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Access Economics

Connecting Australia

The economic and social contribution of Australia's airports

Australian Airports Association 2018

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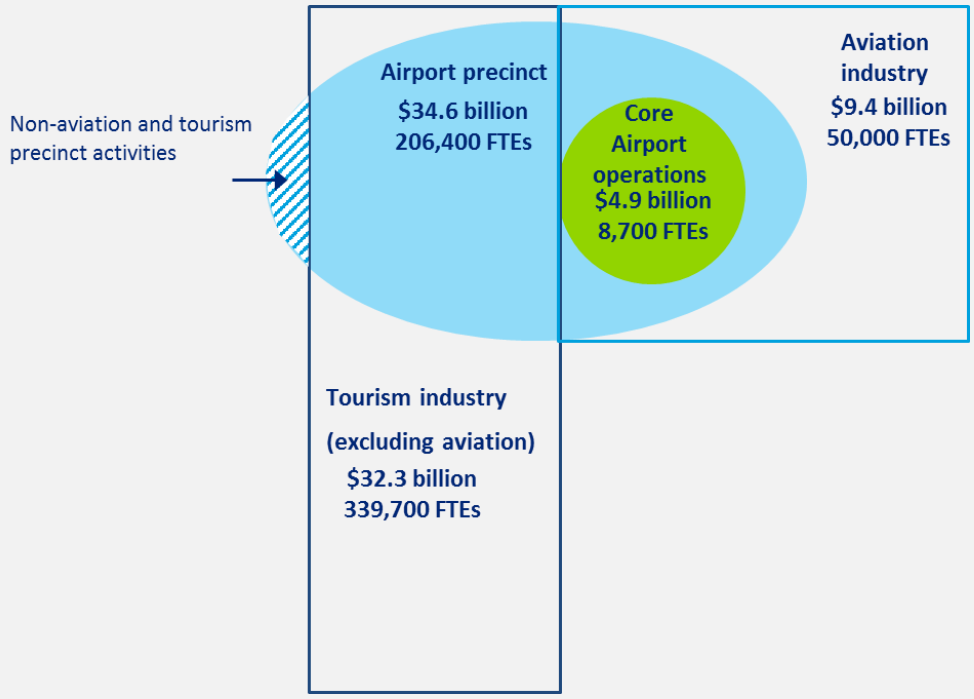
Glossary

Acronym	Full name
AAA	Australian Airports Association
AAPA	Australian Airline Pilot Academy
ABS	Australian Bureau of Statistics
ACCC	Australian Consumer and Competition Commission
A-CDM	Airport Collaborative Decision Making
BITRE	Bureau of Infrastructure, Transport and Regional Economics
CPI-X	Consumer Price Index
DAE	Deloitte Access Economics
FIFO	Fly-in Fly-out
FTE	Full Time Equivalent
GDP	Gross Domestic Product
GOS	Gross Operating Surplus
IATA	International Air Transport Association
RPT	Regular Public Transport

Executive summary

Key findings at a glance



- In 2016-17, the Australian airport sector facilitated almost **118 million domestic passenger movements and almost 39 million international passenger movements.** Over the last five years to 2016-17, total passenger movements grew by 14%. Domestic passenger movements grew by 9%, while international passenger movements grew by 34%.
- This growth has seen the **total value added of airport core activities increase to $4.9 billion,** up from **$3.2 billion** in 2011.
- The sector is currently supporting employment of over **8,700 Full Time Equivalent (FTE) jobs**.
- Outside the core activities of airports themselves, **airports support a much wider ambit of economic activity within their precincts** including retail, office spaces, logistics and broader aviation sector activity.
- Combining both core and precinct, **the value added of airports was estimated at $34.6 billion, or around 2% of Australia's GDP.** The contribution of airports and their broader precinct to employment (both direct and indirect) was estimated to be **206,400 FTEs.** This is significantly larger than the aviation sector itself reflecting the degree of non-aeronautical activities undertaken on airport precincts including: retail and tourism services; airline operations, general aviation and aircraft maintenance; transport; activities by government agencies and broader non-aeronautical commercial activities.

