Kong, Singapore, Kuala Lumpur) rather than direct to the United States for instance.[1] Direct routes through to Europe are not currently a viable option.

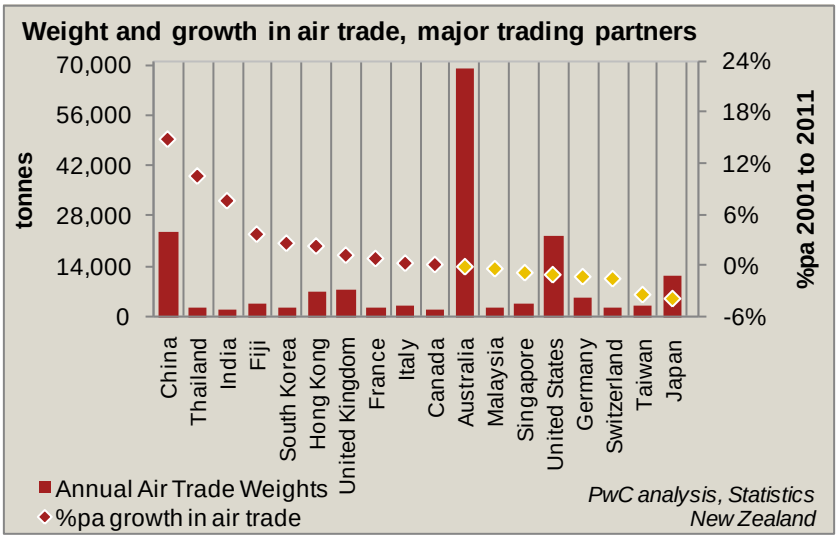
New Zealand's geographical isolation means new air freight services would likely hub through a major Australian or Asian airport to ensure connectivity to the rest of the world.

Australia dominates, but Asia leads growth

Figure 8 presents the weights transported between New Zealand and major trading partners by air in 2011, as well as the percentage per annum growth in weights transported by air over the last 10 years.

[1] One other possibility is a route to the United States via Fiji, given the expected potential for air freight trade between those two countries and the South Island considered later in this report.

Figure 8 Weight and growth in air trade by major trading partners

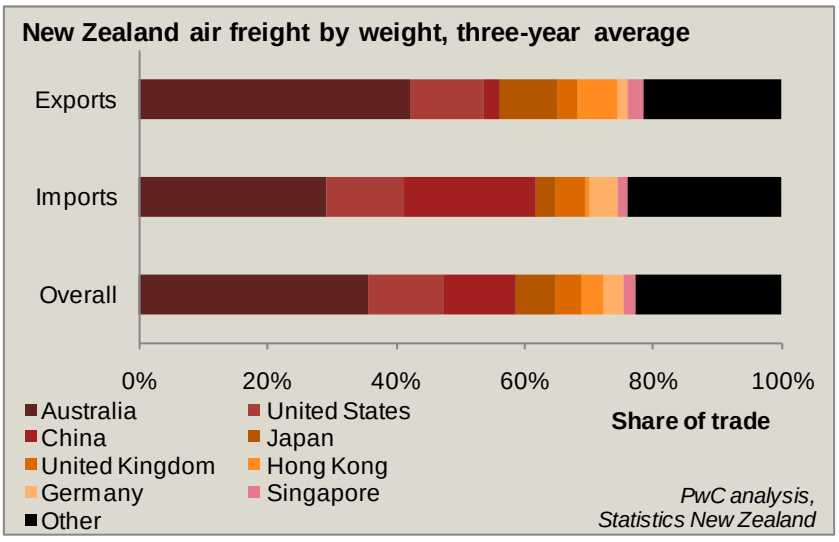


Two things are immediately obvious. First, air freight trade is dominated by three major players in terms of weight – Australia, China and the United States, with Japan a distant fourth. Second, the fastest growth in air trade weight is from China, Thailand, and India, all emerging Asian economies, followed by Fiji and two more Asian economies.

Air freight trade is dominated by three major players – Australia, the United States, and China. The fastest ***growth*** in air trade values is from emerging Asian economies.

Figure 9 presents our eight most important air freight trading partners by weight, showing exports, imports, and total trade as a share of all air freight. Note that the percentages in this figure are averages for three years from 2009 to 2011, to reduce the impact of one-off spikes in trade weights with certain trade partners in particular years.

Figure 9 Air freight by weight, major trading partners



The top eight air freight trading partners together account for almost 80% of total air trade. More than 40% of ***exports*** are to Australia, well ahead of the next largest export destination, the United States, with 11.6% of export weights.

On the ***imports*** side, China plays a far more important role, with 20.5% of import weights over the last three years although Australia is still our most important trading partner (29.1%).

Overall, more than one-third of air trade weights originate or terminate in Australia, followed by the United States and China, with 11% to 12% of air trade weight each.

The strength of air freight trade with Australia is likely the result of several factors including:

- the close proximity of Australia relative to other markets; and
- cultural similarities in food and other buying preferences.

Primary exports and high-tech imports lead the way

Figure 10 and Figure 11 show export and import weights by major trading partner and key commodity groups (at HS two-digit level) respectively. The numbers are three-year averages, to lessen the impact of one-off transactions on the analysis.

Figure 10 Export weights by major commodity and trading partner

Export weights by country (tonnes)	Australia	China	Germany	Hong Kong	Japan	Singapore	United Kingdom	United States	Other countries	TOTAL
Meat	61	5	784	220	281	251	1,210	335	3,839	**6,987**
Seafood	9,273	409	65	2,864	1,300	268	52	5,627	1,354	**21,211**
Dairy produce & honey	161	311	10	452	170	275	106	90	2,017	**3,592**
Vegetables	3,921	0	5	314	4,822	34	22	209	1,092	**10,419**
Fruit	2,283	45	22	841	396	569	118	420	2,412	**7,106**
Food not elsewhere included	976	152	3	345	76	46	23	25	498	**2,143**
Pharmaceuticals	431	28	30	14	74	13	134	184	536	**1,444**
Plastics	3,345	54	9	49	23	16	60	102	405	**4,063**
Paper products	833	32	8	14	13	4	31	69	194	**1,197**
Printed materials	1,005	2	6	12	5	12	26	65	109	**1,242**
Knitted apparel & accessories	1,833	3	1	3	6	3	38	95	74	**2,057**
Non-knitted apparel & accessories	1,236	2	1	3	4	2	17	40	45	**1,349**
Iron & steel articles	654	11	6	10	11	16	18	70	220	**1,016**
Appliances, agricultural & industrial machinery	2,748	100	155	56	50	246	207	748	1,667	**5,977**
Electrical machinery	1,645	102	54	88	37	132	211	504	884	**3,657**
Scientific equipment	585	29	183	12	124	93	222	994	979	**3,220**
Other	9,830	973	150	831	1,430	436	439	1,659	4,403	**20,151**
TOTAL	**40,820**	**2,258**	**1,491**	**6,129**	**8,821**	**2,416**	**2,932**	**11,236**	**20,728**	**96,830**

PwC analysis, Statistics New Zealand

By far the most important bilateral exports are in Seafood, with almost 10% of total exports by air in weight terms travelling to Australia, and a further 5.8% exported to the United States. In total, Seafood accounts for 21.9% of all exports by weight.

For many commodities, Australia is the dominant purchaser. An exception is Meat, much of which is exported to Europe, and of which 55% is exported to other trading partners.

Figure 11 Import weights by major commodity and trading partner

Import weights by country (tonnes)	Australia	China	Germany	Hong Kong	Japan	Singapore	United Kingdom	United States	Other countries	TOTAL
Meat	31	1	0	0	0	0	0	1	28	**60**
Seafood	88	0	0	0	0	14	0	3	326	**431**
Dairy produce & honey	661	2	0	0	0	0	6	24	154	**847**
Vegetables	3,019	2	3	0	0	6	0	97	1,218	**4,346**
Fruit	1,862	1	0	0	0	0	1	322	446	**2,633**
Food not elsewhere included	735	30	41	1	6	13	21	329	368	**1,543**
Pharmaceuticals	867	32	260	5	8	4	181	219	1,532	**3,108**
Plastics	1,173	665	182	21	63	35	167	563	986	**3,856**
Paper products	897	484	57	13	39	85	68	157	224	**2,025**
Printed materials	4,231	305	45	71	11	107	1,709	852	248	**7,579**
Knitted apparel & accessories	370	2,859	11	67	1	1	10	50	449	**3,817**
Non-knitted apparel & accessories	244	2,334	13	85	2	1	9	59	673	**3,419**
Iron & steel articles	612	363	137	9	71	66	93	301	614	**2,266**
Appliances, agricultural & industrial machinery	2,492	3,685	1,022	75	1,439	466	462	2,368	4,140	**16,152**
Electrical machinery	3,281	3,301	528	170	436	298	294	953	3,083	**12,345**
Scientific equipment	500	268	244	24	149	66	164	962	711	**3,089**
Other	5,799	4,560	1,391	175	727	194	1,120	3,846	6,977	**24,788**
TOTAL	**26,862**	**18,892**	**3,935**	**716**	**2,952**	**1,357**	**4,305**	**11,107**	**22,176**	**92,303**

PwC analysis, Statistics New Zealand

On the imports side, Australia again dominates most commodities, with the lion's share of Vegetables; Fruit; and Printed materials. Australia is also a key player in Appliances, agricultural and industrial machinery; and Electrical machinery imports.

China, with surging exports to New Zealand, plays a central role in several commodities, including clothing (apparel) and machinery.

Imports from the United States, the United Kingdom, Singapore, Japan and Germany tend to be focused on just one or two commodity groups.

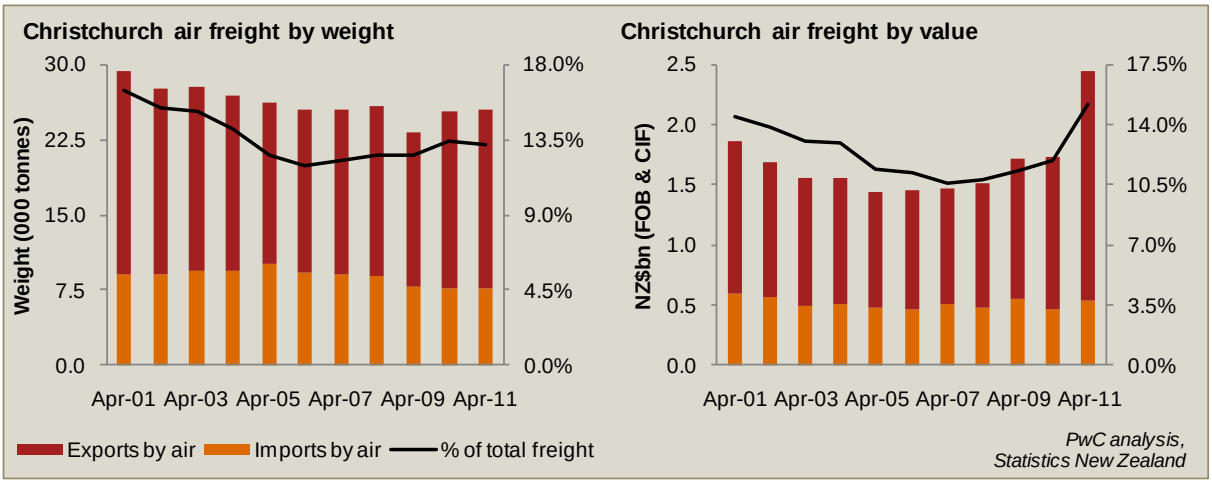
Christchurch air freight today

This report aims to identify the current role of Christchurch International Airport in New Zealand's international air freight transactions, and the potential to increase this role. To do this, we must not only understand the role of air freight in New Zealand, as discussed in the previous chapter, but also where Christchurch sits in the New Zealand air freight sector.

Christchurch is an export hub

Figure 12 shows the changing role of Christchurch in New Zealand's air freight operations over the last 10 years, in weight and value terms. FOB refers to Free On Board values as used for exports, while CIF refers to Cost, Insurance and Freight values, used for imports. Note that values are ***nominal***, and would be expected to increase in time as prices rise.

Figure 12 Christchurch air freight weights and values, 2001 to 2011



In the April 2011 year, 25,500 tonnes of air freight passed through Christchurch, the equivalent of 250 fully-laden Boeing 777 freighters. This cargo was worth NZ$2.44 billion.

Air freight ***weights*** through Christchurch have remained relatively flat over the last several years, with a poor year to April 2009 followed by near-zero growth between 2010 and 2011. The constraints on growth in air freight weights through Christchurch are obvious from its decline in share of New Zealand air freight, from 16.4% in 2001, to 13.2% in 2011 although this is up on the low of 12.0% in 2006.

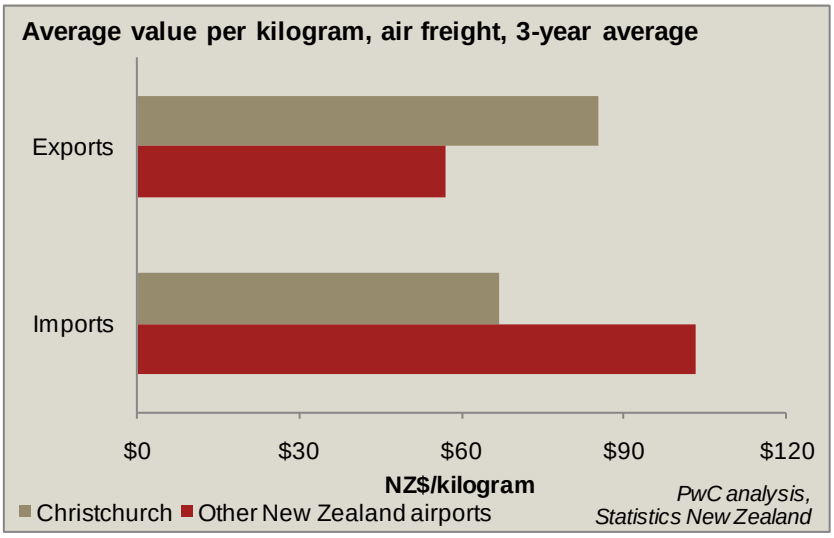
The chart showing air freight by ***value*** tells a different story. Although there a one-off surge in aircraft exports in the April 2011 year, likely involving the sale of New Zealand-based aircraft, the trend in share of air freight values flying through Christchurch has been clearly upward over the last four years. This has been driven by growth in values on the exports side, rather than in imports. This growth is largely the result of booming commodity prices such as Minerals (30.4% of all Christchurch export

values in the year ending April 2011), Seafood and Dairy produce, which play major roles in South Island exports.

Further factors that possibly played a role in this upturn include the introduction of Emirates flights to Dubai via Sydney and Bangkok in February 2009, on Boeing 777-300ER aircraft that offered 10 to 15 metric tons' more air freight capacity than the Emirates Airbus A340-500s already flying to Christchurch. Finally, April 2011 was also the first month that AirAsia X began flying direct from Kuala Lumpur to Christchurch, offering some cargo capacity.

An important point to take from Figure 12 is that Christchurch accounts for a far larger share of New Zealand's air freight export weights and values (18.2% and 29.4% respectively in 2011), than imports (8.0% and 5.5% respectively). An examination of the average value per kilogram of air freight through Christchurch and other New Zealand airports helps explain this, as highlighted in Figure 13.

Figure 13 Average value per kilogram, air freight



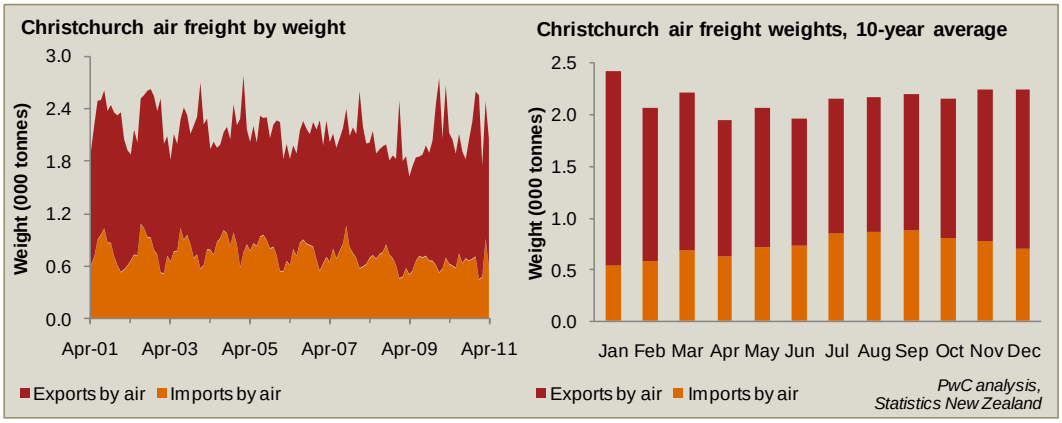
On average, the value of exports out of Christchurch is far higher than that of exports out of other New Zealand airports, while the picture for imports is the inverse. One reason for this is the high proportion of precious stones and minerals leaving New Zealand through Christchurch – high value, low weight items. On the other hand, lower value, higher weight commodities like Vegetables (New Zealand's second-largest export in weight terms) pass almost exclusively through other airports, with only 2.9% of Vegetable exports passing through Christchurch.

