INTERNATIONAL AIR FREIGHT FEASIBILITY STUDY

REGIONAL DEVELOPMENT AUSTRALIA ORANA

URBIS

PREPARED FOR RDA ORANA

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EXECUTIVE SUMMARY

In Australia, domestic freight charges for road and rail are more competitive than for air, while international shipping costs are significantly more competitive than air freight charges for most cargo. Further, air freight is constrained by the maximum size and volume of goods that can be carried, making it suitable only for high-value small (weight and volume) products such as pharmaceuticals, and some time-sensitive fresh foods and mail.

This competitive reality is reflected in Australian air freight statistics. Although these are infrequently published and typically incomplete, the Bureau of Infrastructure, Transport and Regional Economics estimates that:

- domestic air freight makes up just 0.01% of the volume of total freight
- international air freight accounts for 0.1% of total freight volumes.

Regional Development Australia Orana engaged Urbis to analyse the feasibility of a regional air freight facility. Dubbo Regional Airport in the Orana region is considered the most feasible option for a regional air freight capability, given its existing infrastructure and facilities. Nevertheless, the airport would require significant investment in both logistics (loading and storage, including cold storage) as well as upgraded runways to carry larger aircraft.

Much of Orana's regional produce, such as grains, cotton and wool, is freighted in bulk and therefore air freight is not competitive when compared to intermodal freight (land and sea in combination).

However, there are nascent and boutique producers with fresh produce, such as juices, that might potentially take advantage of an air freight facility if an investment in the required infrastructure were made. To provide an adequate return on investment for the infrastructure, however, sufficient regular and profitable freight loads would need to be offered by willing and capable airlines.

KEY FINDINGS

- The most opportune markets for produce from an air freight facility at Dubbo would be in Asia, where there is continuing strong per capita income growth and a growing market for fresh foods. Hong Kong is the most viable option, with freight for China being forwarded via road.
- Given the small scale of relevant goods currently produced in Orana, as well as the costs associated with dedicated air freight services (which are typically much higher than for belly freight), Urbis considers that, it is more realistic that an airline operator would choose to operate a passenger service rather than a dedicated freight service.
- The carriers that are most likely to operate a Dubbo to Hong Kong passenger route are Qantas, Cathay Pacific, China Eastern, China Southern and Air China.
- These carriers are likely to initially choose aircraft with the smallest possible seat count and freight capacity, since this minimises the risk of excess supply on a route that is characterised by uncertain passenger and freight demand.
- For each of the above carriers, the most likely aircraft to be operated that can fly to Hong Kong is the Airbus A330-300 (Cathay Pacific, Qantas) or Airbus A330-200 (all other carriers). The typical freight haulage capacity for the A330-300 is 46 tonnes, and around 35 tonnes for the A330-200.
- To adequately service passengers, and optimise aircraft usage and profitability, an airline would be expected to service a minimum of three flights per week.
- Applying minimum freight load (tonnage) and passenger seat factors required for profitability, Urbis estimates the following annual requirements for each aircraft type.

	A330-200*		A330-300**	
Services per week	**Passenger movements**	**Freight (T)**	**Passenger movements**	**Freight (T)**

	A330-200*		A330-300**	
3	54,413 - 59,155	6,814	62,650 - 74,131	8,592

** China Southern, China Eastern and Air China; **Qantas and Cathay Pacific*

- In 2015, 16% of visitors to the region, or 4,800 people, originated from Asia, representing around 9,600 air passenger movements.
- The estimated number of residents of the Orana region who have travelled overseas to Asia in 2015 was 4,100 or 8,200 passenger movements. Tourism Research Australia data indicates that 41% of outbound travel by Orana residents is to Asia.
- In combination, current annual passenger movements between Asia and Orana of 13,000 are well below the 54,000 required for an airline to operate profitably.
- Based on the average long run annual growth rate for passenger movements at Dubbo Regional Airport of 3%, Urbis estimates that passenger routes to Hong Kong (or other Asian destinations) may be viable by 2050.

Extensive consultations were undertaken by Urbis in relation to the feasibility of a regional air freight facility at Dubbo with several regional airports (including Dubbo), NSW Infrastructure, Infrastructure Australia, and the Federal Department of Infrastructure and Regional Development. Urbis also spoke with regional producers and representative organisations, and sought additional feedback via an on-line survey. The overwhelming view confirmed the economic analysis undertaken by Urbis, that a regional air freight facility is not seen as necessary or currently viable to attract regular airline services for international freight.

STRUCTURE OF REPORT

This air freight facility feasibility analysis is presented as follows:

- An overview of Australian domestic and international air freight markets is provided in Chapter1, for context.
- Current and future opportunities for export from Orana are examined in Chapter 2, by products and markets.
- Chapter 3 then analyses the feasibility of an Orana Air Freight facility.
- A summary of consultation findings is presented in Chapter 4.
- Chapter 5 presents infrastructure and regulatory requirements.
- Conclusions are then presented in Chapter 6.

This report is intended to be read alongside the “Orana Freight and Logistics Study” (Urbis, 2016), which provides more detail on regional production and alternate freight routes.

1. AUSTRALIAN AIR FREIGHT

Air freight statistics for Australia are infrequently published and typically incomplete. As the Bureau of Infrastructure, Transport and Regional Economics (BITRE) notes:

…because of the breadth and diversity of freight, detailed freight data is generally costly to collect, and even where data is collected, commercial confidentiality can limit the availability of more detailed information required to inform planning[1].

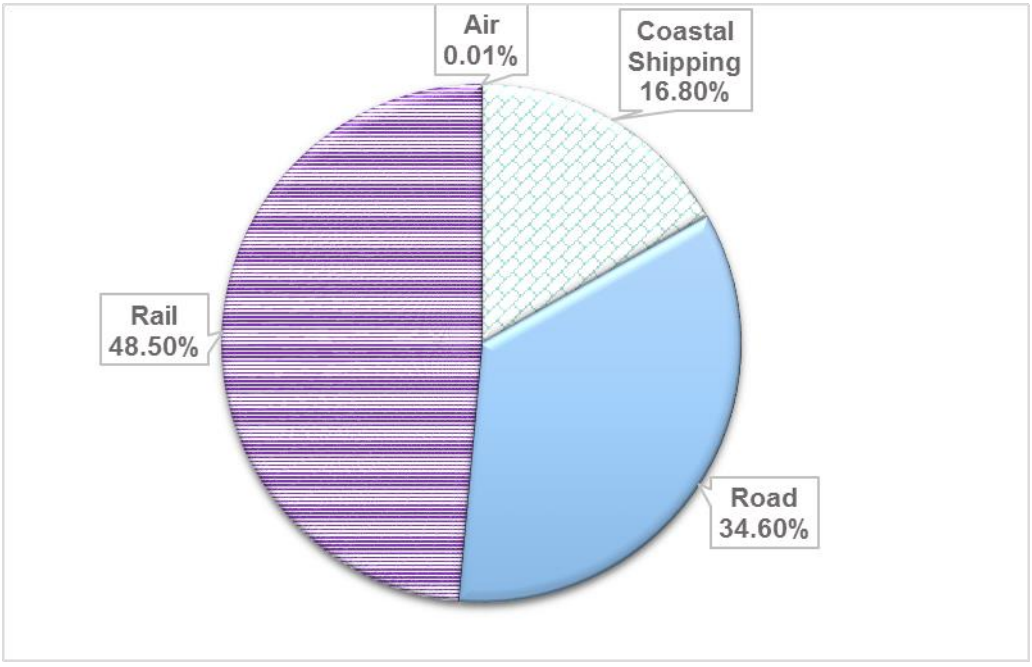
There are sufficient data, however, from which several important conclusions can be drawn, when considering the feasibility of an air freight facility for the Orana region.