- In contrast to the results for core airport activity, the precinct level results in this report are not directly comparable to those in the previous 2012 report. The estimate of precinct level activity developed for this report has been based on an industry survey of precinct level airport activity and a number of recent studies of precinct activity at major airports. This new information has allowed Deloitte Access Economics to build on the exploratory analysis undertaken in the last report and develop a more robust measure of precinct level activity for this report.
- The airport sector also has a vital role in transporting time critical goods within Australia and between Australia and the rest of the world. In 2016-17, the airport sector supported the transportation of 450,000 cargo tonnes domestically and over a million tonnes internationally. The majority of the goods were low density, high value and time critical, such as eCommerce parcels, perishable food, and medical items.
- While air freight only accounted for 0.1% of freight transported between Australia and the rest of the world by volume, it accounted for **21% of freight by value** (BITRE 2014).

- The airport sector also plays an important role in facilitating international tourist arrivals. **In 2016-17, the aviation sector facilitated 8 million international tourist trips** to Australia and $27 billion of international tourism expenditure.
- The international tourism activity facilitated by the Australian airport sector contributed **$21.6 billion in total value added**, equivalent to 1.3% of the national economy and **supported 218,500 jobs**, equivalent to 1.8% of the total employment in Australia.
- The airport sector also plays an important role in supporting domestic tourism activity. Domestic tourism activity facilitated by the Australian airport sector was estimated to contribute **$10.6 billion in total value added** and **supported 121,200 jobs**.

- The Australian airport sector plays a defining role in connecting families, friends and communities, promoting tourism and trade and supporting essential and emergency services, such as the Royal Flying Doctor Service, providing aviation skills training and supporting community groups.

- The sector is incredibly diverse encompassing both large metropolitan airports such as Sydney, Melbourne, Brisbane, Perth and smaller regional and remote airports as well as a number of isolated landing strips. Regardless of size or location, all airports play a role in connecting individuals to essential services and connecting Australia to the world.
- The domestic and international economic outlook for the airport sector remains favourable with a slowed but positive growth outlook for major source countries and a lower Australian dollar helping to offset the winding down of the mining boom, although the impact of these broader macroeconomic trends will differ across the sector.

The Australian airport sector

The airport sector in Australia is highly diverse. It is characterised by around 155 airports which receive Regular Public Transport (RPT) services and more than 2000 smaller airfields and landing strips around the country.

The airports are classified by size and level of activity into five groups: major, major regional, regional, remote, and federally leased secondary/metro airports. Ten airports were classified as major airports: Sydney; Melbourne; Brisbane; Perth; Adelaide; Gold Coast; Cairns; Canberra; Hobart; and Darwin. A further 30 airports were classified as major regional airports, 79 as regional airports, 58 as remote and 6 as federally leased secondary/metro airports.

Currently, just under 25% of total passenger movements facilitated by the sector are international. The overall number of international passenger movements grew sharply by 34% over the last five years to reach 39 million passenger movements in 2016-17. International passenger movements count both arrivals and departures by the more than 8 million tourists who visit Australia each year as well as arrivals and departures by other visitors such as permanent migrants and arrivals and departures of Australian residents. By comparison, domestic passenger movements grew at a more moderate pace increasing by 9% over the same period to reach 118 million passenger movements.

The pace of growth across different airports has been far from uniform. A number of regional airports in Queensland and Western Australia saw strong growth as a consequence of the mining construction boom as they met the demands of the Fly-in Fly-out (FIFO) workforce but have since experienced a decline in demand as the mining construction boom has begun to wind down. Meanwhile, other regional areas have benefitted from an increase in both domestic and international leisure travel.

The spread of international visitor movements has also progressively broadened. Thirty years ago more than 53% of international passenger movements to Australia occurred through Sydney Airport whereas today, only 40% do. Airports such as Adelaide and the Gold Coast have significantly grown their international market share over recent years, providing a wider choice of destinations for international tourists.