The reasons for this dichotomy are discussed in detail later. Partly, it is a matter of proximity; most of the precious stones and minerals are produced in the South Island. On the other hand, the South Island is exporting a far lower share of many products than can be explained by its share of production, suggesting capacity is a constraint. On the imports side, the access to a larger number of routes between Auckland and producers of New Zealand's imports by air means that Auckland is the entry point for most high value imports.

Seasonal peaks are hobbled by shortage of air freight capacity

Figure 14 presents the extent to which Christchurch air freight weights are affected by seasonality, showing monthly air freight import and export weights, and 10-year averages by month.

Figure 14 Seasonality in air freight weights and values passing through Christchurch



Weights are relatively constant throughout the year, with some weakness over the February to June period. On average, the weight carried in the slowest month of any 12-month period over the last 10 years has been 85% of the average monthly weight transported. In other words, although there is some seasonality, it is predictable and not of an unmanageable scale.

Although January export weights have been highest over the last 10 years, this masks an important story. Qantas has operated a Boeing 767-200 freighter service on the Sydney-Auckland-Christchurch triangle for several years, which plays a major role in total freight capacity. Over the December to March period, this service has often been reduced to fewer than four flights a week. This reduction in supply has coincided with a major surge in demand for stone-fruit and meat exports.

In the South Island, the peak season is constrained as a result of a drop-off in supply. There is strong demand for air freight all year, with heightened demand between October and March.

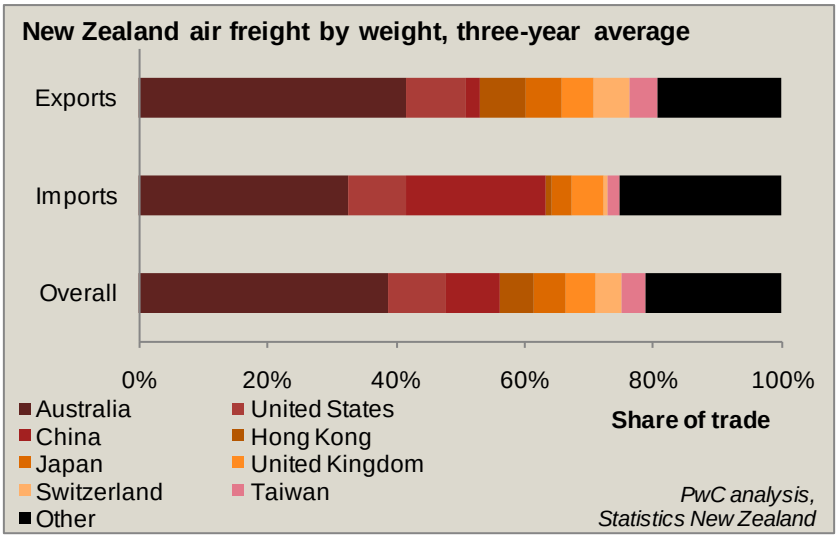
Qantas has recently (March 2011) replaced the Boeing 767-200 with a Boeing 767-300 (increasing capacity by 18 tonnes per flight), and are now scheduled for five flights a week, with an additional flight (based on demand) between April and December. There is an expectation that this should provide more freight capacity on a regular basis going forward although there remains concern that capacity will not be sufficient between January and March.

Australia takes primary exports; Asia provides high-tech imports

This section examines what the major commodities travelling through Christchurch are, and the major trading partners for those commodities.

The major trading partners Christchurch services are mostly the same as for New Zealand as a whole, other than for Switzerland and Taiwan, which replace Germany and Singapore, mostly due to meat and fruit exports to those countries. Trade with major trading partners is summarised in Figure 15.

Figure 15 Air freight by eight, major South Island trading partners



Overall, Australia accounts for nearly 40% of air freight trade through Christchurch, followed by the United States and China. China plays a particularly large role on the air imports side, with a small role on the air exports side.

Taiwan is a particularly interesting trading partner to have due to the two major air freight operators based in that country – Eva Air and China Airlines. Not only is Taiwan a destination for South Island exports, but it may offer an option for a direct freight route with its strong links to Asia and North America.

Figure 16 shows the weight transported by air between major trading partners and Christchurch. It also shows annual percentage change in trade weights over the last decade.

Australia is by far the most important trading partner (nearly 40% of air freight weights) although air freight transported between that country and Christchurch has fallen over the last 10 years. The strongest growth in percentage terms has been in air freight trade with Thailand, China, the Netherlands and India, each growing at over 5% a year since 2001.

Major traded commodities in weight terms are also broadly similar to those seen at a national level, with one important difference being Aircraft and aircraft parts, with the role of Christchurch Engine Centre raising the importance of this commodity group for Christchurch. Exports and imports of this commodity group are almost exclusively with Australia and the United States.

Figure 16 Weight and growth in air trade by major trading partner

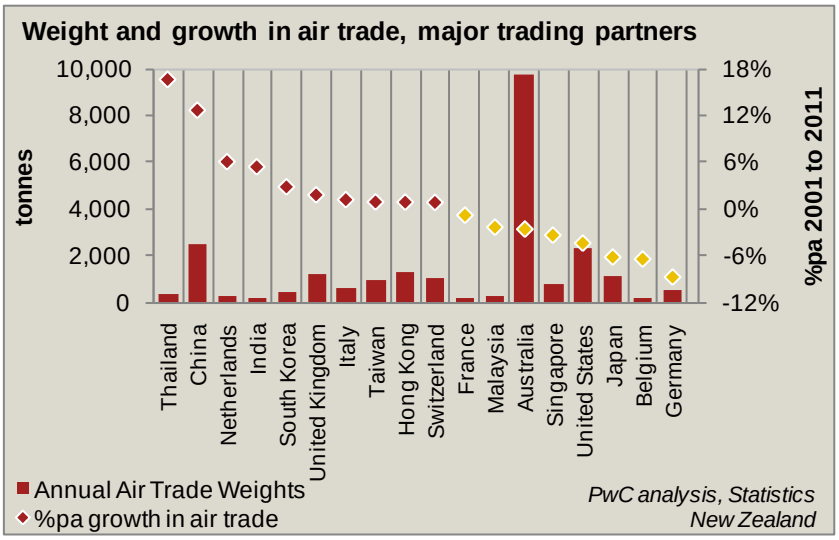


Figure 17 and Figure 18 present exports and imports passing through Christchurch (three-year averages) by commodity and major trading partner.

By far the most important commodity-trading partner pair is Seafood to Australia, at 2,900 tonnes a year, or the equivalent of around 28 Boeing 747-Fs at full capacity. Indeed, Seafood accounts for almost one-third of all export weights by air through Christchurch.

Yet as the second part of Figure 17 shows, across most commodities, Christchurch plays a small role in New Zealand export weights. Some exceptions include Fruit to Japan, China and Singapore; Electrical machinery to China, and the United Kingdom; and Aircraft and aircraft parts to Japan and Australia. The question is whether the particularly small role Christchurch plays in air freight exports and imports across many commodities is justified given the South Island's role in the New Zealand economy.

Is the small role Christchurch plays in air freight trade across many commodities justified given the South Island's role in the New Zealand economy?

For imports (Figure 18), the key story is the dominance of Australia. Around one-third of imports by weight through Christchurch come from Australia, and it has the largest share of imports across almost all major commodity groups.

Figure 17 Export weights by major commodity and trading partner

Export weights by country (tonnes)	Australia	China	Hong Kong	Japan	Switzerland	Taiwan	United Kingdom	United States	Other countries	TOTAL
Meat	47	0	166	135	923	2	448	70	987	**2,779**
Seafood	2,908	149	709	601	4	15	31	943	152	**5,511**
Dairy produce & honey	43	37	42	23	1	19	11	22	288	**487**
Vegetables	284	0	0	2	0	0	0	2	15	**304**
Fruit	249	35	154	26	1	660	62	80	574	**1,841**
Cosmetics & toiletries	44	0	3	4	0	2	1	6	15	**74**
Plastics	288	21	5	0	0	0	4	17	9	**344**
Paper products	55	0	0	0	0	0	3	1	1	**61**
Printed materials	89	0	1	1	0	0	2	2	18	**113**
Knitted apparel & accessories	287	2	0	1	0	0	1	0	3	**294**
Non-knitted apparel & accessories	143	0	0	0	0	0	2	0	1	**147**
Iron & steel articles	115	2	1	2	0	1	2	5	9	**137**
Appliances, agricultural & industrial machinery	486	14	3	10	5	1	63	126	242	**950**
Electrical machinery	821	67	16	1	0	11	123	123	298	**1,462**
Non-railway vehicles	31	1	0	9	0	0	5	6	13	**64**
Aircraft & aircraft parts	135	0	0	0	0	0	3	14	44	**198**
Other	990	35	128	158	5	16	48	152	615	**2,147**
TOTAL	**7,015**	**363**	**1,230**	**972**	**940**	**728**	**810**	**1,569**	**3,285**	**16,912**

Share of New Zealand export weights	Australia	China	Hong Kong	Japan	Switzerland	Taiwan	United Kingdom	United States	Other countries
Meat	26%	3%	76%	48%	56%	20%	37%	21%	32%
Seafood	31%	36%	25%	46%	5%	17%	60%	17%	10%
Dairy produce & honey	27%	12%	9%	13%	50%	10%	11%	24%	14%
Vegetables	7%	0%	0%	0%	0%	0%	0%	1%	1%
Fruit	11%	78%	18%	6%	100%	77%	53%	19%	27%
Cosmetics & toiletries	19%	0%	16%	19%	1%	17%	8%	45%	14%
Plastics	9%	39%	11%	1%	0%	1%	6%	16%	2%
Paper products	7%	0%	0%	0%	0%	2%	10%	2%	1%
Printed materials	9%	13%	5%	20%	50%	0%	6%	3%	15%
Knitted apparel & accessories	16%	45%	8%	10%	26%	12%	3%	0%	3%
Iron & steel	12%	0%	8%	2%	6%	16%	10%	1%	2%
Iron & steel articles	18%	21%	12%	19%	3%	54%	10%	7%	4%
Appliances, agricultural & industrial machinery	18%	14%	6%	20%	38%	15%	30%	17%	12%
Electrical machinery	50%	65%	19%	4%	5%	39%	59%	25%	29%
Non-railway vehicles	8%	21%	0%	42%	39%	11%	27%	33%	13%
Aircraft & aircraft parts	58%	2%	7%	9%	65%	19%	16%	14%	30%
Other	9%	3%	11%	9%	12%	8%	6%	6%	9%

PwC analysis, Statistics New Zealand

Figure 18 Import weights by major commodity and trading partner

Import weights by country (tonnes)	Australia	China	Hong Kong	Japan	Switzerland	Taiwan	United Kingdom	United States	Other countries	TOTAL
Meat	1	0	0	0	0	0	0	0	2	**3**
Seafood	21	0	0	0	0	0	0	0	4	**25**
Dairy produce & honey	1	0	0	0	0	0	2	0	5	**9**
Vegetables	464	0	0	0	0	0	0	2	5	**471**
Fruit	222	0	0	0	0	0	0	0	1	**223**
Cosmetics & toiletries	63	128	0	0	0	0	1	35	28	**257**
Plastics	158	81	1	5	1	10	17	28	103	**405**
Paper products	112	88	0	1	0	1	7	11	54	**274**
Printed materials	292	53	8	1	0	1	184	27	25	**591**
Knitted apparel & accessories	50	338	8	0	0	5	0	2	43	**447**
Non-knitted apparel & accessories	14	2	0	0	0	1	1	1	9	**28**
Iron & steel articles	67	59	1	7	1	9	7	32	60	**242**
Appliances, agricultural & industrial machinery	319	97	2	170	12	32	39	185	548	**1,403**
Electrical machinery	145	122	7	17	7	49	32	50	302	**731**
Non-railway vehicles	48	23	0	4	0	4	24	40	47	**190**
Aircraft & aircraft parts	5	0	0	0	0	0	2	40	10	**57**
Other	537	697	25	35	33	38	71	239	696	**2,371**
TOTAL	**2,519**	**1,689**	**52**	**240**	**56**	**149**	**387**	**692**	**1,942**	**7,725**

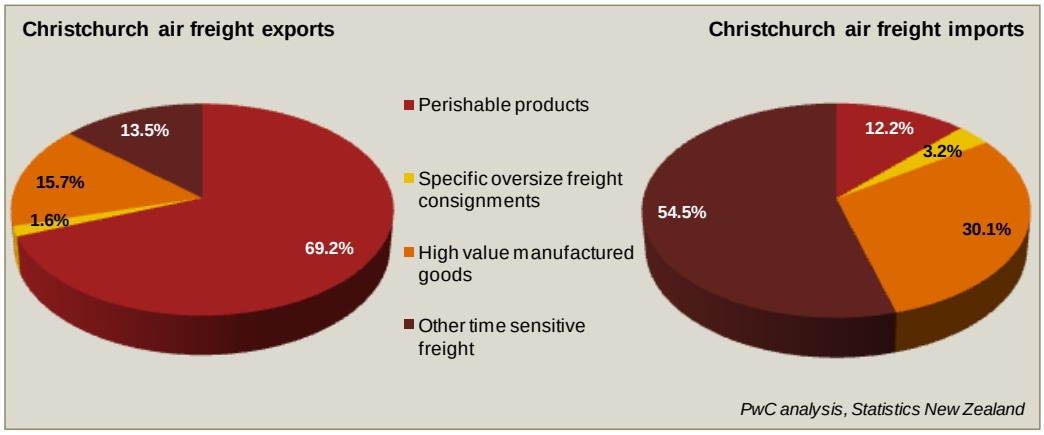
Share of New Zealand import weights	Australia	China	Hong Kong	Japan	Switzerland	Taiwan	United Kingdom	United States	Other countries
Meat	2%	1%	0%	0%	0%	0%	0%	0%	8%
Seafood	24%	0%	0%	0%	0%	0%	0%	2%	1%
Dairy produce & honey	0%	0%	0%	0%	42%	0%	27%	2%	3%
Vegetables	15%	2%	0%	0%	0%	0%	2%	2%	0%
Fruit	12%	0%	0%	0%	0%	0%	0%	0%	0%
Cosmetics & toiletries	11%	25%	10%	0%	1%	2%	1%	7%	5%
Plastics	13%	12%	4%	8%	3%	10%	10%	5%	10%
Paper products	12%	18%	1%	2%	1%	5%	11%	7%	15%
Printed materials	7%	17%	11%	7%	4%	14%	11%	3%	7%
Knitted apparel & accessories	14%	12%	12%	18%	5%	24%	3%	5%	10%
Non-knitted apparel & accessories	19%	26%	9%	1%	0%	11%	5%	3%	18%
Iron & steel articles	11%	16%	8%	10%	9%	10%	7%	10%	8%
Appliances, agricultural & industrial machinery	13%	3%	3%	12%	11%	11%	8%	8%	10%
Electrical machinery	4%	4%	4%	4%	10%	10%	11%	5%	9%
Non-railway vehicles	14%	24%	4%	2%	4%	8%	20%	9%	7%
Aircraft & aircraft parts	31%	8%	0%	2%	33%	0%	16%	19%	17%
Other	8%	11%	9%	6%	7%	12%	6%	6%	7%

PwC analysis, Statistics New Zealand

South Island role in perishables production dominates

Figure 19 summarises export and imports by air through Christchurch in terms of broad cargo categories.

Figure 19 Christchurch air freight exports and imports by broad cargo category



The dominance of Perishable products in Christchurch ***exports*** is even more pronounced than nationally, given the primary sector focus of the South Island economy. Seafood (32.6% of all air exports); Meat (16.4%); and Fruit (10.9%) are by far the most important exports within this category.

As is the case in New Zealand overall, imports tend to be mostly High value manufactured goods and Other time sensitive freight rather than Perishable products. Specific oversize freight consignments, including aircraft engines, account for a relatively small part of Christchurch air freight weights.

Air freight capacity is led by wide-body aircraft

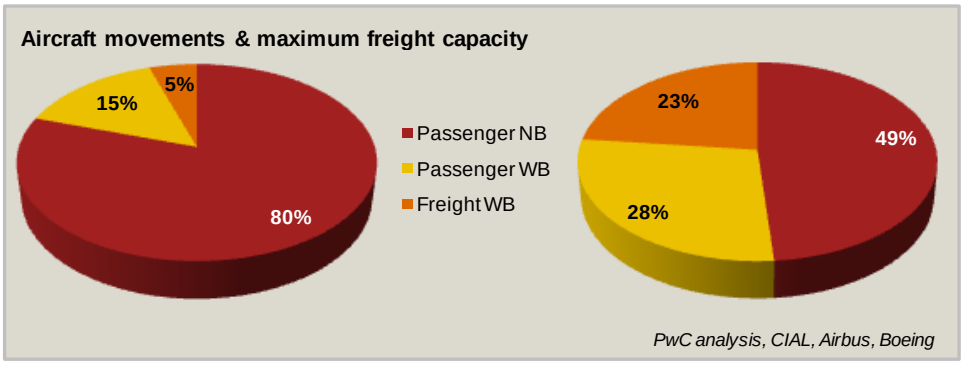
Figure 20 summarises the approximate annual air freight supply out of Christchurch by flight type – Passenger narrow-body (NB), Passenger Wide-body (WB) and Freight Wide-body.[2] The summary is expressed in terms of flights (aircraft movements) and capacity.