Domestically, freight charges for road and rail are more competitive than for air, while internationally, shipping costs are typically significantly more competitive than air freight charges. This is because air freight is calculated based on both weight and size, whereas other freight is based principally on size of load. Air freight is also constrained by the maximum size and volume of goods that can be carried.

1.1. DOMESTIC AIR FREIGHT

BITRE estimates that total Australian domestic air freight in 2011-12 represented less than 0.01% of total domestic freight (Figure 1-1). By freight kilometres, the figure is a little higher at 0.05% of the total. The majority of this freight (109,000 tonnes) was handled through Sydney Airport in 2014.

Figure 1-1 – Domestic Freight by Value Share (2011-12)



Source: BITRE

Importantly, BITRE forecasts growth in domestic air freight out to 2040 to be negligible, in contrast with estimates for very substantial increases in road and rail freight, which are driven by resource production and population growth.

1.2. INTERNATIONAL AIR FREIGHT

International air freight in 2011-12 represented less than 0.1% of Australia's total merchandise trade by volume, but 21% by value (17% for exports, 26% for imports)[2]. This reflects the high-value nature of air

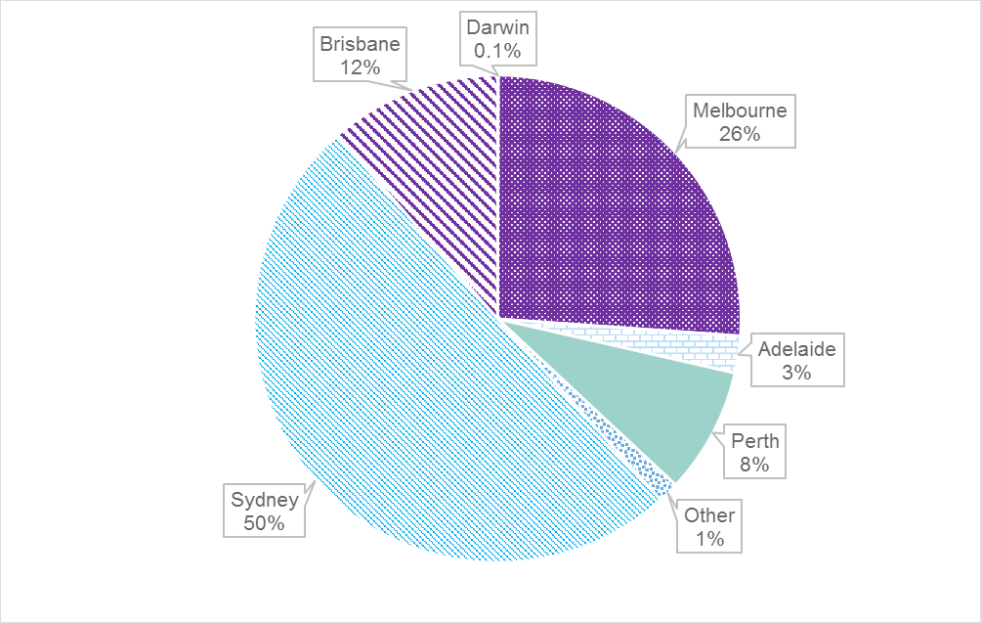
[1] Bureau of Infrastructure Transport and Regional Economics (2014). Freightline 1 - Australian freight transport overview. Canberra, Department of Infrastructure and Regional Development.

freight that is required to make this form of transport viable. Medicinal and pharmaceutical products are the largest export commodities by air. When assessing the feasibility of a new air freight facility both volume and value are important: volume to ensure sufficient resource use and value to ensure profitability.

In 2014-15, 940,000 tonnes of international air freight passed through Australia; 408,000 tonnes of this passed through Sydney Airport, which is the most significant entry and exit point for international freight in Australia by volume.

Sydney Airport handled half of all air-freighted imports and exports in 2009-10[3] (Hamal 2011). Melbourne accounted for one quarter of the total. Regional airports collectively accounted for just 1.4% of the total (Figure 1-2 below).

Figure 1-2 – Air freight share by main airport (imports and exports) 2009-10



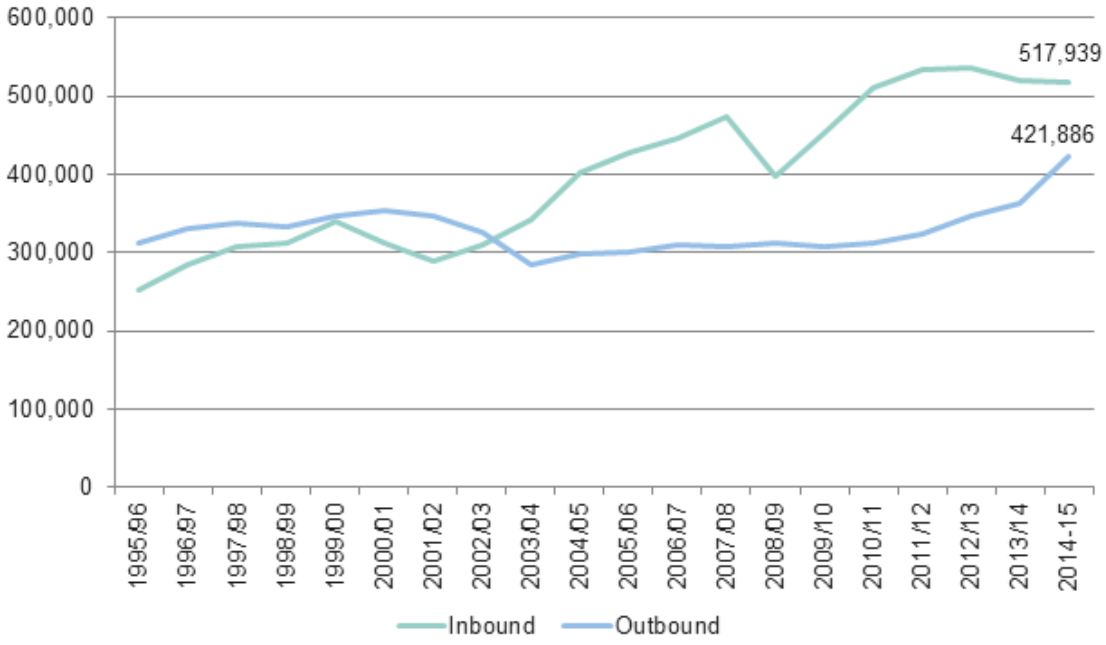
Source: Hamal 2011

Inbound and outbound markets for freight are typically asymmetric, with inbound freight representing 55% of the total in 2014-15 (Figure 1-3).

2 Bureau of Infrastructure Transport and Regional Economics (2014). Freightline 1 - Australian freight transport overview. Canberra, Department of Infrastructure and Regional Development.

3 Hamal, K. (2011). International air freight movements through Australian airports to 2030 Canberra, Bureau of Infrastructure, Transport and Regional Economics.