In responding to the growth in demand for air travel, airports have committed to record levels of capital investment in recent years and invested in a range of innovations to improve the customer experience. The major airports alone invested a total of $6.6 billion over the last five years and $11.5 billion over the last decade. This investment has been largely influenced by the need to accommodate the growth in demand and the development of new larger aircraft

Contribution of airport core activities

Airports typically play a large economic and strategic role in connecting individuals, facilitating economic activity and providing critical services for remote communities. Fundamentally, they contain an operational ‘core’, which comprises the central operation of an airport facility, including its runway infrastructure, terminals and critical aviation safety and security. This core activity is a subset of the broader activity that may occur on the airport precinct which may include airline and charter operations, retail and tourism services and landside transport and logistics.

Drawing on data from an industry survey and financial reports, the economic contribution analysis estimated the direct and indirect value added of the Australian airport sector. The results in Table i indicate that airport core activities contributed $4.9 billion in value added to the Australian economy in 2016-17, including $3.8 billion in direct value added and $1.1 billion in indirect value added. The vast majority was associated with major airports reflecting their relatively large share of the sector.

Table i Economic contribution of airport core activities, 2016-17

	Direct value added ($m)	Indirect value added ($m)	Total value added ($m)
Major airports	3,462	949	4,411
Major regional/ Federally leased airports	219	83	303
Regional airports	96	48	144
Remote airports	8	22	30
Total	**3,786**	**1,102**	**4,888**

Source: Deloitte Access Economics
Note: Numbers may not add to totals as value added is rounded to the nearest million.

Table ii shows the contribution of airport core activities to employment. Although the sector is relatively capital intensive, it supported the employment of over 2,500 FTEs directly and over 8,700 FTEs in total. Direct employment here captures those who are employed by the airport itself (e.g. Sydney Airport Corporation Limited) and indirect employment captures employment for those companies that supply the organisations that run airports (e.g. Sydney Airport Corporation Limited). For example, employment in companies providing office supplies or cleaning services to Sydney Airport Corporation Limited would be captured as indirect employment for airport core activities. Employees of other organisations that may be present on the airport precinct e.g. the Australian Border Force, retail outlets and Airservices Australia are captured under direct employment at the precinct shown in Table iv below.

Table ii Contribution of airport core activities to employment (FTEs), 2016-17

	Direct	Indirect	Total
Major airports	1,897	5,200	7,097
Major regional/Federally leased airports	441	503	945
Regional airports	171	314	485
Remote airports	51	144	195
Total	**2,560**	**6,162**	**8,722**

Source: Deloitte Access Economics
Note: Numbers may not add to totals due to rounding errors.

Contribution of the broader airport precinct

In addition to their core activities, airports support a much larger range of activity through other businesses operating within their precinct. These include all activities that are not operated by airports directly such as airlines, retail, immigration and customs and companies operating on the broader precinct e.g. rental car companies. Given the large number of businesses that may operate on a given airport precinct, estimating the contribution of this broader footprint is a more challenging exercise.

Deloitte Access Economics has sought to estimate the broader footprint by relying on a range of questions on precinct level employment from a survey of airports as well as previous studies of the economic precinct of major airports. Nonetheless, given the wide range of activities occurring on airport precincts, these estimates are necessarily less precise than those for core airport activities (in the case of the latter, survey results can be supplemented and cross-checked against public information such as annual reports).

The precinct level results in this report should not be directly compared to those in the previous 2012 report to assess the growth of on-airport activity in the sector. The estimates contained in the 2012 report were very much exploratory in nature. This report has been able to draw on a range of recently published studies of precinct level activities at major airports and also information on precinct activity from the survey which was not available in the 2012 study to estimate the size of precinct level activity.

Overall, as illustrated by Table iii and Table iv, precinct level activities outside the core activities of airports were estimated to contribute $29.7 billion in total value added to Australia. Some of the indirect value added associated with the precinct would otherwise be captured by the economic contribution of core airport operations (e.g. rental payments by retailers). These transfers were excluded from estimates of the economic contribution of the airport precinct to avoid double-counting activity in the core and broader precinct.