Passenger NB flights account for 80% of international flights out of Christchurch, while Passenger WB flights account for a further 15%. There is only one dedicated freighter service a day (most days) from to Sydney. The flight is from Auckland via Christchurch, meaning the flight can have some freight on board before even arriving in Christchurch.

Data on how much of the freight on the dedicated freighter to Sydney is from the South Island is unavailable. Similarly, data on whether passenger flights currently maximise use of their cargo space is unavailable. Anecdotal evidence from interviews suggests that the business model of low-cost carriers such as AirAsia X is very much focused on quick turnarounds and reducing complications of their operation. This means opportunities for major freight uplift on low-cost carriers is at present decidedly limited.

[2] NB aircraft are single aisle. In this report that typically means aircraft in the Boeing 737 and Airbus A320 families. WB aircraft typically include the Boeing 747, 767 and 777 families, and the Airbus A300 and A330 families.

Figure 20 Aircraft movements and export capacity



In the second pie-chart in Figure 20, we have apportioned share of freight capacity based on the assumption that two-thirds of maximum cargo capacity on the dedicated air freighter service is from the South Island, and on the assumption that maximum capacity is available on all passenger flights.[3]

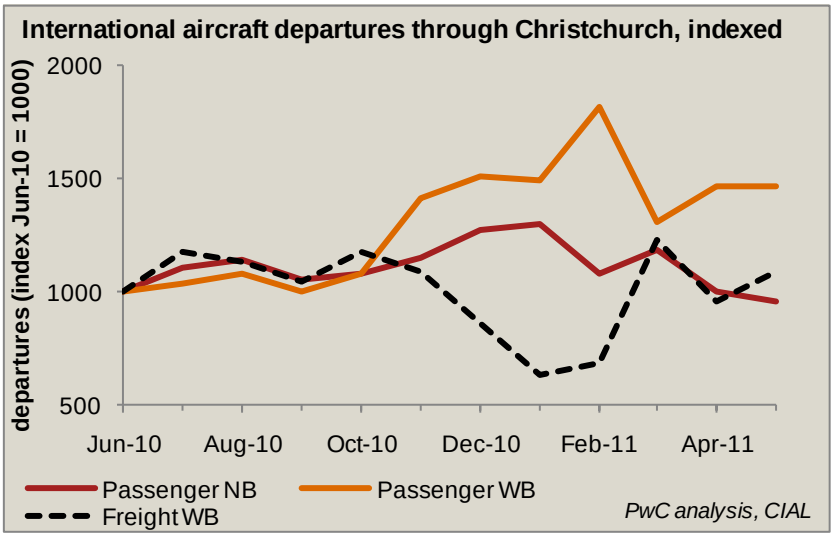
Given the cargo capacity of the dedicated freighter, its share of total freight exported out of Christchurch is estimated to be around 23%, despite accounting for just 5% of aircraft movements. Wide-body passenger departures are estimated to account for 28% of freight exports, while NB passenger flights account for 49%. Thus over the December to March period, there has historically been a significant reduction in WB capacity (around 15% of WB capacity, or 7.7% of all capacity) at a time when stone-fruit and meat exports surge.

Figure 21 shows the pattern of international aircraft departures over the 12 months to May 2011.

Provision of dedicated freighter services through Christchurch fell dramatically in the December to February period with the reduction in the Qantas freighter services. At the same time, flights on NB and WB passenger aircraft surged for the summer season, providing some additional freight capacity.

[3] In reality, maximum capacity may not be available on all passenger flights; this assumption is used to provide a conservative estimate of the role of the dedicated freighter service.

Figure 21 International aircraft departures through Christchurch

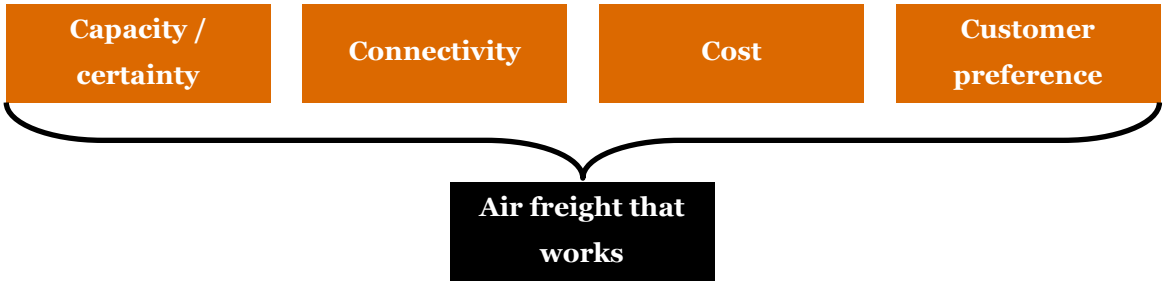


The four Cs that drive air freight demand

This chapter mostly uses information gleaned from more than 20 interviews we undertook with freight forwarders and industry stakeholders.

Our discussions with stakeholders identified four key factors influencing demand for air freight today, and that will underlie future use or a switch to air freight. These four Cs are presented in Figure 22.

Figure 22 The four Cs that make air freight work



Capacity / certainty limits air freight uptake

A major concern for South Island stakeholders currently using air freight for exports and imports is certainty of capacity. Many cited a current lack of capacity as on ongoing problem. Specific problems cited are:

- The ***switch from WB to NB*** aircraft on Trans-Tasman routes several years ago. This was the result of airlines wishing to improve frequency of services, but the use of Boeing 737 and Airbus A320 aircraft has dramatically reduced the cargo capacity on Trans-Tasman routes. Some freight forwarders estimate that the cargo capacity of many NB trans-Tasman flights was less than one tonne, whereas a Boeing 767 passenger flight could offer 10 to 15 tonnes of air freight capacity.
- The ***reduction in freighter services coinciding with the peak stone-fruit and meat season***. The seasonality in the South Island in particular is partly the result of a constraint on supply of air freight services. The historical reduction in capacity from Qantas has meant that capacity is lowest when it is most needed.
- ***Risk of deterioration*** in services. Qantas, Emirates and Singapore, the three major overseas-based airlines servicing Christchurch, have all brought Airbus A380 passenger aircraft into service. This may make it more economical for one or more of these airlines to fly into Auckland and then use NB domestic aircraft to ferry passengers to and from the South Island. This would have a calamitous effect on capacity for South Island exporters and importers. Air New Zealand currently operates WB aircraft only in summer direct from Japan to Christchurch three times a week.
- Dependence on a ***small number of players***. This risk is related to the small number of airlines operating wide-bodies out of Christchurch. Only three overseas-owned airlines serve the South Island with WB aircraft. This creates substantial risk should one airline pull out of the market,

and puts air freight capacity in the hands of a small group of players none of which have an obligation to best serve the needs of New Zealand industry.

The lack of capacity creates uncertainty particularly in the peak season, with substantial business risk related to Perishables not getting to their destinations on time when they are bumped from flights. The scale of some businesses that use freight regularly often places them in the privileged position of being less likely to be bumped. Many smaller businesses are discouraged from entering the export market at all, or from using Christchurch because of the uncertainty over access to sufficient capacity.

On the other hand, several stakeholders also mentioned that with the surge in demand over the peak season, when capacity is reduced, some day-to-day exporters of non-perishables have product bumped in favour of Perishables.

Even so, most freight forwarders estimate that 70% to 90% of their air freight weights were able to fly out of Christchurch. The figure for industry stakeholders, particularly on the imports side, is significantly lower, at around 50% overall. One reason for the lower share of imports coming in direct through Christchurch appears to be the origin of those imports, much of which comes from Asia, which is not as well served by direct links to Christchurch. This is also a connectivity issue, as discussed below.

A general comment was that forwarders and businesses using air freight services are forced to work around the current constraints in capacity rather than working in a system that best fits their needs. This reality means that air freight is generally used for perishables, and only in unusual circumstances for most other export businesses. Examples of unusual circumstances include when a production line breaks down and a spare part is needed in a hurry, or when a customer runs out of a key product and needs timely replenishment. On the imports side, air freight is used almost exclusively for High value, low weight componentry, where the transport cost is a small fraction of the overall cost of the item.

Several stakeholders mentioned that the reduction in capacity with the switch to NB aircraft, along with strong growth in surface freight capacity (and thus lower prices) had forced many industries to revert to surface freight.

A notable exception where current air freight provision through Christchurch is well below that needed is in industries that are characterised by large volumes of oversize cargo. Due to the shortage of WB services to Australia, and limited cargo space on Emirates and Singapore WB passenger aircraft, several stakeholders have no alternative but to transport goods through Auckland. This causes time delays, risks damage to the product, and ultimately increases costs.

Alternatives transport options to air freight through Christchurch

Several interviewees, particularly on the imports side, make regular use of road freight to and from Auckland, where the vast bulk of imports enter New Zealand. For some, this was a matter of convenience, as import weights were not sufficient to justify splitting the consignment into North Island and South Island shipments. For others, the issue was a lack of a capacity or certainty through Christchurch. One major importer mentioned a desire to establish a South Island distribution centre to service local needs rather than having everything come through Auckland, but that will require sufficient service through Christchurch.

Some interviewees, particularly in primary production, mentioned their internal need to improve processes so as to shorten transport times to Christchurch or by truck up to Auckland.

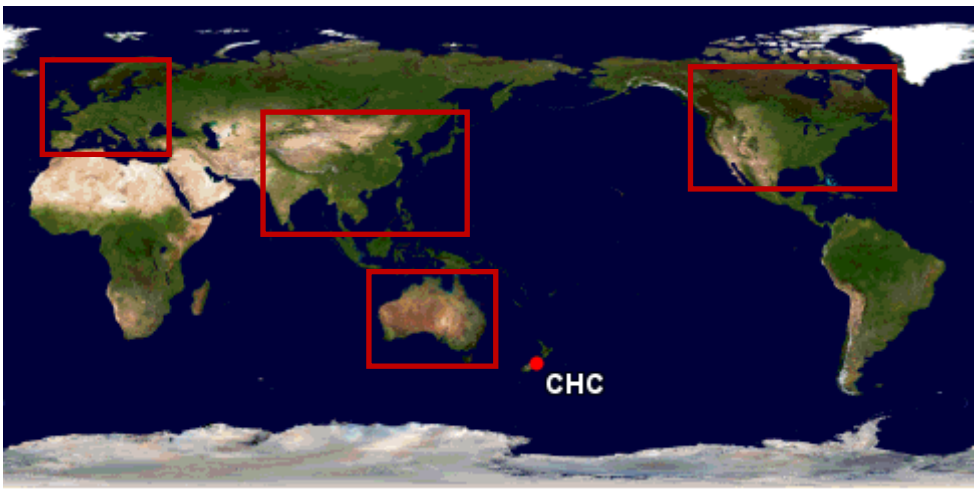
The current lack of capacity through Christchurch, more capacity and a wider range of links through Auckland, and the relative cost-efficient movement of trucks between Christchurch and Auckland have made trucking goods to and from the South Island a viable alternative. Any new service through Christchurch would need to convince exporters and importers that the time and money savings of flying direct through Christchurch justify a switch back to direct air freight from the South Island.

None of the interviewees mentioned rail as an option they use.

Connectivity must be maintained and expanded

The second factor essential to good air freight services is connectivity. New Zealand has four key regional trading blocs: Australia; Asia (mostly East Asia but increasingly South-East Asia and the sub-continent); the United States; and Europe, as shown in Figure 23. It is not enough that products arrive and depart through Christchurch; there must be easy links to these trading blocs through major air hubs.

Figure 23 New Zealand's major trading blocks



Three airports – Sydney and Singapore, and to a lesser extent Melbourne – serve this purpose. Through Sydney and Melbourne, there are several connections to Europe, North America and Asia. Through Singapore, there are connections to other parts of Asia, Europe and North America.

Given the growth areas in air freight trade discussed in the section entitled *South Island air freight trade in the future*, potential new connections would need most of all to:

- ***serve the rapidly-expanding Asian economies***. These links may be through hubs already used, or through other major hubs such as Hong Kong, China, South Korea, or Malaysia, which will also offer easy access to India, Vietnam, Thailand, and on to North America.
- ***keep New Zealand producers competitive*** on price and lead-times. A key comment from exporters was that connectivity (along with capacity) needs to keep them competitive with local producers. For example, given sufficient capacity on aircraft (which remains a problem for him), one producer, based outside Canterbury, can get product to markets in Brisbane faster than it can be trucked up from Melbourne. This is a significant competitive edge over Australian businesses. Any additional capacity will need to need to reinforce this connectivity.

An inter-island ferry terminal at Clifford Bay would increase connectivity and risk

The main focus in this report is the connectivity between Christchurch and other international airports that will get products to and from trading partners quickly. However, if the proposal to move the inter-Island ferry terminal from Picton to Clifford Bay goes ahead, this will shorten the trip time from Wellington to Christchurch for rail and road freight by two hours and 80 minutes respectively. This would make a stronger case for Lower North Island businesses to use Christchurch for their air freight needs by improving ***domestic connectivity***.

This freight is less likely to move the other way, as Wellington does not currently have a sufficiently long runway to meet the needs of wide-body aircraft, so this presents significant potential for Christchurch if its capacity and connectivity is attractive to Lower North island businesses.

In contrast, improved inter-Island connectivity would create risk that Christchurch could lose freight capacity and connectivity if trucking to Auckland to make use of Auckland's more extensive international air links becomes increasingly affordable by the shortened trip time.

Cost is important, sometimes

The average value per kilogram of goods transported by air in or out of New Zealand was $81 over the three years to April 2011. There was significant variation in price, from $4.90 for Vegetables (our second largest export commodity in weight terms), to $2,957 for Precious stones and minerals. This compares with an average value of surface-freighted goods of $1.55 a kilogram over the three years to April 2011.

Given the large difference between the ***average*** values of commodity groups transported by air and by surface, we may assume an increase in the air freight costs of most commodities transported by air

will be a relatively small part of the overall price of that commodity and thus have little impact on air freight uptake. In reality this is not always the case.

There is a clear division between perishables and non-perishables when it comes to the role of price in the decision to air freight or not.

- ***Perishables***: For those transporting live seafood, fresh meat or produce, price is far less of a consideration than for those transporting electronics or other High value manufactured goods. Even so, stakeholders would like to see competitiveness in air freight pricing to encourage them to use it, and to make their products price-competitive.

  The general consensus is that the freshness of the product is the very value proposition that gets their product into overseas markets, and thus the price is less of a factor. Connectivity and capacity thus override concerns over price.

- ***Non-perishables***: Almost all our imports (mostly electronics, appliances, machinery, componentry and clothing), and non-perishables exports, are far more price sensitive. In business-to-business trade of electronics and machinery, the choice of air or surface freight is often made by the purchaser. Because of capacity constraints (particularly WB capacity) and uncertainty, some exporters try to avoid using air freight, but will arrange air freight at the purchaser's cost, or when they urgently need a spare part for a production line.

Several interviewees mentioned the importance of maintaining a variety of air services through Christchurch, not only to maintain and grow capacity and connectivity, but also to ensure prices facilitated cost-effective air freight. In recent years, the switch to NB Trans-Tasman flights led to a rise in air freight costs. This has been accompanied by a surge in surface freight capacity (such as 9.5% growth in capacity expected in 2012 alone), leading to a price war in surface freight.[4]

As mentioned under Capacity, the current capacity constraints and resultant impact on price through Christchurch have encouraged several industries to truck goods to and from Auckland, where greater capacity and connectivity exists. Any new freight service through Christchurch would need to compete against the existing trucking route to Auckland through convenience/time savings and/or price.

The costs of risk

Other cost factors interviewees mentioned that discourage them from using Christchurch include:

[4] Journal of Commerce Online. *Record Container Ship Capacity Growth Forecast*. 8 July 2011.

- The ability to ***pre-clear produce*** bound for Australia ***in Auckland***. Exporters find this to be a valuable way of reducing risk that they will encounter hold-ups when produce enters Australia. This perceived cost encourages them to truck produce up to Auckland.
- The ***risk of produce being bumped*** from a flight in Christchurch. Despite the costs and time involved in trucking goods to Auckland, the overall cost of doing business that way is seen as low to some exporters, compared to the risk of produce being bumped from a flight through Christchurch due to lack of capacity.

Customer preference is for fresh food and JIT delivery

Making the air freight system work requires that it matches customer preferences.

We were initially surprised to see that air freight trade through New Zealand overall has grown by under 1% a year over the last decade. This seemed contrary to anecdotal evidence of increased online trade and customer preference for shorter lead times. Yet this was a finding borne out in speaking to freight forwarders and other stakeholders. Some reasons for this may include:

- Many people purchase online to find the cheapest price or a specialty item, rather than for the shortest delivery time. Thus, much online shopping may still take two to four weeks to deliver.
- The business-to-business trade model is largely hidden from the public eye, meaning that the perception of rapid growth in air freight trade is driven by what we see in the retail sector.
- In New Zealand, the likes of *Trademe* have captured a large share of the online retail market, which means much of the trade is domestic rather than international.