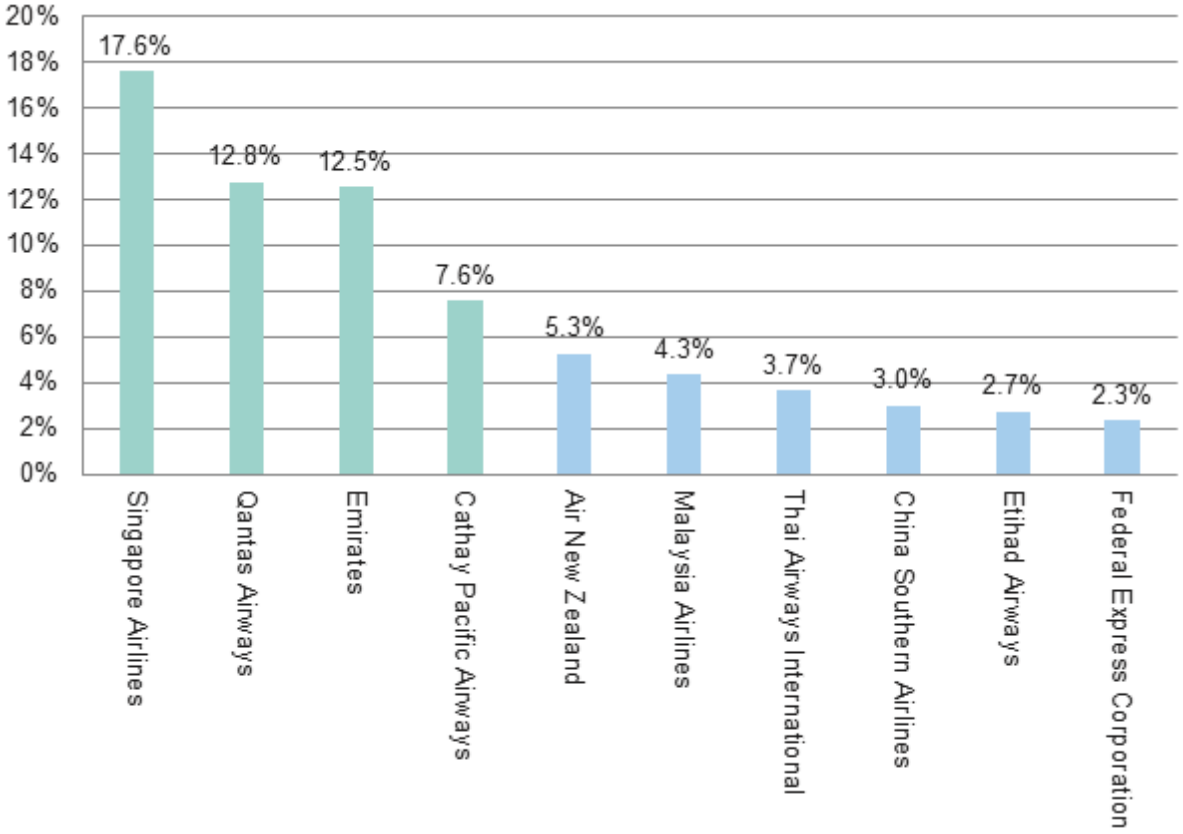
Figure 1-3 – Annual international air freight in Australia, tonnes of air freight



Source: BITRE, Urbis calculations

Four airlines carried over 50% of air freight in the Australian international market over the financial year-to-May 2016 as indicated in Figure 1-4 below.

Figure 1-4 – Carrier share of Australia international air freight, FYTD 2016



Source: BITRE

The dominant airlines include Singapore Airlines, Qantas, Emirates and Cathay Pacific. The vast majority of air freight carried by these airlines is carried in the hold of passenger services.

Australia's major outbound air freight products by weight in 2009-10 were:

- meat and meat preparations (18.1%)
- vegetables and fruit (16.8%)
- fish, crustaceans, molluscs and preparations (8.8%), and
- miscellaneous manufactured articles (5.3%).

Gold represented 37.4% of air freight exports by value, the majority of this leaving from Perth.

In 2015-16, Elders made two shipments of live cattle to China. However, Elders also has markets for live cattle in Indonesia, Vietnam and Malaysia. Elders have reported that these were small trial shipments only and that sea freight is used for standard shipments.

Current major export destinations for Australian air freight include New Zealand, Singapore, Hong Kong, United Arab Emirates, Japan, USA and ASEAN[4] markets.

[4] Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam

2. OPPORTUNITIES FOR EXPORT FROM ORANA

Orana's main opportunities for air freight lie with international trade. This section discusses the opportunities for regional exports and likely markets. Imports from key markets are unlikely to alter current routes as Orana has too small a population to make dedicated routes viable.

2.1. CURRENT OPPORTUNITIES

A detailed profile of the Orana region's production is provided in the report "Orana Freight and Logistics Study" (Urbis, 2016). Mining and Agriculture form the backbone of the regional freight task.

- Key agricultural commodities produced in 2014-15[5] are broadacre crops (notably wheat, other grains, and cotton), and meat and livestock (e.g. wool and milk) products.
- In contrast, hay and silage, and horticulture and viticulture production represented 6% of volume and 1.4% of the value of agricultural production across the region in 2014-15[6].
- The Orana region has several of the largest copper and gold mines in NSW, and also produces zinc, lead and silver.

The key determinants of freight movements through Australian airports, as modelled by BITRE, are:

- per capita real income in export destination markets and
- real export prices.

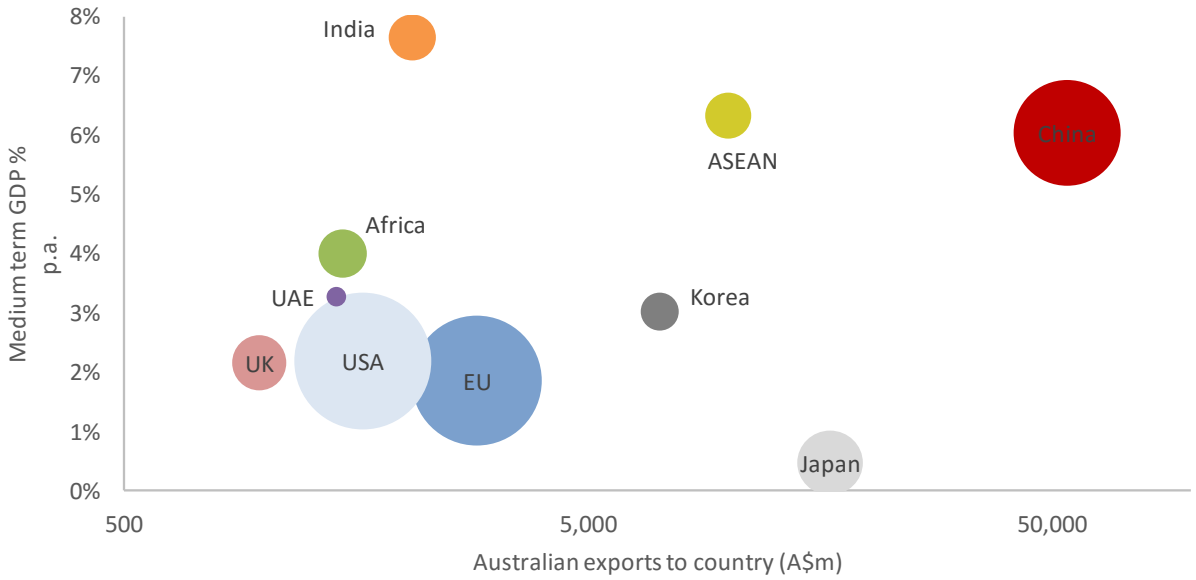
The prevailing wisdom of recent years regarding global trade opportunities, such as that expressed in the *Australia in the Asian Century* white paper, remains unchallenged at present.[7] China, India and Indonesia represent the strongest growth markets over the next three decades, while the USA and Europe will fall in GDP rankings, according to leading global economic research house, the Economist Intelligence Unit (EIU).