Table iii Economic contribution of airport precinct activities, 2016-17

	Direct value added ($m)	Indirect value added ($m)	Total value added ($m)
Major airports	15,388	12,500	27,888
Major regional/Federally leased airports	943	424	1,366
Regional airports	318	124	443
Remote airports	25	22	47
Total	**16,673**	**13,070**	**29,744**

Source: Deloitte Access Economics
Note: Numbers may not add to totals as value added is rounded to the nearest million.

Similarly, economic activity on the precinct was estimated to support the employment of over 197,600 FTEs, as shown in Table iv.

Table iv Contribution of airport precinct activities to employment (FTEs), 2016-17

	Direct	Indirect	Total
Major airports	97,241	86,270	183,511
Major regional/Federally leased airports	6,092	4,186	10,279
Regional airports	2,409	1,146	3,555
Remote airports	186	159	345
Total	**105,929**	**91,761**	**197,690**

Source: Deloitte Access Economics
Note: Numbers may not add to totals due to rounding errors.

Combining both airport core activities and wider precinct activities, total industry value added was estimated to be $34.6 billion, or 2.0% of Australia's GDP. The contribution of airports and their broader precincts to employment (both direct and indirect) was estimated to be over 206,400 FTEs.

Contribution of tourism facilitated by the Australian airport sector

The Australian airport sector facilitated 8 million international trips and $27 billion in international tourism expenditure in Australia as well as supporting domestic travel by Australians.

The role of airports in facilitating international tourism contributed $12 billion in direct value added and supported 146,000 jobs in Australia. Combined with the indirect contribution to upstream suppliers, it is estimated that international tourism facilitated by the airport sector contributed $21.6 billion to the national Gross Domestic Product (GDP), and supported 218,500 jobs in Australia. These contributions were equivalent to 1.3% of the GDP and 1.8% of total jobs in Australia.

The airport sector also plays an important role in supporting domestic tourism activity. Domestic tourism activity facilitated by the Australian airport sector was estimated to contribute $10.6 billion in total value added and support 121,200 jobs. These contributions were equivalent to 0.6% of GDP and 1.0% of national employment.

Combining both domestic and international tourism, the Australia airport sector facilitated $32.2 billion in tourism activity nationwide.

1 Introduction

The Australian Airports Association has engaged Deloitte Access Economics to undertake an update of the economic and social contribution study of the airport industry that was previously undertaken in 2012. The primary aim of this study is to provide the Australian Airports Association with an up to date picture of the economic and social contribution that the airport sector makes to the Australian economy and community.

The study examines the significant role of Australia's network of airports in connecting communities, facilitating economic activities, and promoting social inclusion. It highlights the range of commercial activities that are typically supported by the presence and operation of airports.

The study is intended to stand as an information resource for industry, stakeholders and Government on the economics of airports and the nature of their economic and social contribution to Australia. In this regard, building on the quantitative findings, the study contains views from industry participants and discusses some strategic implications for the future of Australia's airport industry.

1.1 Our approach

The study has drawn on a range of sources to capture the economic contribution of airports and the broader benefits of airports on their communities. This has included fielding a detailed Economic Impact Survey to all airports in Australia as part of this study, drawing on data from airport financial reports and reviewing previous studies of the economic contribution of larger airports.

This data has been used to estimate the contribution of airports to value added and employment with the economic contribution analysis drawing on the *Australian National Accounts: Input-Output Tables, 2014-15* published by the Australian Bureau of Statistics (ABS), the *2015-16 State Tourism Satellite Account* published by Tourism Research Australia, and the Deloitte Access Economics Regional Input-Output Model.

In addition, this report has drawn on a range of sources to identify the level of investment in the airport sector, the operation of the regulatory environment, the broader social contribution made by airports and the strategic environment in which they operate. The key themes of the report are illustrated by a range of case studies of individual airports.