Several stakeholders on the exports side said the ***market will determine*** what gets air freighted, and that this is likely to see strong growth in perishables, and slower growth in dry goods. Depending on the product, customer preference for shorter lead-times may override cost concerns.

In the case of imports, some stakeholders expressed a preference for "Just In Time" (JIT) delivery of componentry, which has driven a greater use of air freight. This allows importers to hold smaller stocks in New Zealand, saving on storage costs, and reducing the time between paying for imports and receiving payments for exports.

In terms of risk, customer preference for shorter lead times ***may reduce the competitiveness*** of South Island exporters because of the shortage of capacity through Christchurch. If customers continue to move toward holding less stock, and requiring more speedy replenishment, New Zealand producers may not be able to meet the demands placed on them if sufficient capacity and connectivity are not in place.

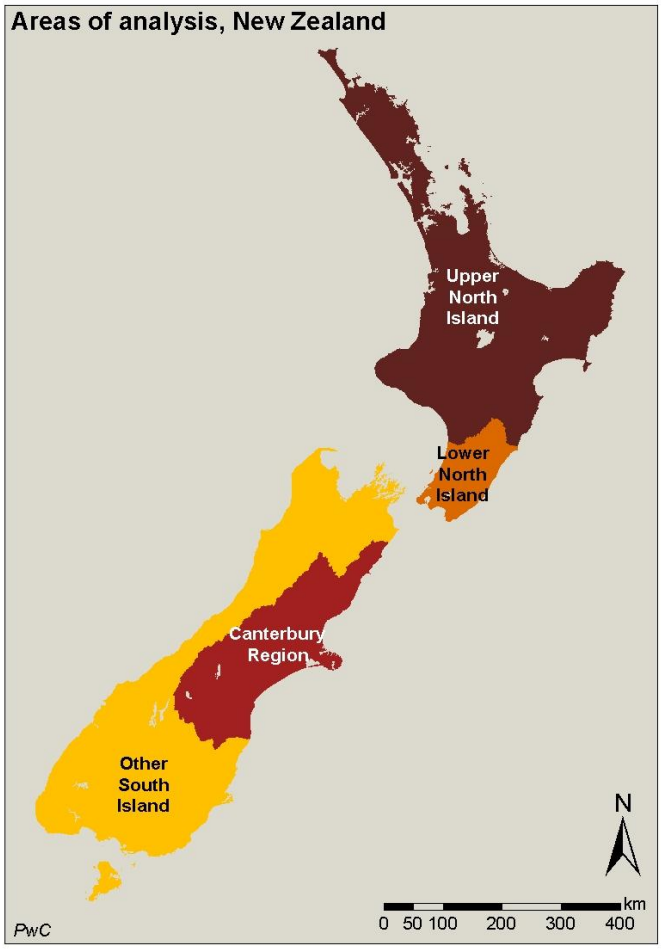
Current potential

This chapter highlights the extent to which Christchurch appears to be capturing less air freight trade than the South Island's share of production and consumption would suggest it should capture. In particular, it estimates:

- The share of New Zealand's air freight ***export weights*** Christchurch could be capturing relative to what is produced in the South Island.
- The share of New Zealand's air freight ***import weights*** Christchurch could be capturing relative to what South Island businesses import, and the South Island share of the population.
- The air freight trade originating in the ***Lower North Island*** that Christchurch has the potential to capture given current production and population in the Lower North Island.

Figure 24 maps out the geographic extent of each area of analysis used in the report.

Figure 24 Areas of analysis for air freight demand study



Throughout this report we consider the Canterbury, South Island, and Lower North Island economies as we examine opportunities for growth although the main area of focus is the South Island, the

natural catchment area for the Airport.[5] Serving the Lower North Island is a realistic opportunity for Christchurch, particularly if Clifford Bay is developed as a new inter-Island ferry terminal, because the Lower North Island is not served by a runway capable of accommodating fully-laden wide-body freight aircraft.

The Canterbury, South Island and Lower North Island economies

This section introduces the population and economies of Canterbury, the South Island and the Lower North Island. Understanding the major industries and buying power of the population in these areas of analysis is important in estimating the gap between what could be exported or imported direct through Christchurch and what is.

Population underlies many imports

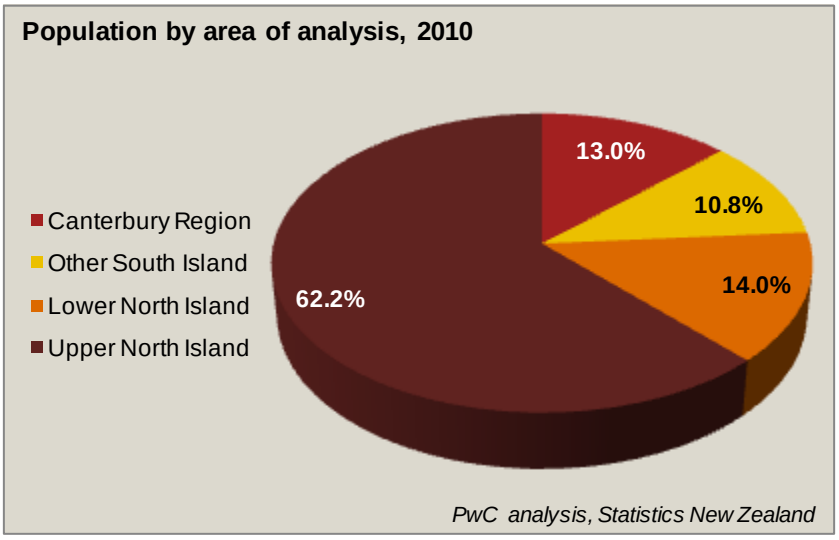
Population plays a key role in the analysis of potential for air freight trade through Christchurch. Many imports arriving in New Zealand are already in the form of finished goods, ready for sale to the end-user. For instance, a DVD-player arriving by air is eventually most likely to be sold to a consumer. Where those consumers live will determine where the DVD-player ends up.

Figure 25 presents the population of each area of analysis in this report.

Just under 570,000 people live in the Canterbury Region, or 13% of the New Zealand population. However, given the island nature of New Zealand, and the role of Christchurch as the only major international freight airport on the South Island, the natural catchment area for Christchurch is far larger, at 1.04 million (23.8% of New Zealand's population). With Christchurch already directly serving 1.04 million people, or 23.8% of the New Zealand population, one would expect Christchurch to account for more than its average 12.6% of air freight weights over the last three years.

[5] In this report, the Lower North Island refers to the territorial local authorities of: Wellington, Hutt City (Lower Hutt), Upper Hutt, Porirua, Kapiti District, Carterton District, Masterton District, South Wairarapa District, Horowhenua District, Tararua District, and Palmerston North. In deciding what parts of the Lower North Island to include, we examined the travel times from each major town in the Lower North Island – New Plymouth, Wanganui, Palmerston North, and Napier – to Auckland airport or Wellington ferry terminal, where trucks would embark for the South Island. Given the respective travel times from each of those cities to Wellington and Auckland, it was decided a conservative approach would be to only include areas as far north as Palmerston North and the Tararua District as the likely catchment area for Christchurch within the North Island. It is possible that if a new ferry terminal is built at Clifford Bay, the catchment area could extend further as far as Wanganui District (a further 43,500 people), but any further north is unlikely given the time cost in getting freight to and from Christchurch.

Figure 25 Population by area of analysis



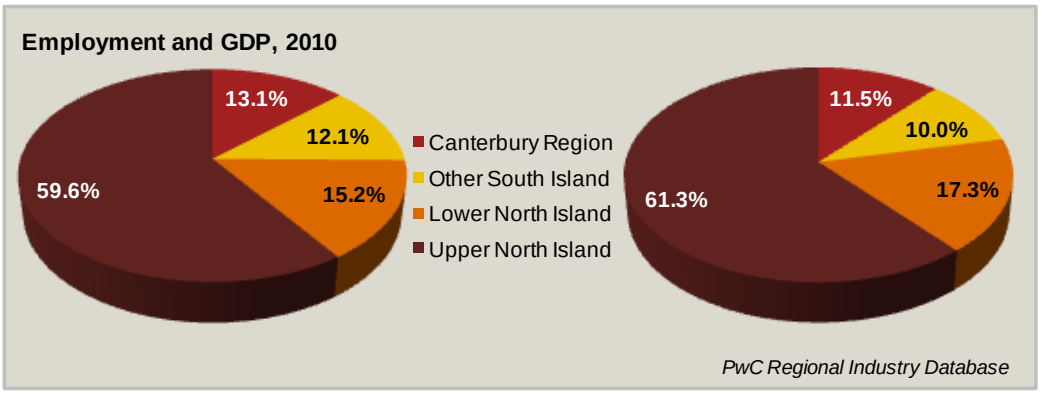
This report also considers the possibility of Christchurch supplying air freight services for the Lower North Island. This potential catchment would take the overall population being served to 1.74 million, or 37.8% of New Zealand's population.

The South Island contributes disproportionate shares of primary production

This section introduces the economies of the areas of analysis in this report, showing their shares of national employment and GDP, and of each industry within the national economy.

Figure 26 shows the share of New Zealand employment and GDP accounted for by each area of analysis. This analysis uses the PwC Regional Industry Database, which covers key economic indicators for each region, district, city and sub-district in New Zealand.

Figure 26 Employment and GDP by area of analysis



Canterbury Region has 13.1% of all employment in New Zealand, while the rest of the South Island has a further 12.1% of employment. The Lower North Island has 15.2% of employment. The total potential catchment area for Christchurch therefore covers 40.4% of all employment in New Zealand.

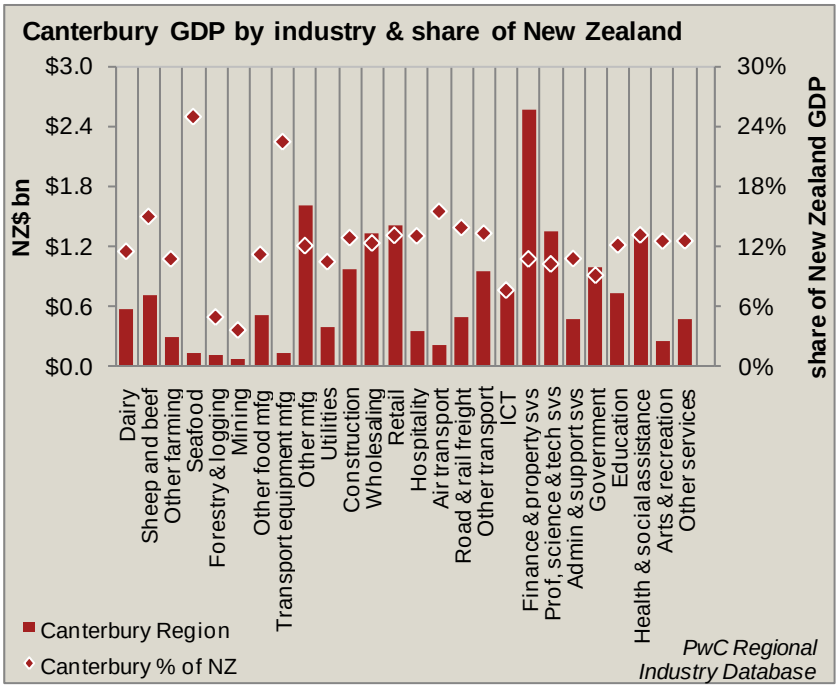
GDP, the main indicator used in apportioning where exports are produced, or imports are consumed, has a slightly different distribution. The dominance of Wellington City in the Lower North Island, and Auckland in the Upper North Island, with their high labour productivities, results in these areas producing larger share of GDP than their respective shares of employment would indicate. The wider catchment area for Christchurch, including Canterbury Region, Other South Island and Lower North Island, accounts for 38.7% of New Zealand's GDP.

Taking population and economic factors into account suggests a strong initial case for improved direct air freight links between the South Island and international trading partners. To better serve the economies of the South Island, and potentially, the Lower North Island, Christchurch would benefit strongly from increased reliable, price-competitive air freight routes. This case would be strengthened should the proposed redirection of Cook Strait ferries to Clifford Bay proceed.

Population and economic factors suggest a strong initial case for improved direct air freight links between the South Island and world.

The following three figures give an indicator of the size of each of 26 industries into which the economy can be divided at the Canterbury; South Island; and South Island and Lower North Island levels. They represent ***incremental catchment areas***, and show the dollar value of GDP produced as of March 2010 in each incremental catchment area, and the share of national GDP each industry produces within each catchment area.

Figure 27 Canterbury GDP by industry and share of New Zealand GDP



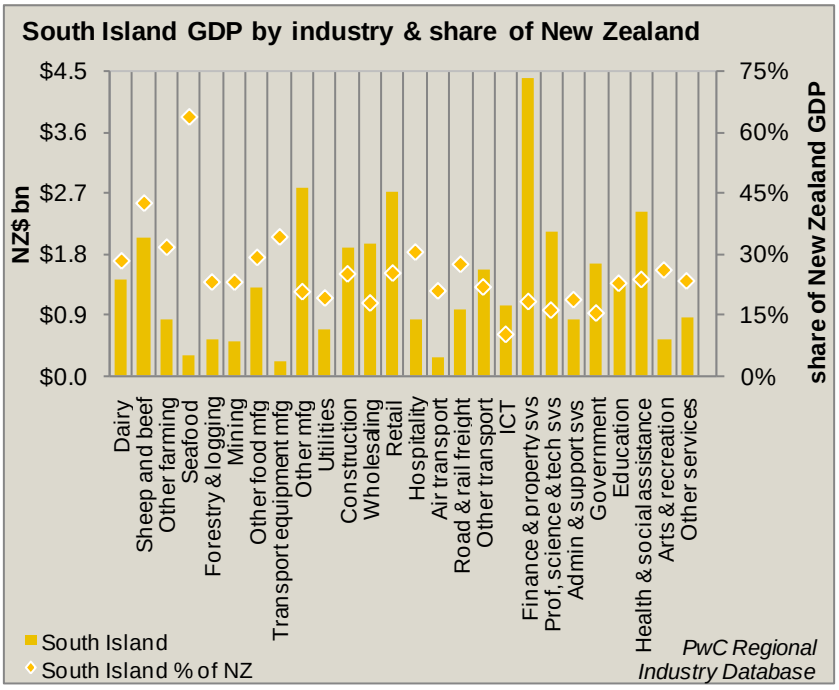
Industries in which Canterbury has a competitive advantage, producing far higher shares than its portion of national GDP, include Seafood (24.8%) and Transport equipment manufacturing (22.4%).

In absolute terms, the largest industry is Financial and property services, with GDP of $2.57 billion in the year to March 2010. In terms of merchandise exporters and importers, the largest industries were Other manufacturing ($1.61 billion), Retail ($1.40 billion), and Wholesaling ($1.34 billion).

Figure 28 shows the dominance of the South Island in Seafood production, producing 63.7% of national Seafood GDP. The South Island also accounts for 42.5% of Sheep and beef, 34.2% of Transport equipment manufacturing, and 30.5% of Hospitality GDP, all significantly higher than the South Island's 21.5% of national GDP.

In dollar terms, the South Island produces $4.38 billion in Financial and property services GDP, while the major importer and exporter industries of Other manufacturing, Retail and Wholesaling account for $7.41 billion in GDP between them.

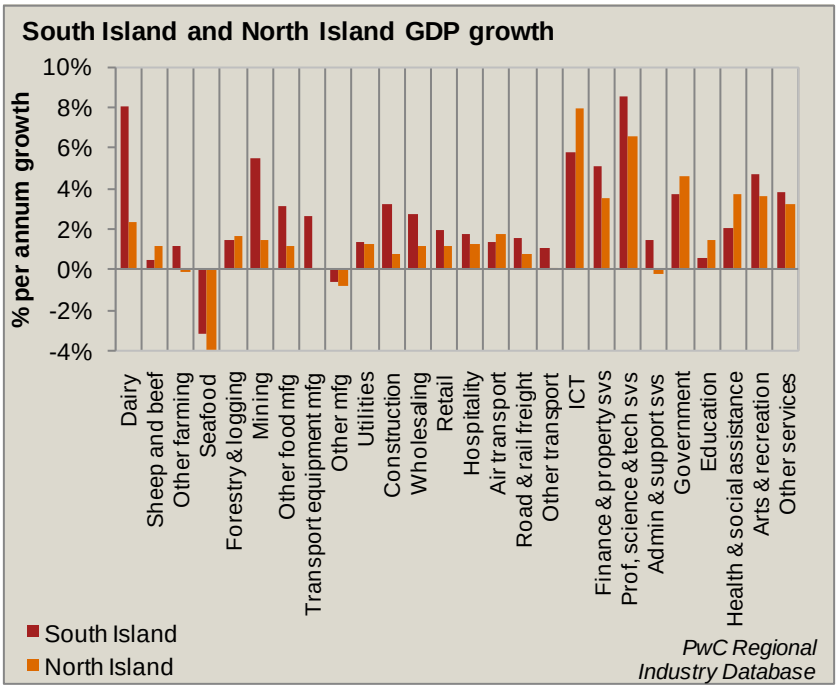
Figure 28 South Island GDP by industry and share of New Zealand GDP



Given the geography of New Zealand, there is a strong argument that overall, air freight exports and imports through Christchurch should broadly reflect the share of each constituent industry accounted for by the South Island.