Over the medium term, then, these growth markets will remain strong for Australian exporters, although competition for access can be expected to continue to rise – in particular for processed or partially processed commodities where low wage, resource-rich developing countries represent a significant competitive threat (Indian buffalo exports to Indonesia are a recent example). Established competitors from developed markets, such as the USA, also pose a continuing risk in some agricultural markets, notably beef and grains. Recent Australian bilateral Free Trade Agreements (FTAs) with China, Japan and Korea may improve market access over time, but will take up to ten years to fully come into effect.

Nevertheless, Figure 2-1 below shows how regional opportunities play well to the Orana region's strengths. The horizontal axis shows the relative strength of Australian exports to key markets, while the vertical axis shows expected annual GDP growth rates in those markets over the medium term. The size of the bubbles represents the comparative size of the export destination country. GDP growth is expected to translate into increased per capita incomes in developing economies.

5 ABS 2016, *Agricultural Commodities,* cat. no. 7121.0, Table 2
6 ABS 2016, *Agricultural Commodities,* cat. no. 7121.0, Table 2
7 Department of Prime Minister and Cabinet, 2012, *Australia in the Asian Century*

Figure 2-1 – Australian exports and markets (by size and growth)



Source: IMF World Economic Outlook Database 2016

The chart shows the strong current and potential relationship between Australian exporters and our Asian trading partners, notably China and the ASEAN[8] economies.

With strong population and economic growth anticipated in India, the EIU forecasts that India will be the third largest economy globally by 2050, at roughly nine tenths the size of the US. India therefore remains an opportunity for further strong export growth in coming years. The forecast economic growth of China and India is highlighted by the EIU:

> *By 2030 the top three economies of the world will be the US, China and India. Such will be the growth of the two latter countries, in particular, that by 2050 they will each be richer than the next five (Indonesia, Germany, Japan, Brazil, and the UK) put together. This will represent a scale of wealth relative to the rest of the top ten that is unique in recorded history.*

However, the opportunities presented by China may not be as large or as easily established as some of the hyperbole suggests. China's goods imports are dominated by minerals and metals, as well as machines and transport. Crude oil and integrated circuits – the top two imports – account for more than a fifth of China's goods imports.

Among 'other' imports, such as beef, the story is more subdued. Frozen and fresh beef accounted for just 0.1% of total Chinese imports in 2014, although the value of this market is US$1.7 billion and Australia dominates, accounting for almost half of all China's imports. Wheat is also a dominant market for Australia, with a 49% share of US$875 million in imports.

Across other Asian markets, product demand from Australia is similar, relying largely on primary produce. The relatively high wages structure in Australia compared to these countries means that most producers will export unprocessed goods for further processing offshore.

Real export prices are much harder to forecast over the long term. For Australia to have success, high value products in markets of interest (such as wagyu beef) have the best prospects.

Frozen beef is considered the most likely regional commodity to utilise a regional air freight facility, given potential demand from Asia. Other possibilities include frozen sheep and lamb, pork and poultry products, and milk and eggs.

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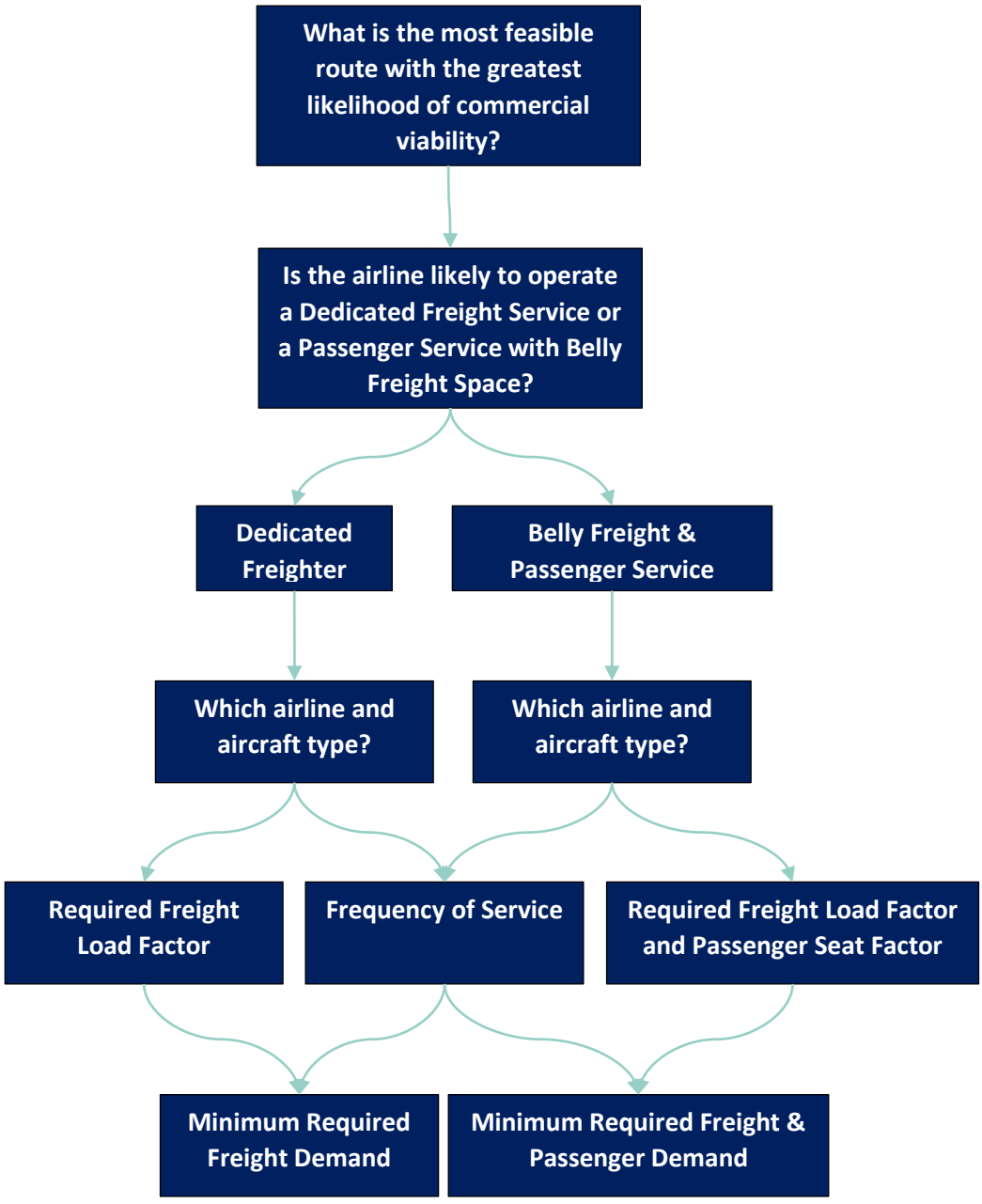
8 Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam

3. ORANA AIR FREIGHT FEASIBILITY

3.1. APPROACH TO ANALYSIS

Figure 3-1 below presents the broad, stepped approach that is used to assess the viability of an air freight route and to quantify the minimum level of freight and/or passenger demand that is required to justify direct international air services between Orana and a foreign destination (most likely in Asia).