There are four main components of this study:

- **The economic contribution of airports' core operations**: The core contribution of airports focuses on the economic footprint of the airports themselves and the revenue they generate from their operations including leasing retail and terminal space, and revenue from car parks. For large airports, the analysis has been based on publicly available financial data, data from the survey and previous reports on airport activity by Deloitte Access Economics. For airports without survey data and whose data are not available publicly, contributions have been estimated based on passenger and aircraft movements.
- **The economic contribution of broader activity occurring at airport precincts:** In addition to the contribution from the airport's core operations, there is a substantial portion of the contribution that is made through other businesses located within airport precincts such as: retail, logistics, aircraft repair and maintenance and business parks. The analysis in this section is supported by the Economic Impact Survey conducted by Deloitte Access Economics, which included questions on airport profiles, financial information, and scale of on precinct activity.

- **Regional case studies:** The report includes a range of case studies to illustrate the significance of airports to their regions and their commitment in supporting the development of their regions.
- **Contributions of tourism activity facilitated by the airport sector:** With the vast majority of international tourists arriving in Australia by air, the activities of the airport sector are instrumental to facilitating economic activity across Australia's international tourism industry. The role of airports in facilitating tourism has been captured by combining information from the Tourism Satellite Accounts with data on the proportion of tourists who enter Australia on cruise ships.

1.2 Structure of this report

The report is divided into four chapters:

- **Chapter 2: Australia's airports**— This chapter sets out the current profile of the nation's network of airports and identifies overarching trends that have driven the development of the sector, including market dynamics, investment by the sector, innovation and the approach to regulating the airport sector.
- **Chapter 3: Contribution to the economy** — This chapter measures the economic contribution of both airport core operations and broader precinct activities. It explores how airports underpin a spectrum of economic activities that in turn contribute to Australia's overall economic prosperity.
- **Chapter 4: Broader contribution to the economy** — This chapter discusses the broader contribution of airports to the economy through facilitating tourism, connecting communities and promoting social inclusion.
- **Chapter 5: Strategic implications** — This chapter outlines the future opportunities, risks and policy environment for Australia's airport sector. This includes a synthesis of issues raised by industry representatives that have been identified through the survey.

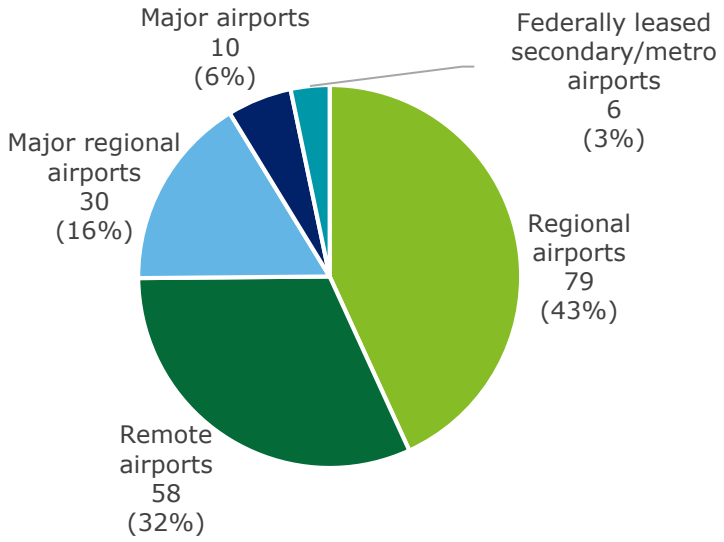
2 Australia's airports

This chapter sets out the current profile of the nation's network of airports and recent developments in the sector. The key role of airports in the economy is also highlighted, supported by a number of metrics and statistics around the structure, cost and revenue base of the industry.

2.1 A diverse sector

The airport sector in Australia is characterised by around 155 airports and more than 2000 smaller airfields and landing strips around the country. Among the 155 airports with RPT services, 75% of them are located in regional and remote areas. Overall activity is dominated by larger facilities and the 10 largest service about 140 million domestic and international passengers and comprise about 90% of the overall passenger traffic in 2016-17.