Analysing growth in GDP by industry over the last 10 years, it is further evident that the South Island is where the greatest growth in primary production is occurring, as highlighted in Figure 29.

Figure 29 GDP growth rates by industry, North Island and South Island



Dairy has grown at three times the speed in the South Island, while Other farming (including horticulture) GDP has continued to expand in the South Island, while shrinking in the North Island. The South Island has also dominated growth in Mining and Other food manufacturing GDP.

There may be additional potential for Christchurch to transport a share of imports destined for, and exports originating in, the Lower North Island. The combined role of the South Island plus Lower North Island in GDP production is shown in Figure 30.

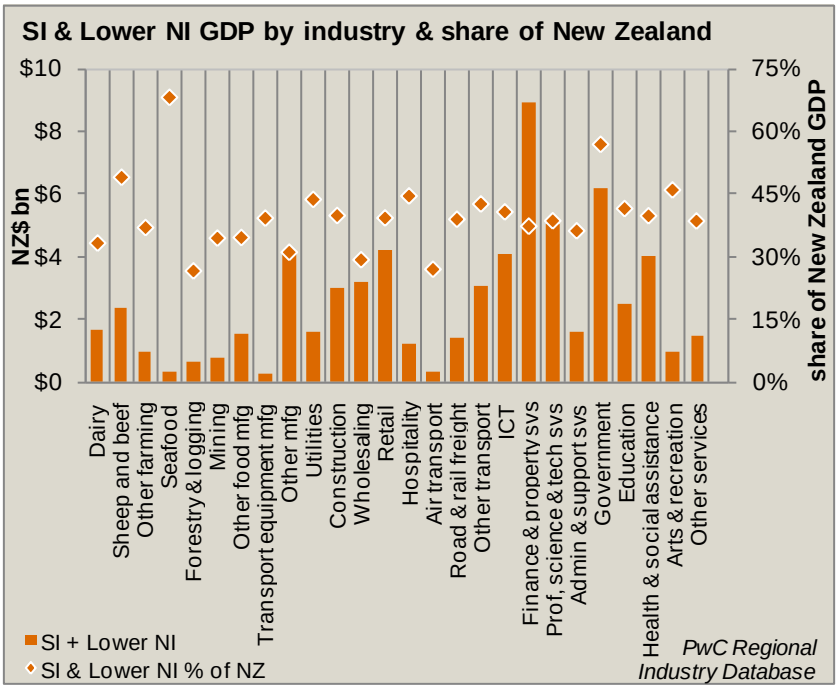
Given the Lower North Island's role in Government, it is unsurprising that including it in the catchment area causes a significant rise in the share of Government GDP captured in the catchment area (56.9%). This wider catchment area also captures significantly more GDP in Sheep and beef, Seafood, Hospitality, and Arts and Recreation than its overall share of national GDP would indicate.

The key message of this figure is that if Christchurch is able to capture a share of the Lower North Island, particularly for consumer imports, it will gain access to a large additional market of 613,000 people, including 312,000 highly-paid workers.[6]

Providing freight services to the Lower North Island would give access to a further 312,000 highly-paid workers.

[6] Labour productivities in the Lower North Island average 43% more than the South Island average.

Figure 30 South Island and Lower North island GDP by industry and share of New Zealand GDP



The South Island transports less than half its share of air freight

This section presents an estimate of the air freight weights that could be expected to pass through Christchurch today given better air freight route access. It is based on the assumptions that:

- the natural catchment area for Christchurch is all of the South Island
- South Island businesses within each industry are as likely to export or import as their North Island counterparts.[7]

This section further examines the role of the Lower North Island in air freight imports and exports, an additional area that could be included in the Christchurch catchment area should reliable, regular air freight services be established.

A South Island air trade gap of 29,700 tonnes

Figure 31 summarises the extent to which exports and imports out of Christchurch at present do not match the production and consumption patterns of the South Island. It also provides values that include the production and consumption of the Lower North Island.

[7] This assumption is discussed in more detail in the appendices.

Figure 31 Air freight gap for South Island and Lower North Island, 2011

Air freight gap (tonnes)	South Island	South Island & Lower North Island
Exports	**17,671**	**23,900**
Short-haul (Australia)	7,040	9,997
Other	10,632	13,903
Imports	**12,001**	**25,710**
Short-haul (Australia)	3,252	7,293
Other	8,749	18,417

PwC analysis

It is estimated that, given South Island production patterns, an extra 17,700 tonnes of South Island production should be exported. Based on the consumption patterns of the South Island, Christchurch there is currently potential to increase direct air freight imports by a further 12,000 tonnes a year.

Some industry stakeholders we spoke to explained that because of the risks related to limited freight capacity, especially as they relate to perishables, South Island producers have been hesitant to enter the export market. Thus the assumption that South Island businesses within each industry are as likely to export or import as their North Island counterparts may not hold for all industries. The potential figures published here should thus be interpreted as the difference between what is currently transported through Christchurch, and what is either being transported through another New Zealand airport or is untapped potential due to the current lack of air freight capacity.

Including the Lower North Island in the analysis increases the gap in weight terms to 23,900 tonnes for exports and 25,700 tonnes for imports. The doubling of the import gap by including the Lower North Island is because of the large, relatively high income population of the Lower North Island, which results in high demand for commodities imported by air, which is unmet locally due to a lack of long-haul freight capacity through Wellington. This suggests potential for the Lower North Island and South Island to work together to narrow the gap between exports and imports by air, making certain air freight routes more attractive. This is discussed in detail elsewhere.

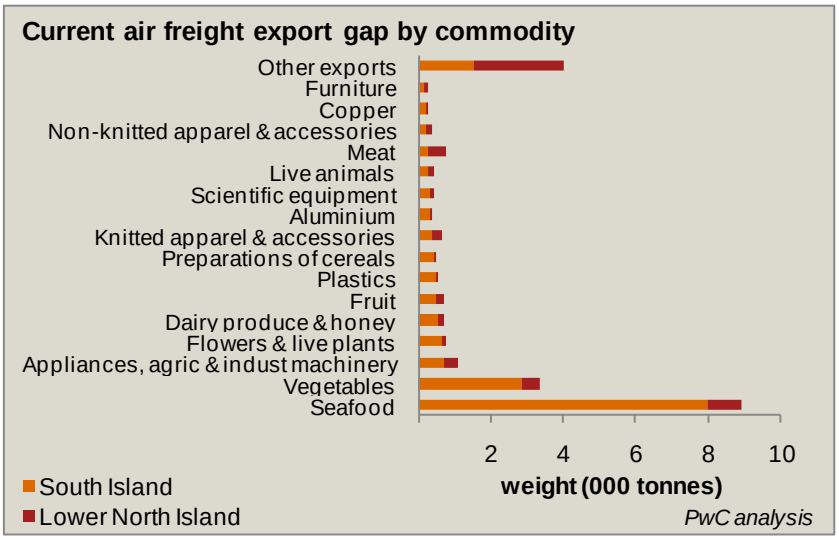
There may be potential for the Lower North Island and South Island to work together to narrow the gap between exports and imports by air.

The gap is in seafood and vegetables exports, electronics and machinery imports

This section highlights commodities in which the production in the South Island (exports) or the consumption by industry or the population (imports), suggests that air freight weights flying through Christchurch could be significantly higher than they already are.

Figure 32 presents the current estimated gap in direct exports out of Christchurch, based on production in the South Island and the Lower North Island. Values are in ***thousands of tonnes***.

Figure 32 Gap by major export commodity



By far the largest potential for increased air freight from Christchurch is in Seafood. Almost 8,000 tonnes of Seafood exports estimated to be produced in the South Island are exported from other parts of New Zealand, or do not use air freight at all. Including the potential for Christchurch to export commodities produced in the Lower North Island raises the Seafood air freight potential from Christchurch to 8,900 tonnes.

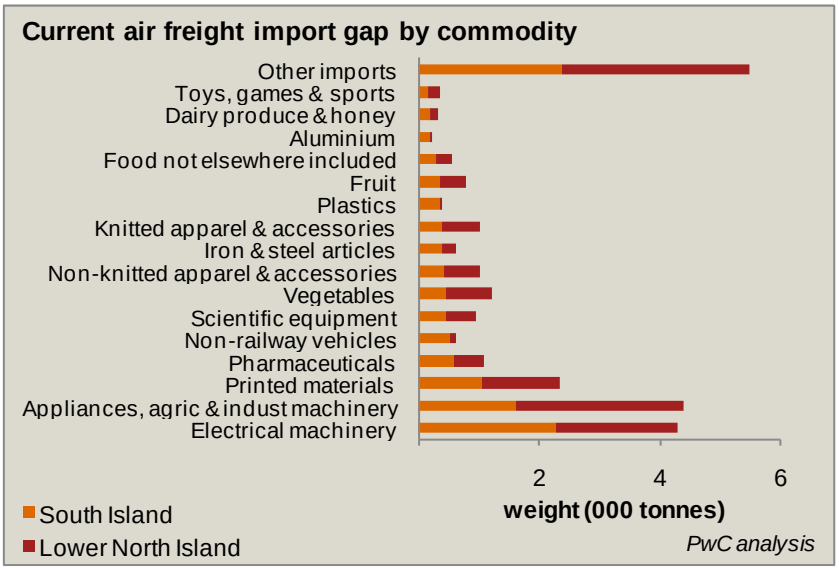
Vegetables are the next most important commodity in which Christchurch currently exports a lower share of production than would be expected. An estimated further 2,900 tonnes could be exported direct from the South Island based on production there, with potential for nearly 500 tonnes from the Lower North Island to also be transported through Christchurch.

Across a range of other commodities there is potential for Christchurch to be exporting up to 6,800 additional tonnes today. Including the Lower North Island adds a further 4,800 tonnes.

The top 16 export commodities in which a significant gap exists could be exporting up to 16,100 tonnes (around three flights a week on fully-laden Boeing 777-Fs) out of Christchurch should additional reliable, cost-competitive air freight services be available.

Figure 33 presents the current estimated gap for direct imports into Christchurch, based on consumption by industry and consumers in the South Island and the Lower North Island. Values are in ***thousands of tonnes***.

Figure 33 Gap by major import commodity



Immediately evident is that the Lower North Island plays a more important role in broadening the air freight potential for Christchurch on the imports side than on the exports side. This is because many commodities imported into New Zealand are in final or near-final form, ready for consumption. The Lower North Island provides a large number of relatively high-income consumers to consume imported commodities.

Nevertheless, at the South Island area of analysis alone, it is estimated Christchurch could be directly importing a further 12,000 tonnes of commodities each year, the equivalent of nearly 120 fully-laden Boeing 777-Fs each year (more than two flights a week).

The largest gaps in direct imports into the South Island are in Electrical machinery (2,300 tonnes); Appliances, agricultural and industrial machinery (1,600 tonnes); and Printed materials (1,000 tonnes).

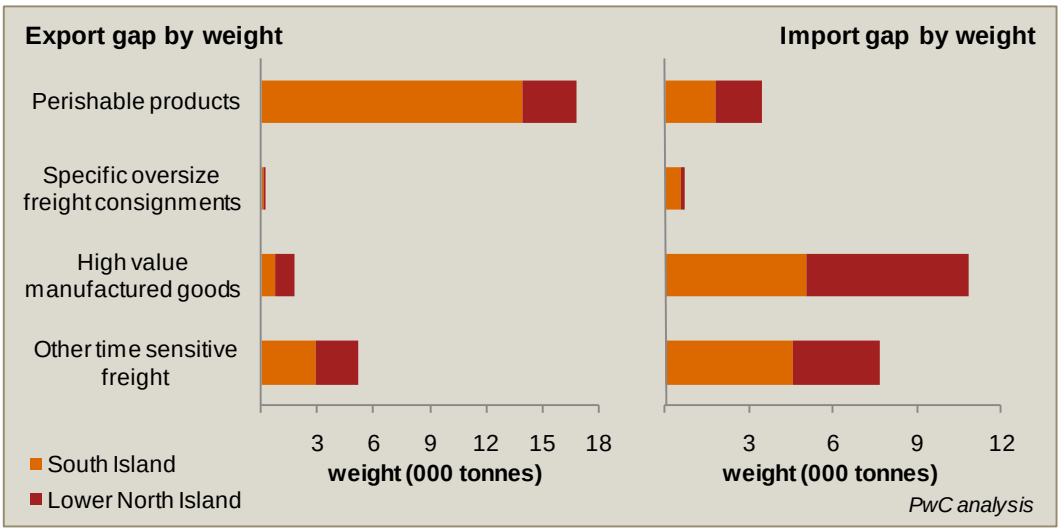
A small group of commodities account for a large proportion of the total air freight gap out of Christchurch: Seafood; Vegetables; Electrical machinery; and Appliances, agricultural and industrial machinery.

The wider spread of commodities imported by air (as opposed to exported by air) is evident from the large share of import potential accounted for by Other imports, at 2,360 tonnes, or 19.7% of the import gap at the South Island level.

The gap is in Perishables and High value manufactured goods

Figure 34 presents the current gap in air freight through Christchurch by broad cargo category.

Figure 34 Gap by broad cargo category



Although Christchurch exports are already overwhelmingly within the Perishable products category, based on what the South Island produces, this share could be even higher. Based on current South Island production patterns, nearly 14,000 extra tonnes of South Island Perishables could be flown out of Christchurch. This would equate to a 119% increase in exports of Perishable products through Christchurch.

On the ***imports*** side, far more High value manufactured goods (217% increase) and Other time sensitive freight (109%) could be imported directly, based on South Island consumption patterns. Taking the Lower North island into consideration more than doubles the High value manufactured goods that could be imported, or a 470% increase in imports of this category.

Gaps are mostly with major trading partners

This section presents the commodity-country pairs in which the potential appears greatest (i.e. where additional air freight directly from or to the South Island would be likely to travel or originate). It examines New Zealand's eight largest air freight partners across the 16 exports and imports with the largest gaps.

Figure 35 presents the commodity-trading partner pairs for major ***export*** gaps from the South Island (using three-year averages to avoid skewing due to one-off transactions). Values are in tonnes, and the area of analysis is the South Island. Including the Lower North Island would result in even larger values. Orange cells are particularly large gaps, while blue cells are commodity-trading partner pairs for which the South Island is already directly exporting substantially more than its expected share.

Figure 35 Gap by major export destination and commodity

Export weights (tonnes)	Australia	China	Germany	Hong Kong	Japan	Singapore	United Kingdom	United States	Other countries	TOTAL
Seafood	2,988	112	23	1,112	226	104	2	2,635	774	7,975
Vegetables	914		-3	96	1,472	10	7	62	324	2,882
Appliances, agricultural & industrial machinery	269	14	32	12	4	30	-6	79	257	692
Flowers & live plants	4	3	2	24	356	7	12	128	112	648
Dairy produce & honey	2	50		85	25	-17	18	3	353	519
Fruit	502	-20	-14	123	104	89	-24	58	-324	495
Plastics	372	-11	1	4	4	2	8	4	72	458
Preparations of cereals	72	169		7	-13	5	7	7	171	426
Knitted apparel & accessories	306			1	1		11	31	22	372
Aluminium	203	5	1	14		2	1	14	68	309
Scientific equipment	15	2	20	1	15	10	23	114	103	303
Live animals	133	2		18	1	27	7	17	81	286
Meat	33	2	128	-70	-13	19	79	76	11	265
Non-knitted apparel & accessories	163			1	1		2	10	11	188
Copper	149			4		1		11	12	177
Furniture	90	-1	2	2		2	8	14	32	150
Other exports	824	20	21	104	-42	53	-7	216	339	1,529
TOTAL	**7,040**	**348**	**215**	**1,537**	**2,142**	**345**	**149**	**3,479**	**2,417**	**17,671**

PwC analysis

It is estimated that a further 3,000 tonnes of Seafood produced in the South Island could be flown from Christchurch bound for Australia. Almost as much (2,600 tonnes) destined for the United States could be exported via Christchurch, along with 1,100 tonnes more to Hong Kong, of a total of 8,000 tonnes of Seafood.

Other commodity-country pairs of significance include Vegetables to Japan and Australia, at almost 2,400 tonnes between them.

Most other categories are significantly smaller, but together 17,700 tonnes of further exports could depart New Zealand through Christchurch given current trade and production patterns. Of this, 7,040 tonnes could be to Australia; 3,500 tonnes to the United States; and 2,100 to Japan.

One possible reason for the large gaps in trade with Australia may be that given its proximity, the time needed to transport products to Auckland for export when capacity is insufficient through Christchurch may not play as important a role as, for instance, flying perishables to Europe or Asia. Stakeholders we spoke to said that transporting goods to Auckland for export to Australia is an option they often use, particularly on the Perishables side.

Looking forward, the strong growth in air freight exports to China (12.9% a year over the last decade through Christchurch), will mean strong annual increases in demand for export air freight to that country regardless of whether Christchurch is fully realising its potential as air freight hub for the South Island. This is discussed in greater detail in the projections section of this report.