Figure 3-1 – Approach to estimating minimum required freight and/or passenger demand for Orana services



The first step in estimating the minimum demand requirement is to make an assumption about the relevant direct route. Our analysis considers Dubbo Regional Airport in the Orana region as the most feasible site for a regional air freight capability, given its existing infrastructure and facilities. A range of potential international destination airports is then considered, based on three critical considerations:

- the most likely export market for the produce of Orana;
- the most likely origin for international visitors to the Orana region; and

- the most likely destination for residents of Orana when they travel overseas.

The second critical decision involves determining whether an airline is likely to use a dedicated freight service to Orana or whether it is likely to combine freight and passengers, using the belly of the aircraft to transport freight.

Once a mode of air freight carriage is determined, the next decision involves assessing the type of aircraft that is likely to be used. This will depend chiefly on the distance of the relevant route, which will determine the feasible set of aircraft able to fly that route, as well as the expected level of demand for the route.

Once the aircraft type is determined, then the freight and passenger carrying capacity of the aircraft can be determined. Combining this information with an informed judgment about the expected freight load factor and passenger seat factor, along with the expected frequency of services to and from Orana, a reasonable assessment about the minimum required level of freight and passenger demand can then be made.

Consideration of each key decision node presented in Figure 3-1 is outlined below.

3.1.1. Most Likely Route

Orana location

The largest airport in the Orana region is Dubbo airport, which is located 5km northwest of Dubbo on the Mitchell Highway. The airport currently supports direct services to Sydney, Brisbane, Melbourne (Essendon airport), Newcastle, Cobar and Broken Hill. The airlines that currently operate services to and from the airport are QantasLink, Jetgo, Regional Express (Rex), and FlyPelican. The airport services just over 200,000 passengers per year who primarily travel for business.

The airport has two runways with an asphalt surface. The main runway has a length of 1,700 metres and a width of 45 metres. Based on current pavement strength, the runway is restricted to aircraft of less than 8,000 kilograms and is not available for night operations. The remaining runway is 1,067m in length and is not typically used for regular passenger transport services.

The Master Plan for Dubbo airport indicates the potential for the airport to accept new, and in some cases larger, types of aircraft over the next 20 years, including Embraer 145, Boeing 717, Fokker 100, Boeing 737-800 and Airbus A320 aircraft (with the latter two aircraft viable from 2031 onwards).

The *Dubbo City Regional Airport Runway Extension Investigation* details the need for a runway extension to cater for the Boeing 737-800 and Airbus A320 to 2,350 metres, as well as pavement strengthening, at a capital cost of approximately $29 million (and potentially up to $55 million to enable aircraft to operate at maximum payload capacity). In its current form, however, Dubbo airport is incapable of handling large international services. There is also no dedicated handling or cold storage facilities for fresh produce.

Potential destinations

Generally, international air freight will consist of products that are:

- high value added
- low weight and volume
- perishable
- urgent.

Examples of goods that are well suited to freight by air include mobile phones and computer hardware, pharmaceutical products, precious metals and gemstones, newspapers and parcels, critical spare parts and materials and fresh, perishable produce.

Generally, the content of Australia's inbound air freight is significantly different to the content of Australia's outbound air freight, reflecting Australia's overall import and export trade mix. Indeed, most of Australia's key exports are bulk items that cannot be feasibly transported by air, such as iron ore, coal and bulk agricultural commodities.

Given potential demand for Orana's agricultural products, Urbis has considered a range of foreign destination airports located in, or nearby, China for the purposes of our preliminary analysis.

The distance between Dubbo airport and six identified key airports in Asia is outlined in Table 3-1. These distances place limitations on the type of aircraft that can be used to operate services between Dubbo and these destinations in North East Asia.

Table 3-1 – Flight Distances from Dubbo

Destination	Flight Distance (Km)
Beijing	8,657
Shanghai	7,583
Hong Kong	7,072
Taiwan	6,974
Kuala Lumpur	6,274
Singapore	5,983

While routes such as Dubbo to Beijing and Dubbo to Shanghai take potential products from the Orana region directly into densely populated areas with strong per capita income growth in China, the air trip is relatively long and bears significant fuel costs. The likely best option is to take the products by air into Hong Kong (the shortest air distance with a land connection to mainland China) and then truck the products by land up through the South of China and then spread them across the major Chinese cities. The product can also be sold into Hong Kong directly, which has a population of around seven million with a relatively high income per capita.

The most feasible route for Dubbo international services is therefore likely to be Dubbo to Hong Kong.

3.1.2. Dedicated Freighter or Belly Freight?

Passenger aircraft can transport air freight at a significantly lower operational cost than dedicated freighter aircraft. This is because a passenger aircraft can share the 'fixed cost' of flying a commercial aircraft across more revenue-generating activity drivers than a dedicated freighter aircraft.

80% of freight passing through Sydney Airport – Australia's most significant air freight port – is carried in the holds of passenger aircraft.

The key costs of flying a passenger aircraft are:

- fuel costs
- the wages and expenses of the technical and cabin crew
- the capital costs of the aircraft, including depreciation costs, operating lease premiums and borrowing costs
- aircraft maintenance costs (including station engineering costs and major maintenance checks)
- route navigation costs, including fly-over costs in the case of international jurisdictions
- airport charges and terminal navigation costs
- ground handling costs, including passengers, passenger baggage and freight handling
- passenger costs including customer reservation system costs, meals, inflight entertainment systems, marketing and advertising costs and passenger commissions
- non-operational staff costs and other overheads.

Many of the above costs of operating a passenger aircraft are fixed, irrespective of the volume or weight of freight that is loaded into the belly of the aircraft. The only costs that materially increase in response to added belly freight of a passenger aircraft are:

- **Fuel costs:** adding more freight to the aircraft adds to the weight of the aircraft which in turn adds to fuel burn
- **Freight handling costs:** freight must be taken from a storage/holding area, loaded into containers or onto pallets, and then fixed into position in the belly of the aircraft – these are costs that are directly related to the volume of freight activity.

As a proportion of total cost of a passenger airline that is carrying belly freight, the costs directly attributable to freight are very small – in the order of 5% to 10% of total cost. The vast majority of the costs of the passenger airline are invariant to the volume of belly freight that is loaded onto the aircraft, as such these costs can be spread over not only revenue generating passenger activity on the aircraft but also over revenue generating freight activity.

Conversely, in the case of a dedicated freighter there are some costs that the airline avoids by being a dedicated freighter aircraft rather than a passenger aircraft. These include:

- cabin crew wages and expenses
- passenger related expenses
- fuel burn that is attributable to the weight of passengers and their baggage.

The overwhelming majority of costs borne by the dedicated freighter, however, are also borne by a passenger aircraft.