Chart 2.1: Classification of Australian airports, 2017



Source: Deloitte Access Economics

Note: A total of 183 airports are included here but not all currently have RPT services.

Australia's airports can also be grouped by ownership type where the major categories of airport ownership in Australia are:

- Privatised airports.
- Government (local/state) owned regional airports/aerodromes.
- Defence owned airports.
- Privately owned airstrips.

A list of airports leased under the Airports Act 1996 (Cth) is provided in Table 2.1. Some other privatised airports are privately owned, leased from the Queensland Government, local councils and the Defence department. The majority of regional airports are owned and operated by local or state governments. Much of this structure is attributable to the Aerodrome Local Ownership Plan (ALOP), which operated during 1985-1990, under which the Federal Government encouraged local ownership of airports.

Table 2.1: Privatised airports

State/Territory	Privatised airports (under long term Federal leases)
ACT	Canberra
NSW	Sydney, Bankstown, Camden
QLD	Brisbane, Gold Coast, Townsville, Archerfield, Mt. Isa
NT	Darwin, Alice Springs, Tennant Creek
VIC	Melbourne, Essendon, Moorabbin
TAS	Hobart, Launceston
SA	Adelaide, Parafield
WA	Perth, Jandakot

Source: BITRE 2015

2.2 Recent growth and industry trends

2.2.1 Passenger movements

The Australian airport sector has been supported by a strong growth in passenger movements in the past 10 years. Total passenger movements have increased by an average of 3% annually over the last decade, from 112 million in 2006-07 to 156 million in 2016-17. This strong growth has been driven by an increasing demand for both domestic and international air travel.

Supported by large and fast growing Asian economies, international passenger movements have increased considerably, from 22 million in 2006-07 to 39 million in 2016-17, an equivalent of 6% annually. At the same time, domestic passenger movements have increased by an average of 3% annually. While the growth rate in domestic travel has not been as high as in international travel, domestic travel accounted for 75% of total passenger movements in 2016-17.

While the trend in passenger movements have been positive in recent years, it has not always been the case historically. Chart 2.2 shows that there were some sizeable decreases in domestic passenger movements in 1989-90 and 2001-02 by 28% and 10% respectively. These were entirely the result of supply side shocks, the pilots' strike and the collapse of Ansett respectively, and the rapid recovery is evidence that there was no softening in the underlying demand for RPT services.

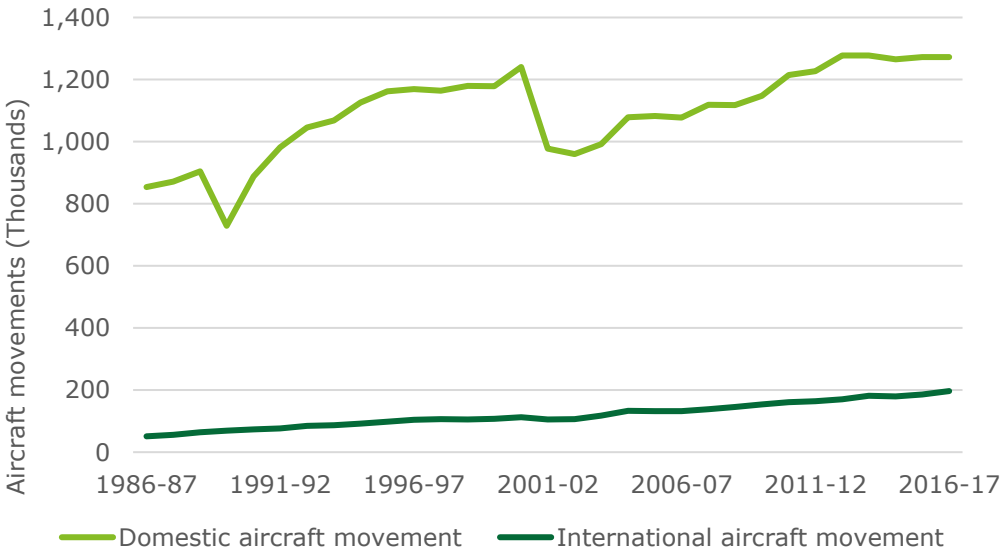
The growth of international passenger movements, while being less volatile, declined in 2001-02 and 2002-03 by 4% and 2% respectively. Despite some decreases in certain years, the overall number of passenger movements, domestically and internationally, has increased substantially over the last three decades, from 34 million passengers to 156 million passengers.