Figure 35 also includes some negative values, the largest of which is a 70 tonne surplus in the case of Meat exports to Hong Kong. This suggests that the Meat export relationship between Christchurch and Hong Kong is already strong, and that the South Island is punching above its weight in exports of Meat to that territory.

Figure 36 presents the commodity-country pairs for major ***import*** gaps to the South Island. Values are in tonnes, and the area of analysis is the South Island. Including the Lower North Island would result in even larger values.

Figure 36 Gap by major import origin and commodity

Import weights (tonnes)	Australia	China	Germany	Hong Kong	Japan	Singapore	United Kingdom	United States	Other countries	Total
Electrical machinery	656	684	75	34	90	29	40	182	492	2,281
Appliances, agricultural & industrial machinery	145	588	74	12	98	55	47	255	326	1,599
Printed materials	616	13	6	7	2	19	182	155	35	1,034
Pharmaceuticals	152	6	52	1	1	1	36	40	304	593
Non-railway vehicles	70	9	68		78	5	16	119	139	505
Scientific equipment	78	38	38		24	2	26	169	93	468
Vegetables	184		1			1		19	256	461
Non-knitted apparel & accessories	36	283	1	8			2	12	78	419
Iron & steel articles	101	41	26	2	12	16	19	51	111	379
Knitted apparel & accessories	29	275	1	6			2	8	49	372
Plastics	73	50	19	3	7	4	16	83	100	356
Fruit	178							69	95	342
Food not elsewhere included	132	6	7		1	2	3	63	75	289
Aluminium	91	21	20	1	1	2	4	17	47	204
Dairy produce & honey	140							5	28	173
Toys, games & sports	58	45	-1	1	6	1	6	32	17	164
Other imports	514	262	114	28	56	-5	127	332	934	2,362
	3,252	**2,322**	**500**	**104**	**377**	**132**	**526**	**1,610**	**3,179**	**12,001**

PwC analysis

As with exports, a small number of commodity-country pairs dominate, most notably Electrical machinery imports from Australia and China; Printed materials imports from Australia; and Appliances, agricultural and industrial machinery imports from China.

Overall, it is estimated that an extra 12,000 tonnes could be imported directly through Christchurch to directly meet the needs of the South Island. Of this, around 27% would be from Australia; 19% would be from China; 13% would be from the United States; and a further 26% would be from countries other than the top eight trading partners.

A small number of trading partners account for a large proportion of the total air freight gap through Christchurch: Australia, the United States, China (imports side), Hong Kong (exports) and Japan (exports).

Stakeholders offered some indication of why this gap exists. To a larger extent than for exports, import trading partners are in Asia, Europe or the United States. There are far more connections to these trading blocs through Auckland than through Christchurch. This makes it far easier to get products in through Auckland. It also means that smaller shipments do not need to be split between North Island and South Island distribution centres.

South Island air freight trade in the future

This chapter presents scenarios of growth for the three, five, 10 and 20 year horizons. The strong growth in the value of exports through Christchurch in recent years points to ***strong potential*** to increase air freight throughput.

The overall story is unsurprising. The need for air freight is expected to grow slightly faster than it has over the last 10 years, driven by demand to and from emerging economies like China, India, Vietnam and China. Even so, by 2031 we expect most of the South Island's top eight or 10 trading partners and commodities on the exports and imports side to be broadly the same as today although they may have swapped positions.

New Zealand air freight growth will be led by Asia

Having established that there is already potential for significantly greater air freight trade direct through Christchurch, the question was how the demand for air freight into and out of New Zealand is expected to change over the next three to 20 years.

This meant building a scenario model of likely growth in demand for exports and imports by air, by country and commodity. Broadly, the model anticipates growth patterns to be similar to those seen over the last 10 years, with a couple of key modifiers:

- Growth rates for each commodity-country pair are limited to a maximum of 10% growth a year, as rates higher than this are unlikely to be sustainable over the long-run. In most cases, long-term growth rates are well below this.
- Trading partners are defined as either High Growth or Business as Usual, based on recent trade growth and expected changes over time. This process was completed separately for imports and exports. So, for instance, China can be a High Growth export destination for air freight, and a Business as Usual source country for air freight imports.
- The next three years are expected to see stronger growth in air freight as international trade picks up following the Global Financial Crisis, after which growth rates mostly return to more modest rates.

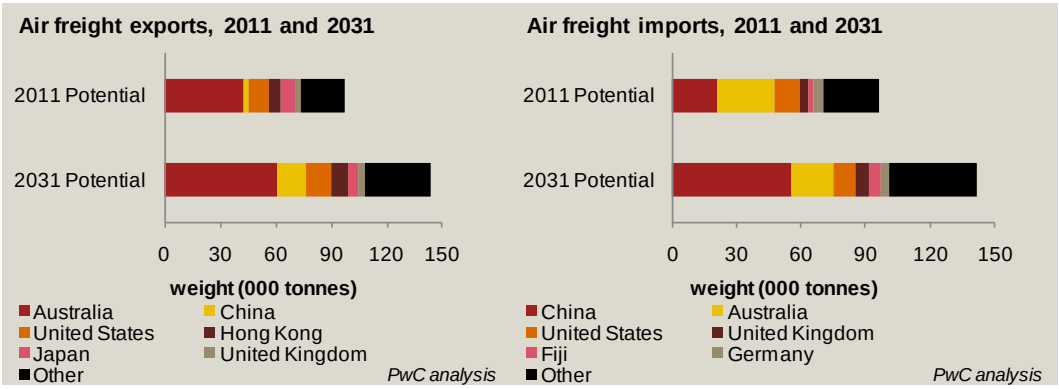
This provided a framework of commodity and trading partner air freight growth for each forecast year.

Figure 37 presents projections of the change in air freight trade with major trading partners for both exports and imports to 2031 from 2011.

On the ***air freight exports*** side, Australia is expected to remain the most important trading partner over the next 20 years, growing at a moderate 1.8% a year, in line with the 1.7% a year seen over the last decade. China, currently New Zealand's 6th largest air export destination, is expected to rise to 2nd, with six times as much exported each year by 2031 (15,600 tonnes). However, Russia (8th up from

25th), and India (21st up from 28th) are countries expected to move steadily up the list of major air export trading partners.

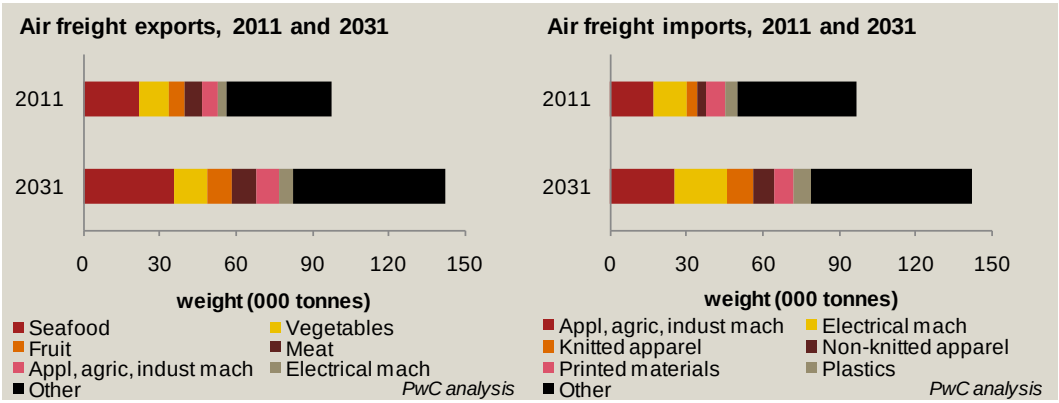
Figure 37 New Zealand air freight export and import demand by trading partner, 2011 and 2031



On the ***air freight imports*** side, China is expected to replace Australia within the next three years as New Zealand's largest trading partner. Australia is expected to remain the 2nd most important trading partner, but China is expected to dominate growth in imports. The United States and United Kingdom fill 3rd and 4th place in 2031, respectively. Together, these four trading partners are expected to provide nearly two-thirds of New Zealand's air freight imports. As China moves up the production value chain, growth is increasingly expected to come from other emerging economies such as India, Vietnam, and Thailand, which are expected to be New Zealand's 8th, 9th and 10th largest air import trading partners, respectively.

Figure 38 presents projections for commodity air freight weights for both exports and imports to 2031 from 2011.

Figure 38 New Zealand air freight export and import demand by commodity, 2011 and 2031



The most important ***air freight exports*** are expected to be Seafood (25% of total) followed in distant second by Vegetables (9%), then Fruit (7%) and Meat (6%). The fifth most important export is expected to be Appliances, agricultural & industrial machinery (6%). Between them, these five export commodities will account for 53% of air freight exports (76,500 tonnes). This growth pattern points

strongly to the ongoing shift toward live, fresh and chilled Seafood exports (rather than frozen), and fresh produce, a recurring theme in interviews held with industry stakeholders.

The most important ***air imports*** are expected to remain Appliances, agricultural & industrial machinery; and Electrical machinery, with around 33% of total import weights between them in 2031 (46,200 tonnes). Knitted and non-knitted apparel & accessories (13% in total) are expected to fill 3rd and 4th place, respectively.

The role of the South Island in producing and consuming

This section summarises the expected ***potential demand*** for air freight services from South Island producers and consumers for four projection years – 2014, 2016, 2021 and 2031. The key questions in all these scenarios are whether:

- capacity, connectivity and cost will be such that South Island producers will be encouraged to enter and remain in the export business;
- services will be direct through Christchurch, or via truck, rail and domestic flight to or from another airport in New Zealand.

There is clear existing potential for significantly broader air freight services to and from the South Island, and these projections show that demand is expected to grow steadily based on the production and consumption patterns of the South Island. The uncertainty is whether air operators, the Airport and major industries are able to develop more robust air freight services that meet the need for a reliable, regular service at competitive rates, while also being attractive to air freight operators.

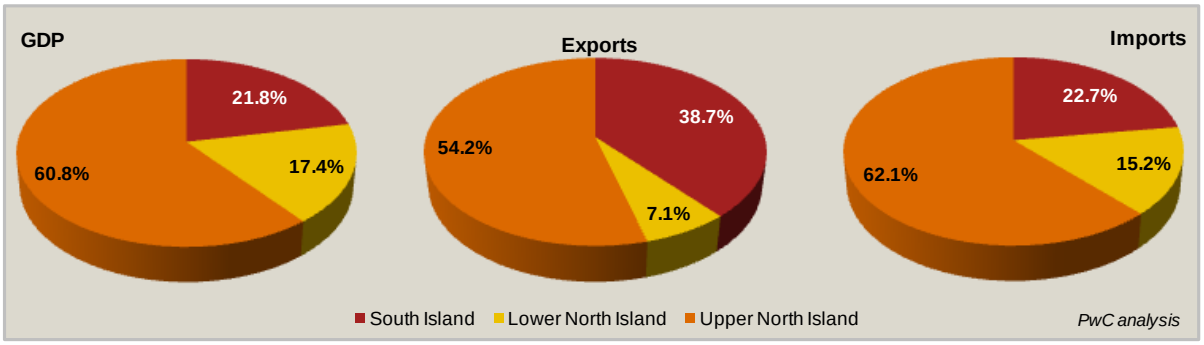
These projections build from the ***starting point*** of the April 2011 year, in which ***potential demand*** for air freight services (a large part of which is unmet by direct air freight services from the South Island) is estimated at around ***35,000 tonnes of exports*** and ***19,800 tonnes of imports***.

With projections of how New Zealand's air freight imports and exports may be expected to grow, the question arises as to how those exports and imports will match the production and consumption patterns of the South Island, the natural catchment area for Christchurch. Additionally, we need to know what the production and consumption patterns of the Lower North Island will be out to 2031, to consider the additional catchment area that may be possible if Christchurch is able to service the needs of the Lower North Island.

Projections of GDP growth for the South Island, Lower North Island and Upper North Island were built out to 2031. This gave a clearer picture of, for instance, what share of Seafood GDP is expected to be produced in the South Island, and what proportion of national consumption will be accounted for by the South Island.

Figure 39 shows the expected shares of GDP, export weights and import weights each area of analysis is expected to account for in 2031.

Figure 39 GDP, exports and imports by area of analysis, 2031



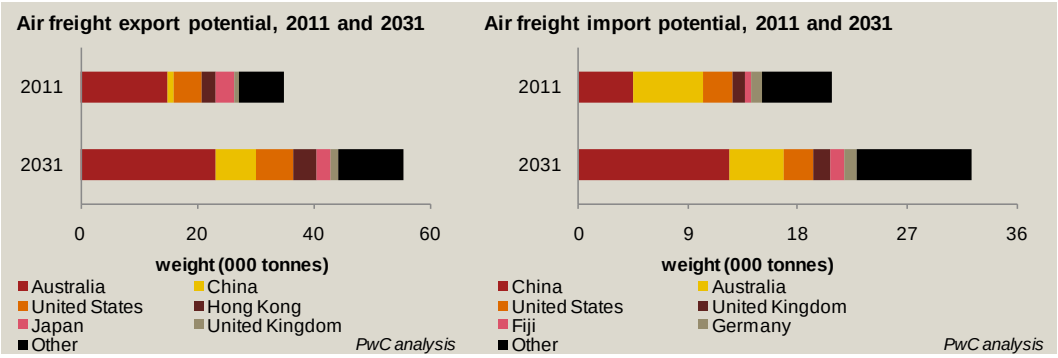
Overall, the South Island is expected to account for around 38.7% of export production weights to be transported internationally by air by 2031. Should the South Island be able to capture its share of direct air freight exports this would equate to 55,500 tonnes per year, the equivalent to filling 545 Boeing 777-F aircraft to capacity each year, or 10 flights a week.

Industry and the population of the South Island are expected to demand around 32,300 tonnes of air freight imports, or 22.7% of all New Zealand air freight import weights. This is the equivalent of six fully-laden Boeing 777-F aircraft movements a week.

Major trading partners and commodities will remain similar

Figure 40 presents the expected change in air freight trade with major trading partners for merchandise produced and consumed in the South Island over the 20 years to 2031.[8]

Figure 40 South Island air freight export and import potential by trading partner, 2011 and 2031



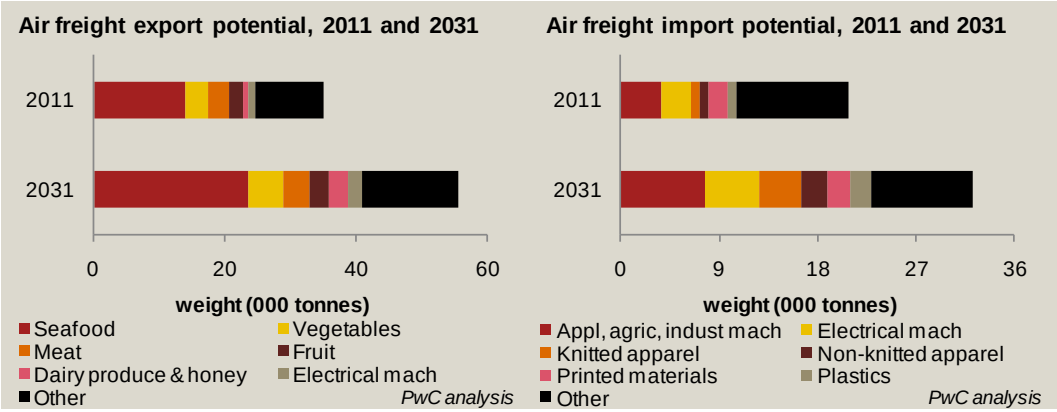
Australia is expected to remain the most important export trading partner for South Island products out to 2031, while there will be a clear shift toward Asia. South Korea and Taiwan will become major export destinations, and India will play a greater role on the imports side.

China will rise to become the South Island's 2nd largest export partner and largest import partner. Combined trade with that country will make it our most important merchandise trading partner overall. Fiji is an interesting case, with Vegetable imports from that country increasing strongly.

[8] A more complete list is provided in the Appendices.

Figure 41 presents the expected change in exports and imports of major commodities expected to be produced and consumed in the South Island over the 20 years to 2031.

Figure 41 South Island air freight export and import potential by commodity, 2011 and 2031



There will be few changes in major export products, with Seafood, Vegetables, Meat and Fruit continuing to dominate. There is expected to be an increased role for Dairy exports by air, while increased competition in the machinery industry is expected to see slower growth there.

There is expected to be a lot more movement on the imports side although Appliances, agricultural and industrial machinery; and Electrical machinery will still dominate, accounting for nearly one-third of imports destined for the South Island. Should current trends continue, clothing is expected to play an increasingly important role in air freight imports.

Three year projection: 2014

Figure 42 presents the expected air freight potential for commodities produced in the South Island by major trading partner and commodity, in 2014.