It follows that an airline operator can move air freight at a significantly lower unit cost by using the belly space of a passenger aircraft rather than by using a dedicated freighter. **In terms of decision making about services from Dubbo to Hong Kong, Urbis considers that it is far more realistic that an airline operator would choose to use a passenger aircraft rather than a dedicated freighter to service the Orana region.**

3.1.3. Which Airline and Aircraft?

The flight distance from Dubbo to Hong Kong places a restriction on the potential aircraft that can be used to operate on the route. Table 3-2 below presents the range that the most popular commercial aircraft can fly with maximum passenger and freight weight on board.

Table 3-2 – Aircraft range and take off requirements for aircraft used on Australian international routes

Aircraft	Maximum Range	Take-off Distance	Relevant Carriers
B767-300F	6,621 km	2,621 m	Qantas Freight
B777-200	9,700 km	2,440 m	Cathay Pacific, Air China
B777-300	11,100 km	3,230 m	Cathay Pacific
B777-300ER	13,600 km	3,050 m	Cathay Pacific, China Southern, China Eastern, Air China
A330-200	13,450 km	2,770 m	China Southern, China Eastern, Air China
A330-300	11,750 km	2,770 m	Cathay Pacific, China Southern, China Eastern, Air China, Qantas
A350-900	15,000 km	2,200 m	Singapore Airlines
B787-800	13,621 km	2,600 m	Singapore Airlines, China Southern
B787-900	14,140 km	2,900 m	China Eastern, Air China

Aircraft	Maximum Range	Take-off Distance	Relevant Carriers
A380-800	15,200 km	2,950 m	China Southern, Qantas
B747-400	13,450 km	3,018 m	Cathay Pacific, Air China
B747-400F	8,230 km	3,520 m	Qantas Freight, Cathay Pacific

Source: Urbis, Dr Tony Webber

As outlined above, **the Qantas Freight Boeing 767-300F dedicated freighter aircraft does not have the required range to meet the Dubbo to Honk Kong route** (or any other mainland China destination).

The carriers that are most likely to operate the Dubbo to Hon Kong route are Qantas, Cathay Pacific, China Eastern, China Southern and Air China.[9] The aircraft these carriers are likely to choose to operate on the route are those with the smallest possible seat count and freight capacity but can make the range of the city pair, since this minimises the risk of excess supply on a route that is characterised by uncertain passenger and freight demand.

For each of the above carriers, the most likely aircraft to be operated that can make a range of approximately 7,000 km is **the Airbus A330-300** (Cathay Pacific, Qantas) or **Airbus A330-200** (all other carriers). The typical freight haulage capacity for the A330-300 is 46 tonnes, and around 35 tonnes for the A330-200.

3.1.4. Required Freight Load Factors

A high-level analysis of actual freight load factors for a range of airlines in Asia has been undertaken to provide insight into the freight load factors required for commercially viable transport of air freight between Dubbo and Hong Kong.

Airline freight load factors were taken from aviation data provider Airline Intelligence and research for the Asian airlines that are most likely to consider operating services to and from Orana. Qantas and Virgin Australia do not provide information about freight operation capacity, nor does BITRE, so it is not possible to obtain freight load factor information for Australian-domiciled airlines and for the broader Australian market.

The midpoint of average freight load factors achieved by Cathay Pacific, Singapore Airlines, China Eastern, China Southern, Air China is around 60%. This is consistent with the breakeven freight load factor of 62.5% that is externally reported by Singapore airlines.

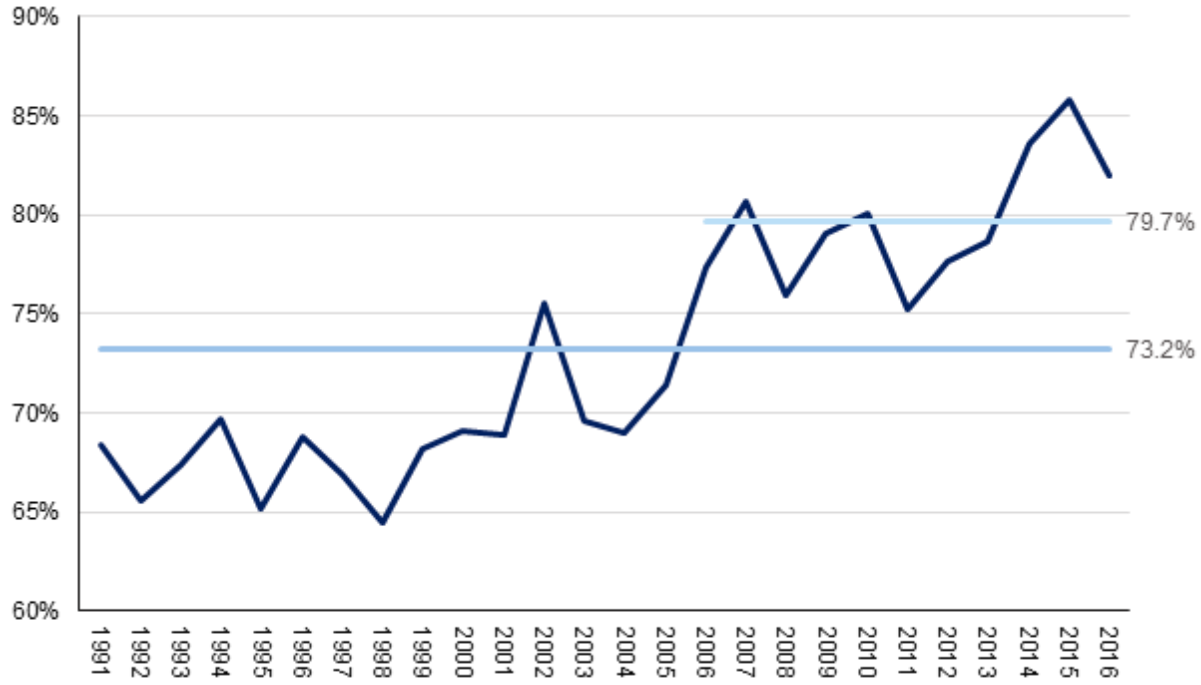
Urbis, therefore, considers an average freight load factor of 60% is required for an international airline to commence flying services to Orana.

3.1.5. Required Passenger Seat Factors

A time series of the passenger seat factor (the number of seat sales required to break even) for services between Australia and mainland China and Hong Kong is presented in Figure 3-2 below. The average seat factor over the past 25 years is 73.2%, but has trended higher more recently in response to significant increases in fuel costs over the ten years to 2014. The average seat factor of 80% over the past decade is consistent with the current level of observed airline target seat factors.

[9] Now that Virgin Australia has an affiliation with the Hainan and Nanshan Groups, both Chinese companies, there may also be some interest from Virgin Australia. Given the very weak exposure that these two company Groups have to Australian international aviation it is unlikely in the short to medium term that this will be the case.

Figure 3-2 – Passenger seat factor for the China and Hong Kong aviation market in Australia



Source: BITRE

3.1.6. Minimum Required Demand

Based on the above analysis, Urbis has estimated the minimum passenger and freight demand required to establish an international airline route between Dubbo and Hong Kong (China). For the route to meet passenger demands and be economic, it would typically have to operate a minimum of three times per week.

The estimated minimum passenger and freight demand requirements for three or more flights are shown in Table 3-3 below.