Figure 42 Potential for air freight from South Island producers (exports), 2014

South Island export potential by weight (Tonnes), 2014	Australia	United States	Japan	Hong Kong	China	United Kingdom	Singapore	South Korea	Other countries	TOTAL
Seafood	7,370	3,304	794	1,644	1,392	29	152	324	741	**15,750**
Vegetables	1,923	120	1,288	110	0	8	13	7	391	**3,860**
Meat	117	237	116	94	7	607	135	83	1,866	**3,262**
Fruit	615	135	126	219	39	31	171	89	878	**2,304**
Appliances, agricultural & industrial machinery	633	206	9	12	39	57	64	7	518	**1,544**
Electrical machinery	508	240	11	28	55	69	49	10	331	**1,300**
Dairy produce & honey	66	39	31	221	169	38	77	34	447	**1,122**
Knitted apparel & accessories	794	42	3	1	1	7	1	0	28	**876**
Plastics	714	22	4	10	15	8	4	3	83	**864**
Other	3,934	778	423	409	299	173	198	160	1,693	**8,067**
TOTAL	**16,673**	**5,124**	**2,806**	**2,746**	**2,016**	**1,027**	**864**	**716**	**6,977**	**38,949**

PwC analysis

Seafood will continue to dominate South Island production for export, with an estimated 15,750 tonnes for export by 2014. Other primary sector commodities – Vegetables, Meat and Fruit – will maintain their major roles. Australia will still be far and away our most important air freight trading partner, given its proximity and the air freight options to that country. South Korea will be the only country expected to break into the top eight, at the expense of Switzerland.

Figure 43 presents the expected air freight potential for commodities consumed in the South Island by major trading partner and commodity, in 2014.

Figure 43 Potential for air freight from South Island consumers (imports), 2014

South Island import potential by weight (Tonnes), 2014	China	Australia	United States	United Kingdom	Germany	Japan	Fiji	Italy	Other countries	TOTAL
Appliances, agricultural & industrial machinery	1,279	502	524	117	235	332	1	143	985	**4,117**
Electrical machinery	1,039	651	194	71	119	88	1	40	827	**3,029**
Printed materials	95	917	179	410	10	2	1	3	97	**1,713**
Knitted apparel & accessories	853	72	10	2	3	0	9	4	156	**1,109**
Non-knitted apparel & accessories	711	50	13	2	3	0	26	5	186	**996**
Vegetables	1	593	20	0	1	0	320	0	28	**963**
Plastics	211	245	112	45	36	16	0	18	279	**962**
Pharmaceuticals	11	233	53	43	62	1	1	33	368	**806**
Non-railway vehicles	43	107	173	53	105	96	0	26	197	**799**
Other	1,708	2,150	1,069	334	338	136	250	284	2,111	**8,379**
TOTAL	**5,950**	**5,520**	**2,346**	**1,076**	**911**	**671**	**609**	**556**	**5,234**	**22,873**

PwC analysis

China is expected to overtake Australia by 2014. This change will be the result of China's dominance in our Appliances, agricultural and industrial machinery; Electrical machinery; and clothing imports.

Five year projection: 2016

Figure 44 presents the expected air freight potential for commodities produced in the South Island by major trading partner and commodity, in 2016.

Figure 44 Potential for air freight from South Island producers (exports), 2016

South Island export potential by weight (Tonnes), 2016	Australia	United States	Hong Kong	Japan	China	United Kingdom	Singapore	South Korea	Other countries	TOTAL
Seafood	7,673	3,359	1,709	776	1,618	30	154	341	764	**16,424**
Vegetables	2,059	124	117	1,269	0	9	13	7	416	**4,015**
Meat	120	247	97	112	8	624	136	88	1,864	**3,295**
Fruit	634	146	226	125	45	31	172	94	904	**2,376**
Appliances, agricultural & industrial machinery	634	206	12	9	44	57	63	8	527	**1,560**
Electrical machinery	531	258	29	11	64	71	50	10	350	**1,374**
Dairy produce & honey	73	42	247	32	208	43	83	38	489	**1,255**
Knitted apparel & accessories	840	43	1	3	1	7	1	0	30	**925**
Plastics	728	22	10	4	18	8	4	3	85	**883**
Other	4,028	791	422	426	336	174	199	167	1,718	**8,262**
TOTAL	**17,320**	**5,238**	**2,870**	**2,766**	**2,342**	**1,054**	**875**	**757**	**7,147**	**40,369**

PwC analysis

By 2016, Hong Kong and Japan are expected to swap places. This is because, despite improving air links with China, Hong Kong remains a major gateway to southern China in particular.

Figure 45 presents the expected air freight potential for commodities consumed in the South Island by major trading partner and commodity, in 2016.

Figure 45 Potential for air freight from South Island consumers (imports), 2016

South Island import potential by weight (Tonnes), 2016	China	Australia	United States	United Kingdom	Germany	Japan	Fiji	Italy	Other countries	TOTAL
Appliances, agricultural & industrial machinery	1,403	490	526	121	238	339	1	145	1,015	**4,277**
Electrical machinery	1,131	631	194	72	119	89	1	40	856	**3,135**
Printed materials	103	891	179	427	10	2	1	3	99	**1,713**
Knitted apparel & accessories	929	71	10	2	3	0	9	4	170	**1,197**
Non-knitted apparel & accessories	772	49	13	2	3	0	27	5	199	**1,070**
Plastics	229	237	112	46	36	16	0	18	293	**987**
Vegetables	1	578	20	0	1	0	346	0	30	**977**
Non-railway vehicles	48	107	177	56	109	100	0	27	209	**833**
Pharmaceuticals	12	227	53	44	63	1	1	34	388	**822**
Other	1,858	2,093	1,070	344	341	138	272	286	2,186	**8,586**
TOTAL	**6,486**	**5,374**	**2,353**	**1,112**	**921**	**686**	**658**	**561**	**5,444**	**23,596**

PwC analysis

China is expected to widen the gap between itself and Australia, as imports from Australia by air continue to decline. Imports from Fiji are expected to continue to grow strongly, led by Vegetables and to a smaller extent, Fruit.

Ten year projection: 2021

Figure 46 presents the expected air freight potential for commodities produced in the South Island by major trading partner and commodity, in 2021.

Figure 46 Potential for air freight from South Island producers (exports), 2021

South Island export potential by weight (Tonnes), 2021	Australia	United States	China	Hong Kong	Japan	United Kingdom	Singapore	South Korea	Other countries	TOTAL
Seafood	8,467	3,494	2,349	1,880	734	33	158	389	835	**18,336**
Vegetables	2,435	133	0	139	1,217	11	15	9	486	**4,444**
Meat	128	273	11	105	101	670	137	101	1,889	**3,415**
Fruit	683	172	63	246	121	30	173	108	973	**2,571**
Appliances, agricultural & industrial machinery	638	206	59	12	8	58	61	8	554	**1,604**
Electrical machinery	595	306	92	31	12	75	54	13	403	**1,581**
Dairy produce & honey	92	51	350	321	34	57	99	50	608	**1,663**
Knitted apparel & accessories	961	45	2	1	3	7	1	0	34	**1,055**
Plastics	762	23	25	11	4	8	5	3	92	**932**
Other	4,298	831	454	464	432	177	201	188	1,806	**8,851**
TOTAL	**19,057**	**5,535**	**3,405**	**3,209**	**2,665**	**1,126**	**903**	**870**	**7,680**	**44,451**

PwC analysis

By 2021, demand for South Island commodities is expected to make China the region's third most important air freight export trading partner. This growth will likely be led by surging demand for live, fresh and chilled Seafood.

Figure 47 presents the expected air freight potential for commodities consumed in the South Island by major trading partner and commodity, in 2021.

Figure 47 Potential for air freight from South Island consumers (imports), 2021

South Island import potential by weight (Tonnes), 2021	China	Australia	United States	United Kingdom	Germany	Fiji	Japan	Italy	Other countries	TOTAL
Appliances, agricultural & industrial machinery	1,766	461	531	131	245	1	358	151	1,101	**4,744**
Electrical machinery	1,399	583	193	76	121	2	93	41	948	**3,457**
Printed materials	128	828	179	469	10	1	2	3	106	**1,726**
Knitted apparel & accessories	1,151	66	10	2	3	9	0	4	211	**1,456**
Non-knitted apparel & accessories	949	47	13	2	3	30	0	5	237	**1,287**
Plastics	278	219	109	49	36	0	17	18	335	**1,061**
Vegetables	1	543	20	0	1	420	0	0	36	**1,022**
Non-railway vehicles	63	108	189	64	118	0	112	30	243	**927**
Pharmaceuticals	15	212	53	46	64	1	1	35	445	**873**
Other	2,298	1,960	1,077	372	349	335	144	290	2,413	**9,237**
TOTAL	**8,047**	**5,028**	**2,375**	**1,212**	**949**	**799**	**727**	**577**	**6,075**	**25,790**

PwC analysis

China is expected to account for almost one-third of air freight imports destined for the South Island in 2021, up from 22% in 2011. Japan is expected to drop to 7th position by 2021, with much of New Zealand's imports of high value products from that country having moved to cheaper labour markets.

Twenty year projection: 2031

Figure 48 presents the expected air freight potential for commodities produced in the South Island by major trading partner and commodity, in 2031.

Figure 48 Potential for air freight from South Island producers (exports), 2031

South Island export potential by weight (Tonnes), 2031	Australia	China	United States	Hong Kong	Japan	United Kingdom	South Korea	Taiwan	Other countries	TOTAL
Seafood	10,192	4,877	3,757	2,261	654	39	504	260	945	**23,488**
Vegetables	3,354	0	153	192	1,100	14	13	57	625	**5,508**
Meat	145	21	328	123	84	767	133	11	2,220	**3,832**
Fruit	791	127	227	292	115	30	142	482	836	**3,041**
Dairy produce & honey	139	936	70	518	35	94	85	69	973	**2,919**
Electrical machinery	744	199	422	34	13	84	19	27	577	**2,120**
Appliances, agricultural & industrial machinery	643	106	205	12	6	59	10	4	674	**1,719**
Knitted apparel & accessories	1,240	3	49	2	2	8	0	0	47	**1,352**
Plastics	835	50	25	12	3	8	4	1	114	**1,050**
Other	4,981	846	946	572	438	186	240	71	2,237	**10,518**
TOTAL	**23,063**	**7,165**	**6,180**	**4,018**	**2,450**	**1,289**	**1,150**	**983**	**9,248**	**55,547**

PwC analysis

Seafood exports from the South Island are expected to be around 23,500 tonnes in 2031, averaging around 2.7% growth a year. Australia will still dominate Seafood and total exports, but China and Hong Kong together are likely to import around 7,100 tonnes of Seafood between them.

Figure 49 presents the expected air freight potential for commodities consumed in the South Island by major trading partner and commodity, in 2031.

Figure 49 Potential for air freight from South Island consumers (imports), 2031

South Island import potential by weight (Tonnes), 2031	China	Australia	United States	United Kingdom	Fiji	Germany	Japan	India	Other countries	TOTAL
Appliances, agricultural & industrial machinery	2,788	407	542	154	2	259	398	25	1,487	**6,062**
Electrical machinery	2,138	497	193	85	3	124	101	65	1,226	**4,432**
Knitted apparel & accessories	1,767	59	10	2	11	3	0	31	314	**2,197**
Non-knitted apparel & accessories	1,440	44	13	3	39	3	0	65	296	**1,904**
Printed materials	196	715	179	566	2	10	2	3	123	**1,797**
Plastics	410	186	105	54	0	36	18	13	469	**1,291**
Vegetables	2	480	20	0	618	1	0	0	54	**1,175**
Non-railway vehicles	110	107	212	84	0	138	137	4	374	**1,167**
Pharmaceuticals	23	185	53	53	2	66	2	147	492	**1,023**
Other	3,541	1,734	1,101	443	504	369	158	319	3,067	**11,235**
TOTAL	**12,416**	**4,414**	**2,428**	**1,443**	**1,179**	**1,010**	**817**	**673**	**7,903**	**32,283**

PwC analysis

By 2031, China is expected to be nearly three times more important an air freight import trading partner than Australia. However, we also expect that production of some medium to high value componentry, pharmaceuticals and other products will have shifted to other emerging economies like India, Vietnam and Thailand.

How air freight services might be increased

Empirical evidence and discussions with stakeholders suggest that, at the very least, there is a strong argument for increased air freight capacity through the South Island over the peak season, from October to March. During this time, demand is greatest, and supply is poorest.

This chapter discusses some of the possibilities and solutions proposed by stakeholders to achieve an efficient, well-connected, affordable service that meets customer needs.

Dedicated freighters are not the only option

Capacity and (sometimes as a direct result) cost are the key concerns for South Island importers and exporters. There are several ways to reduce or solve this problem. Four solutions are set out below. In each case, the impact on capacity, connectivity, cost and customer preferences is highlighted. Green means a major positive impact, yellow means limited impact, and red means negative impact.

Solution One: Dedicated year-round freighter

Solution	Capacity	Connectivity	Cost	Customer preference
Dedicated year-round freighter				

Empirical and anecdotal evidence both point to a significant need for increased air freight capacity year-round. The current potential of more than 17,000 tonnes of exports and 12,000 tonnes of imports that is either being transported through other airports or not by air at all, suggests a strong argument for at least two to three dedicated freighter flights a week.

Some investigations into dedicated freighter services have already been conducted by various businesses. The investment required is significant, which limits the number of potential operators. The ***costs*** of service provision will also be higher, as freighter services are generally more expensive to operate than passenger services with some cargo capacity. This is because most passenger flights make the majority of their profits off passengers rather than freight.

This option would nevertheless hold the maximum benefit for South Island businesses. It would increase ***capacity***, and could improve ***connectivity***, as new routes need not be to Sydney or Singapore, the two major hubs currently served by wide-bodies out of Christchurch.

Customer preferences would be better met, particularly through improved main cargo hold space, which would allow for oversize freight in addition to overall increase in capacity.

Solution Two: Dedicated seasonal freighter

Solution	Capacity	Connectivity	Cost	Customer preference
Dedicated seasonal freighter				

A short-term solution would be the provision of a seasonal freighter to fill the gap created by the higher demand during the stone-fruit and meat export season, and exacerbated by reduced Qantas freighter flights.

The logical first option would be to work with Qantas to find a solution to the reduced services over that time. Alternatively, other airlines such as Air New Zealand or an aircraft charter could fill the gap. Given that the majority of our stone-fruit export gap appears to be to Australia, augmenting the existing Christchurch-Sydney route would appear the most sensible choice. This would increase ***capacity*** but have little effect on ***connectivity***. Again, the higher ***costs*** of freighter operation would mean higher prices, but ***customer needs*** would also be better met than today.

Solution Three: Larger year-round passenger aircraft

Solution	Capacity	Connectivity	Cost	Customer preference
Larger year-round passenger aircraft				

The current model of NB passenger aircraft serving trans-Tasman routes will not suffice if South Island businesses are to compete internationally. Either increased dedicated freighter services will be required (as discussed above) or some WB passenger aircraft will need to be re-introduced on trans-Tasman routes.

The recent code-share arrangement developed between Air New Zealand and Pacific Blue may offer the opportunity needed to re-introduce larger passenger aircraft to Sydney. This would increase ***capacity*** significantly, with little effect on ***connectivity***. Air freight on passenger aircraft is cheaper, as airlines make most of their money off the passenger side of the business, so ***pricing*** would be sharper. Customer preferences would be met to some extent, but there would be little improvement in space for larger or oversize shipments.

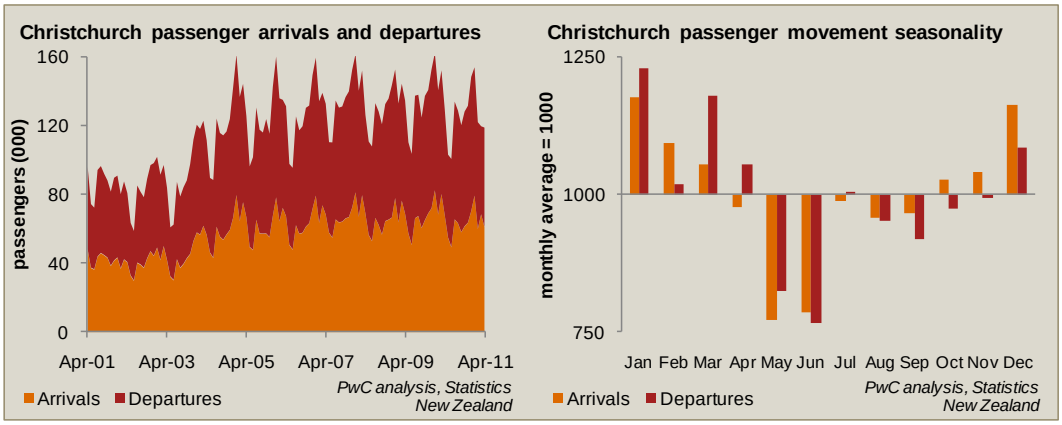
Solution Four: Larger seasonal passenger aircraft

Solution	Capacity	Connectivity	Cost	Customer preference
Larger seasonal passenger aircraft				

A final option would be to at least introduce larger passenger aircraft over the Christmas and New Year season, when demand for seating on aircraft is highest anyway, also increasing capacity for that part of the year.

Figure 50 shows passenger arrivals and departures through Christchurch for the last 10 years, as well as an indexed measure of seasonality across the year.