Table 3-3 – Annual international passenger movements and freight tonnage required for Orana

	A330-200*		A330-300**	
Services per week	**Passenger movements**	**Freight (T)**	**Passenger movements**	**Freight (T)**
3	54,413 - 59,155	6,814	62,650 - 74,131	8,592
4	72,550 - 78,874	9,085	83,533 - 98,842	11,457
5	90,688 - 98,592	11,357	104,416 - 123,552	14,321
6	108,826 - 118,310	13,628	125,299 - 148,262	17,185
7	126,963 - 138,029	15,900	146,182 - 172,973	20,049

** China Southern, China Eastern and Air China; **Qantas and Cathay Pacific*

Source: Urbis, Dr Tony Webber

The establishment of a thrice weekly international service from Dubbo to Hong Kong is estimated to require between 54,000 and 74,000 annual passenger movements[10] and between 6,800 and 8,600 annual freight tonnes moved.

The minimum demand requirements increase to between 137,000 and 173,000 annual passenger movements and 15,900 and 20,000 annual freight tonnes for a daily service.

3.2. ABILITY TO MEET MINIMUM REQUIRED DEMAND

In this section we analyse the possibility that the demand for Orana international services could conceivably meet the minimum demand requirements for a thrice weekly service of between 54,000 and 74,000 passenger movements per annum.

Tourism Research Australia (TRA) collects inbound tourism data for the Orana region[11]. The aggregation of international visitors to Orana over the period from 2006 to 2015 is presented in Figure 3-3 below.

Figure 3-3 – Estimated international visitors to Orana

Source: Tourism Research Australia

In 2015, it is estimated that just over 15,000 international visitors came to Orana region, representing around 30,000 air passenger movements. This is 18% below a peak of almost 18,400 in 2009. However, TRA data indicates that only around 16%, or 4,800, of these passenger movements are estimated to be attributable to residents who reside in Asia travelling to Orana.

Residents of the Orana area also travel overseas. Rather than travelling into Brisbane and Sydney and catching a flight overseas they may have the opportunity to take a direct flight from an airport in the Orana region.

Figure 3-4 below outlines the estimated number of residents of the Orana region who have travelled overseas by aggregating resident outbound travel over the Orana region. An estimated 10,000 trips were taken overseas by the 123,000 residents[12] in the Orana region, representing 20,000 passenger movements. TRA data indicates that only 41%, or 8,200 passenger movements, of outbound travel by Orana residents are to Asia.

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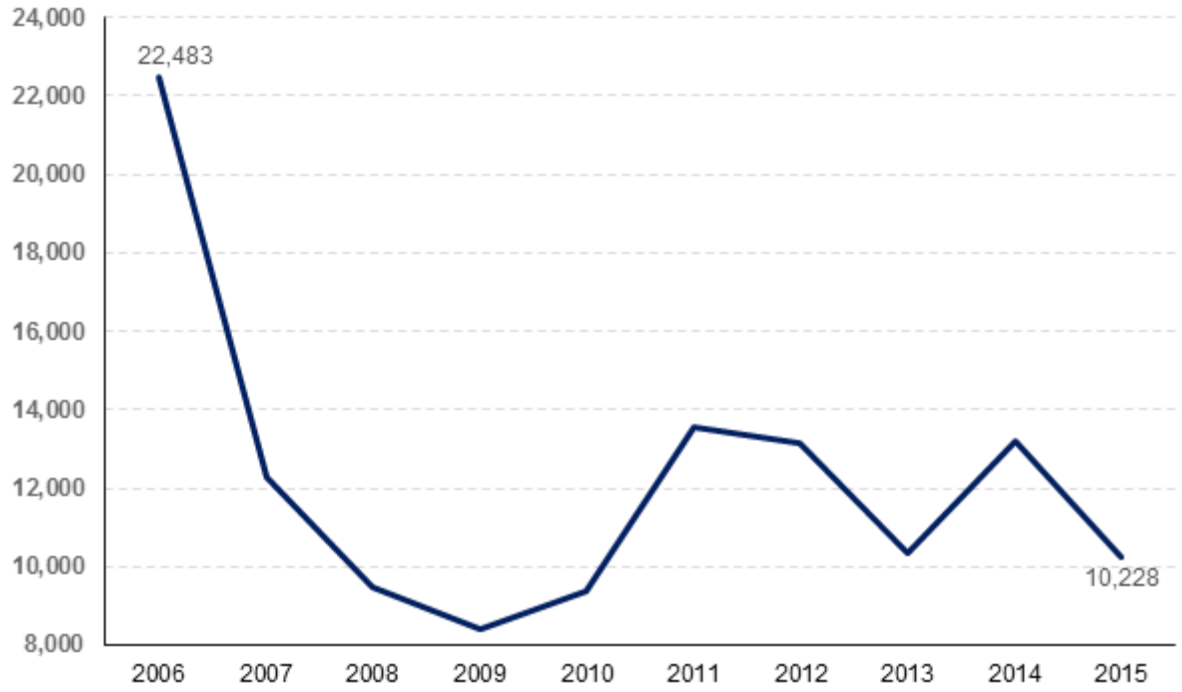
10 A resident of Orana travelling to Hong Kong and back represents two passenger movements.

11 Information is available for the following local government areas: Bourke, Brewarrina, Cobar, Coonamble, Dubbo, Gilgandra, Narromine, Walgett, Warren and Wellington.

12 REMPLAN, 2015, *Orana Economic Profile*, see: http://www.economicprofile.com.au/regionaldevelopmentorana/, accessed 11 August 2016

Figure 3-4 – Estimated residents of the Orana region travelling abroad



Source: Tourism Research Australia

Combined with the number of inbound visitors there are an estimated 50,000 international passenger movements into and out of Australia that are attributable to the Orana region, and approximately 20,000 passenger movements between Orana and Asia.

The minimum demand requirements for an airline that offers three services a week to the Orana region is at least 54,000 passenger movements. Based on current demand, a preliminary analysis indicates that there appears to be insufficient demand between Orana and Asia for a commercially viable international passenger air service to begin operations.

It is estimated that it will take approximately 34 years before passenger demand will to meet the minimum requirements of 54,000 passenger movements. [13]

[13] Using an annual passenger movement growth rate 3% consistent with the long run average growth rate for Dubbo Regional Airport domestic passenger movements.

4. CONSULTATIONS

Consultations undertaken for the regional Freight and Logistics study also included discussion of a potential regional air freight facility. Consultations were held with:

- Infrastructure NSW
- Infrastructure Australia
- Department of Infrastructure and Regional Development
- Dubbo Regional Airport
- Canberra Airport
- NSW RMS
- Fletcher's International Exports
- Alkane Resources
- Beef Innovation Australia (BIA)
- Southern Cross Printed Electronics
- ARTC
- Country Rail Network
- Port of Newcastle
- Ag N Vet
- Aurelia Metals
- Killara Station
- Dubbo Regional Livestock Market
- Austrade
- Dubbo Regional Council
- Cobar Shire
- Warren Shire
- Narromine Shire
- Walgett Shire

Overwhelmingly, those contacted believed that an air freight facility in Dubbo was not currently required and would therefore be unlikely to be viable at the present time, for the very reasons demonstrated in the previous chapter. That is, that there is insufficient freight and passenger demand to attract a commercial airline to offer regular either dedicated or combined passenger-freight services.

The only organisation to put forward a different view was BIA. Yet, despite BIA's belief that a facility would be viable for the beef industry alone, there is no interest from that sector in making such an investment.

5. INFRASTRUCTURE REQUIREMENTS AND FLYING CONSTRAINTS

FREIGHT TEMPORARY STORAGE AND LOADING FACILITIES

Goods produced in the Orana region that are required to be shipped to Asia by air would be packed by producers and transported by land transport to Dubbo airport. At the airport at a cargo terminal, the products would be placed in aluminium containers (unit load devices or ULD) or placed on top of airline-suitable pallets. In the case of some products (such as chilled or frozen beef), the ULD would need to be temperature controlled in order to preserve the 'cool logistics chain'. The ULD devices would sit in waiting at a temporary freight loading facility at the airport in preparation for loading onto aircraft.

The airport would therefore need to spend a considerable amount of money on a freight facility or cargo terminal at the airport. The freight facility would require storage areas for ULDs and pallets, and forklift machinery and equipment to store and load ULDs and pallets onto aircraft. The facility would also require IT and communications equipment to accurately record the movement of freight and to communicate the weight and positioning of the freight that is being loaded onto passenger aircraft, which is critical information for the pilots in determining the amount of fuel that is required for the journey, the thrust that is used at take-off, ascent and descent, and the braking power necessary at landing.

The cargo terminal would need to liaise with Australian Customs and Border Protection services. This would usually consist of a series of reports that are typically sent electronically to Customs and Border Protection. The cargo terminal at Dubbo airport would therefore need to have Australian Customs and Border Protection services requirements in mind when building the terminal.

BILATERAL AIR RIGHTS

The Australian Government negotiates with foreign Governments on the conditions that determine whether Australian airlines will be permitted to fly to particular countries and the ability of foreign airlines to fly to Australia. These conditions are often referred to as bilateral air rights. They are referred to as **bilateral** air rights because the Australian Government must negotiate a set of air rights with each individual foreign Government. The air rights are negotiated for the aggregate of airlines that are domiciled in each country. The relevant Government then allocates rights to individual airlines. For example, suppose the Australian Government negotiated with Fiji that Australian airlines can fly up to 30 services per week to Fiji. The Australian Government must then allocate these 30 services per week to Australian airlines that show an interest in flying to Fiji, such as Qantas mainline, Jetstar, Virgin Australia and Tiger Australia.

The bilateral air rights that Government negotiate usually set out:

- the number of seats that can be carried between the two countries, and/or the frequency of services between the two countries;
- the routes that airlines can fly, including the cities that can be served within, between and beyond the two countries.

In the case of Orana, one would need to consider whether there is any capacity within the current air rights negotiations for Australian airlines to fly from an airport within the Orana area to an overseas port, or for a foreign airline to make the same flight. Given that any airport located in the Orana region is designated as a regional airport for the purpose of air rights negotiations one would expect that any constraints imposed on flights involving Orana will be on the foreign side of the bilateral negotiations since the likely foreign destination airport will be a relatively large airport in Asia, such as Shanghai, Beijing, or Hong Kong.

SAFETY INFRASTRUCTURE

According to the Civil Aviation Safety Authority (CASA) and Air Services Australia rules and regulations, if an airport grows beyond certain critical levels it may be subject to a change in aerodrome classification. When an aerodrome's classification changes this in turn requires an investment in infrastructure that reduces the

risk of a safety incident. It also requires an investment in infrastructure that increases the capability of the aerodrome to render assistance and reduce the impact on life and property if a safety incident is realised.[14]

According to the Australian Airspace Policy Statement (AAPS), the thresholds presented in Table 5-1 below would need to be met for an aerodrome to change classification.

Table 5-1 Aerodrome Classification and Airspace Criteria Thresholds

	Class B	Class C	Class D
Service Provided	**Air Traffic Control**		
Total Annual Aircraft Movements	**750,000**	**400,000**	**80,000**
Total Annual PTO* Aircraft Movements	**250,000**	**30,000**	**15,000**
Total Annual PTO Passengers	**25m**	**1m**	**350,000**

Note: PTO is passenger transport operations

Source: AAPS.

If Dubbo airport expands to cater for large aircraft and significantly more passenger and freight movements then this may require a shift from the current aerodrome classification of E to D, which will add to the fixed costs of running the airport. Eventually such fixed costs will make their way into higher costs of travel for passengers, which in turn will weaken the business case for an airline that is deciding whether to begin operations at the airport.

Investments that may need to be made include that associated with Aerodrome Rescue and Fire Fighting (ARFF) services. For example, a 'level 1' degree of ARFF services is required if more than 350,000 passengers pass through the airport. Investments may also be necessary to improve terminal navigation and other services, including investments in an air traffic control tower or a modified tower.

SECURITY INFRASTRUCTURE

If international services are to begin operations at Dubbo airport this will require Dubbo airport to invest in infrastructure that will accommodate the Australian Border Force. The infrastructure requirements will include:

- Customs desks and officers, or e-passport verification kiosks and technology (passport and inbound passenger card checks);
- Security x-ray machines for hand baggage security assessments after passengers have passed customs;
- Quarantine desks, infrastructure and officers, including sniffer dogs and handlers, officers to investigate incidences in which passengers have checked yes to any of the answers on the inbound passenger card, offices to conduct frisk searches, x-ray and drug testing machines and infrastructure for freight and passenger baggage, specialist officers to conduct biosecurity checks; and
- Accommodation for the Australian Federal Police.

The terminal will also need to be partitioned into domestic and international passengers since it is not a requirement of domestic passengers to pass through customs and be subject to quarantine requirements. This is likely to require an extensive re-configuration and expansion of the existing terminal facilities.

[14] Aerodromes are usually classified as A through to G. Class A aerodromes have the highest air traffic control and safety infrastructure requirements while class G aerodromes have the lowest.

6. CONCLUSIONS

Based on current production and end-market demand, Urbis' analysis indicates that there is currently insufficient demand between Orana and Asia for a commercially viable international passenger and belly freight air service to commence operations.

Further, for many regional producers that currently use, or are likely consider using, air freight, alternative options include:

- existing air freight services available within a few hours by road or rail
- sea freight.

We note that movement in sea shipment costs relative to air shipment costs can cause substitution between the two modes of freight movement. Current sea freight costs are low by historical standards due to significant oversupply, notwithstanding record levels of demolition of older ships in 2015-16.

It is reasonable to assume that airlines with a significant market share in the freight market and a mature presence in the passenger market are the most likely to consider building a business case for starting operations in the Orana market. However, an airline with a relatively weak presence in the Australian air freight market and the wider passenger market is more likely to consider expanding services on one of the more traditional, primary Australian routes (Sydney, Melbourne, Brisbane, Perth, Adelaide) before embarking on a new route, given the relative demand risks associated with existing and new routes.

Airlines most likely to participate in a new route from Dubbo will need to see evidence of strong passenger and freight demand. In the case of China and Hong Kong services, airlines interested in starting services are likely to be Cathay Pacific, China Southern, China Eastern and Air China. However, such interest is highly unlikely at the current combined levels of passenger and freight demand.

The significant regulatory requirements for an international airport at Dubbo, including quarantine and border force provisions, must also be considered. These would add considerably to operational costs and therefore fees charged.

If government – at any level – were to fund the required infrastructure (upgrades to runways and storage and handling), they would receive no return on investment for the foreseeable future.

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