Figure 50 Passenger arrivals and departures through Christchurch, 2001 to 2011



Over the last 10 years, passenger numbers in December and January have typically been 8.5% to 23% higher than at other times of the year. Most of these passengers travel to or from New Zealand via Melbourne or Sydney. This suggests that introducing WB aircraft on these routes over the December to March period may be a commercially viable option for airline operators, while also meeting the needs of businesses needing improved freight ***capacity***.

Because this would only be a seasonal service, the overall impacts on ***connectivity*** and ***customer preference*** would be small, with some ***cost*** savings over a dedicated freighter service.

New services are likely to follow existing routes

Any solution other than introducing a new dedicated freighter route is likely to be via Australia, and probably through Sydney. This would ensure connectivity via Sydney to numerous destinations around the world. In particular, seasonal solutions are likely to meet the gap left by reduced Qantas freighter services.

Ultimately, new dedicated freighter services will need to be introduced if the South Island is to air freight its expected share of primary production out to 2031, and to simplify supply chains for imports for South Island consumption. There are two realistic options:

- Increased air freight routes through Australia, to support the continued strong trading relationship with that country. Demand for air freight between the South Island and Australia is expected to reach 27,500 tonnes a year by 2031. This trade will be strongly skewed in favour of exports, with a 6:1 ratio. There may be potential for a Melbourne-Christchurch route to augment the existing Sydney-Christchurch, offering improved connectivity to Australian markets and beyond.
- A route hubbing through South-East or East Asia (probably Singapore, Hong Kong, Malaysia southern China or possibly Korea). This will dramatically increase connectivity to Asia. By 2031, six of our top 10 export partners, and five of our top 10 import partners are expected to be in Asia. Overall, around 42% of air freight weights are expected to be traded with East and South Asia.

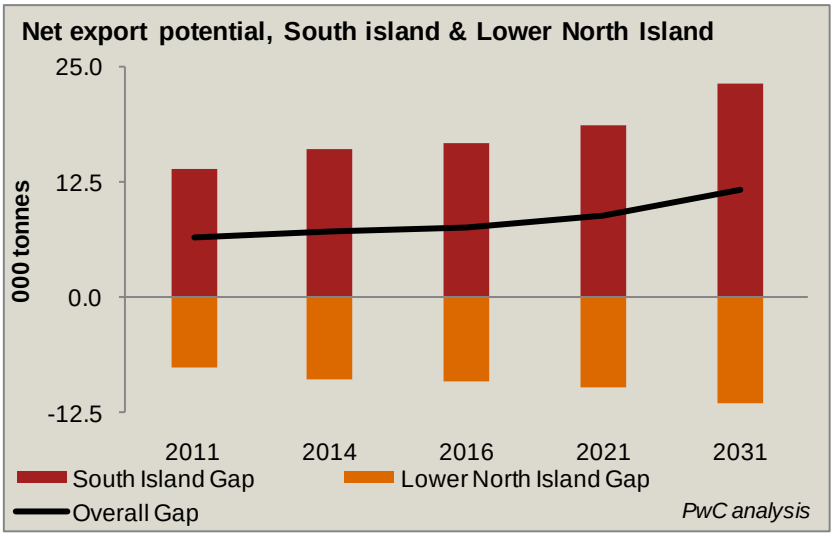
Bridging the gap between imports and exports

An existing difficulty that is expected to remain is the mismatch between export and import weights passing through the South Island. Today, the ratio of exports to imports from the South Island is more than 2:1. The South Island provides almost half of New Zealand's primary production, but its smaller share of the population means that its demand for imports is significantly lower.

One way to narrow this gap, making freight operations more attractive to potential operators, may be an arrangement whereby a triangle is flown between Christchurch, an overseas airport, and Wellington. This could work because the Lower North Island is a net ***importer***, while the South Island is a net ***exporter***.

Figure 51 shows the net export demand gap for the South Island and Lower North Island.

Figure 51 Net export demand potential, South Island and Lower North Island



A route that brings imports through Wellington, thus meeting the excess demand for imports there (expected to rise to 11,500 tonnes by 2031), connects to Christchurch, and then transports South Island exports out of the country, will significantly reduce the gap between export and import demand seen through the South Island.

Further areas for work

Through our work, a number of further questions were raised. These questions were beyond the scope of the study, but will help determine the feasibility of improved air freight capacity in the South island.

Question 1: Can Qantas be persuaded to run more freighter flights between December and March?
Qantas, like most airlines, is run like a business. At present, it is committed to five flights a week year-round, and six flights depending on demand. Between January and March the route is reduced to five flights a week based on reduced demand from Australia. A discussion with Qantas as to how the South Island may be able to secure more regular services during the key season would be worthwhile.

Question 2: Why are other operators not entering the market?
Given the estimates of potential demand, current and future, a case for expanding freight capacity through Christchurch appears to exist. Is the absence of other operators the result of market failures such as lack of information, high barriers to entry (set up, initial operation and compliance costs)?

Question 3: What is the difference in cost between transport on a freighter or passenger aircraft?
The general consensus is that dedicated freighters are more expensive to use than passenger aircraft because the passenger side of the business brings in most revenue on passenger flights. What is the typical difference in price per kilogram of goods transported on a dedicated freighter rather than a passenger aircraft? Are South Island exporters and importers willing to pay more for certainty of capacity? If not, would wide-body passenger aircraft over peak seasons work better?

Question 4: What are the opportunities for major industries to cooperate to guarantee demand?
Probably the biggest obstacle to overcome in attracting extra cargo capacity is to convince potential operators that demand exists. This report goes some way to estimating the size of that potential demand. However, we need to examine the opportunities for the major exporters – seafood, vegetables, meat and fruit in particular – to work together to provide assurances to potential operators that demand will be there when they choose to provide the air freight services.

Question 5: What can CIAL, CDC and others do to attract air operators and users of air freight?
Some interviewees we spoke to mentioned that Auckland International Airport has facilities allowing exporters to pre-clear primary products prior to departure to Australia. This reduces risk of hold-ups on arrival in our most important primary product trading partner. Can this be arranged at Christchurch? What other measures can be taken to incentivise air operators to fly through Christchurch, and to encourage uptake among potential exporters and importers?

Question 6: How might improved freight capacity work?
It was beyond the scope of this work to offer detailed solutions although we have provided some input on potential solutions to increased capacity. A far more thorough look at costings, potential operators and industry uptake needs to be undertaken.

Appendix I: Caveats and assumptions

GDP and buying power

We assume GDP as a proxy for buying power of the population within a geographic area. In other words, if the South Island produces 21.5% of New Zealand's GDP, we assume that it also has 21.5% of New Zealand's demand for consumption imports.

Production, consumption and exports

In estimating the current gap in air freight provision, and likely future demand, we assume that each geographic region of analysis is as likely to export its production within a particular industry as any other geographic region of analysis. For example, if 70% of New Zealand Meat production is exported, we assume that 70% of South Island Meat production is exported, 70% of Lower North Island Meat production is exported, and 70% of Upper North Island Meat production is exported.

This may not always be the case. For example, some South Island-based industries we spoke to suggested that a lack of reliable air freight capacity today discourages their industries from exporting at all, particularly in the perishables space, as the risk of products being bumped from flights is too high. The potential figures published here should thus be interpreted as the difference between what is currently cleared through Customs in Christchurch and what is either being transported through another New Zealand airport or is untapped potential due to the current lack of air freight capacity.

To estimate the potential by commodity, the following approach was used:

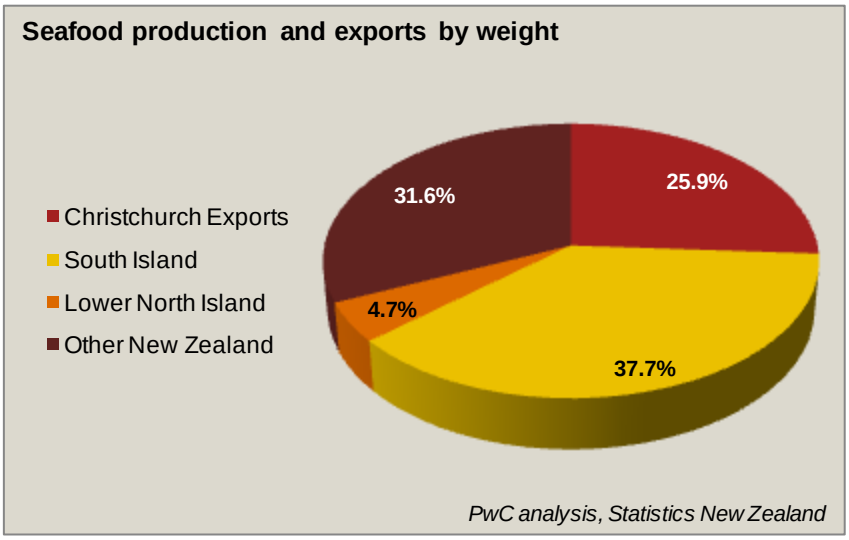
- ***Exports***: each HS code (mostly at the HS two-digit, but where appropriate at the HS four-digit level) was assigned to an industry in the PwC Regional Industry Database (RID) that produces that commodity. The share of GDP produced by the relevant industry in the South Island, or the South Island plus the Lower North Island, was compared with the share of export weights of that commodity currently being shipped out of Christchurch, to identify a gap.

  By way of example, we consider Seafood exports and production, as shown in Figure 52.

  Seafood (HS code 03) was assigned to three industries in the PwC RID – Fishing, Aquaculture, and Seafood Processing.[9] The RID shows that the South Island produces 63.6% of New Zealand's Seafood GDP (the sum of Christchurch Exports and South Island in Figure 52).

[9] In the case of Seafood, industry assignation was in fact carried out at the HS four-digit level.

Figure 52 Seafood production and exports by area of analysis



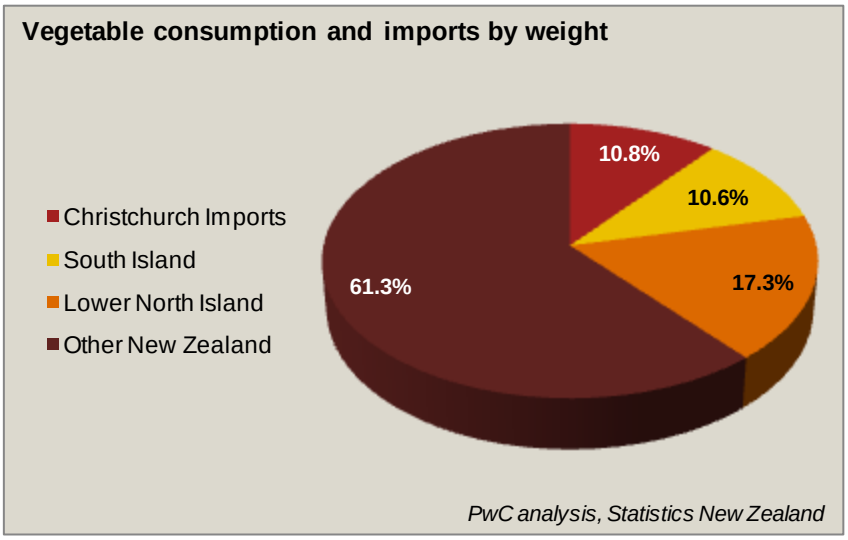
Yet on average over the last three years, Christchurch has exported just 25.9% of New Zealand Seafood exports by air in weight terms. The gap in Seafood production in the South Island that is not exported via Christchurch is thus estimated at around 37% of New Zealand's total Seafood export weights by air. This means that around 13,500 tonnes of Seafood ***could be*** exported out of the South Island by air, when in reality ***only around 5,500 tonnes is***. This extra 8,000 tonnes of Seafood is either exported through other airports in New Zealand, or is not exported by air at all as South Island producers steer clear of the capacity constraints associated with air freight. The result is inefficiencies in freight movements, or reduced exports overall. This lost potential weight is the equivalent of a further 80 Boeing 777 freighter movements each year.

Seafood production in the Lower North Island adds slightly more to the equation. Around 1,000 additional tonnes could be exported through Christchurch if the airport could provide freight services to Lower North island Seafood producers.

- ***Imports***: each HS code was assigned either to an industry in the PwC RID that produces goods using that commodity, or to Local Purchasing Power. The share of GDP produced by the relevant industry (or total local economy in the case of an HS code assigned to Local Purchasing Power) in the South Island, or the South Island plus the Lower North Island, was compared with the share of import weights of that commodity being shipped out of Christchurch.

  By way of example, we consider the South Island's share of purchasing power and vegetable imports, as shown in Figure 53.

Figure 53 Vegetable consumption and imports by area of analysis



Because vegetables are typically consumed by the general population (either directly or via the Hospitality industry), they were linked to Local Purchasing Power (Local Economy GDP), or the public's ability to buy those vegetables.

On average over the last three years, Christchurch has directly imported just 10.8% of New Zealand vegetable imports by air in weight terms. Yet the South Island has 21.5% of GDP (a proxy for Local Purchasing Power). The gap in vegetables imports that are likely to be bought by consumers in the South Island but are not imported via Christchurch is thus approximately 10.6% of New Zealand's total imports of vegetables by air in weight terms. This means that around 930 tonnes of vegetables ***could be*** exported out of the South Island by air, when in reality ***only around 470 tonnes is***. This means a further 460 tonnes of vegetables are likely imported via other airports each year, only to make their way down by road or rail to the South Island.

Considering vegetable imports into the Lower North Island adds significantly more to the equation. A further 750 tonnes could be imported through Christchurch if the airport could provide freight services to bring vegetable imports to Lower North island consumers.

Cargo capacity

Figure 54 presents data on the typical cargo capacity of dedicated freighter aircraft at various ranges, as provided by Airbus and Boeing technical specifications data. This data was used as the basis for estimates of the number of aircraft movements required to transport various loads internationally.

Figure 54 Cargo by range by aircraft type

Aircraft	Cargo (weight)	Range at MTOW (km)	Cargo (weight in kg) at 2,750 km	5,500 km	8,250 km	11,000 km	14,800 km
Boeing 747-400	112,630	8,230	112,630	112,630	112,500	67,200	NA
Boeing 747-400 ER	112,760	9,200	112,760	112,760	112,760	82,000	NA
Boeing 747-8	133,900	8,130	133,900	133,900	133,400	101,500	NA
Boeing 767-300	52,700	6,025	52,700	52,700	41,500	27,000	NA
Boeing 777	102,000	9,070	102,000	102,000	102,000	85,500	57,000
Airbus A330-200F	70,000	5,950	70,000	70,000	55,800	40,000	NA

PwC analysis, Boeing, Airbus

Appendix II: Additional data

Figure 55 Potential export and import demand weights, Christchurch, 2031

Exports	Tonnes	Imports	Tonnes
Australia	23,063	China	12,416
China	7,165	Australia	4,414
United States	6,180	United States	2,428
Hong Kong	4,018	United Kingdom	1,443
Japan	2,450	Fiji	1,179
United Kingdom	1,289	Germany	1,010
South Korea	1,150	Japan	817
Taiwan	983	India	673
Singapore	965	Italy	614
Russia	935	Thailand	605
Thailand	641	Viet Nam	588
Fiji	584	France	397
Switzerland	563	Malaysia	359
Cook Islands	544	Hong Kong	320
Canada	490	Netherlands	310
Germany	393	South Korea	302
Malaysia	296	Singapore	272
Netherlands	271	Greece	236
United Arab Emirates	262	Austria	235
New Caledonia	217	Poland	230
Samoa	214	Sweden	212
Italy	214	Turkey	197
France	206	Spain	189
Viet Nam	186	Canada	185
Indonesia	147	Denmark	178

PwC

Appendix III: Disclaimers

This Report has been prepared solely for the Canterbury Development Corporation for the purposes stated herein and should not be relied upon for any other purpose.

This Report is strictly confidential and (save to the extent required by applicable law and/or regulation) must not be released to any third party without our express written consent which is at our sole discretion.

To the fullest extent permitted by law, PwC accepts no duty of care to any third party in connection with the provision of this Report and/or any related information or explanation (together, the "Information"). Accordingly, regardless of the form of action, whether in contract, tort (including without limitation, negligence) or otherwise, and to the extent permitted by applicable law, PwC accepts no liability of any kind to any third party and disclaims all responsibility for the consequences of any third party acting or refraining to act in reliance on the Information.

We have not independently verified the accuracy of information provided to us, and have not conducted any form of audit in respect of the reports provided to us, or the client for whom work was completed. Accordingly, we express no opinion on the reliability, accuracy, or completeness of the information provided to us and upon which we have relied.

The statements and opinions expressed herein have been made in good faith, and on the basis that all information relied upon is true and accurate in all material respects, and not misleading by reason of omission or otherwise.

The statements and opinions expressed in this report are based on information available as at the date of the report.

We reserve the right, but will be under no obligation, to review or amend our Report, if any additional information, which was in existence on the date of this report was not brought to our attention, or subsequently comes to light.

We have relied on forecasts and assumptions prepared by third parties about future events which, by their nature, are not able to be independently verified. Inevitably, some assumptions may not materialise and unanticipated events and circumstances are likely to occur. Therefore, actual results in the future will vary from the forecasts upon which we have relied. These variations may be material.

This report is issued pursuant to the terms and conditions set out in our initial engagement letter and the Terms of Business attached thereto.