Chart 2.2: Passenger movements at Australian airports between 1986-87 and 2016-2017

Source: BITRE Airport Traffic Statistics, 2017

The trend in aircraft movements over the period has been consistent with the trends in passenger movement growth, although aircraft movements have grown at a slower rate due to a shift to larger aircraft and higher load factors. Domestic and international aircraft movements have had average annual growth rates of 2% and 5% per annum respectively between 1986-87 and 2016-17. Chart 2.3 presents the growth in aircraft movements over this period.

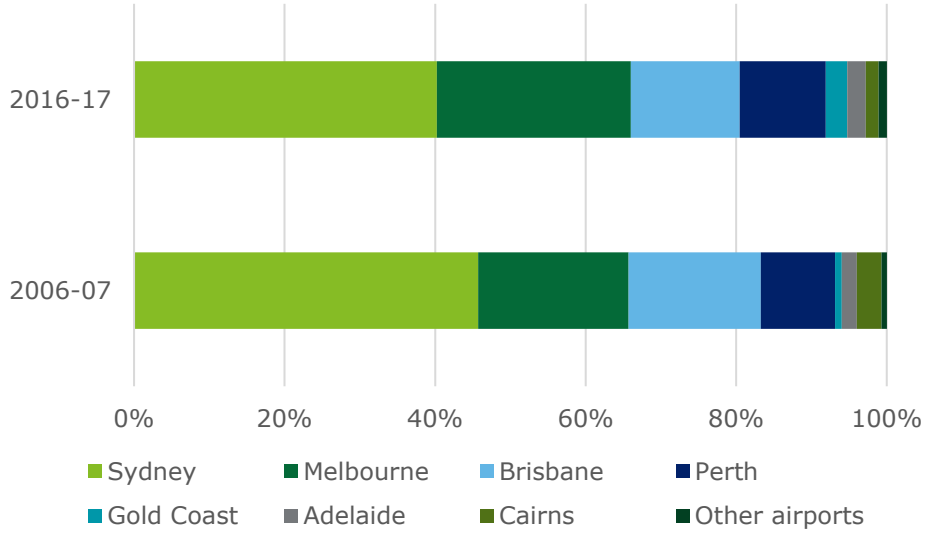
Chart 2.3: Aircraft movements at Australian airports, 1986-87 and 2016-2017



Source: BITRE Airport Traffic Statistics, 2017

The growth in passenger movements has not been evenly distributed across Australian airports. The majority of international air travel to and from Australia (99%, 38 million passengers) has been serviced by seven major airports, including Sydney, Melbourne, Brisbane, Perth, Gold Coast, Adelaide and Cairns. The majority of Australian airports, as a result, have not directly experienced the recent growth in international passengers, although these passengers may fly to other domestic airports subsequently.

Chart 2.4: Distribution of international passenger movements



Source: BITRE Airport Traffic Statistics, 2017

Nevertheless, there have been some changes in the relative importance among the top seven airports. The proportions of international passengers going through the Sydney and Brisbane airports have slightly decreased over the past 10 years, from 46% to 40% for Sydney airport and from 18% to 14% for Brisbane airport. Three decades ago, 53% of all international passenger movements occurred through Sydney airport. By comparison, the proportion of international passengers going through Melbourne airport has increased from 20% to 26% over the last decade. The Gold Coast and Adelaide airports, while being relatively small, now provide services to an increasing proportion of international travellers. Perth airport has a relatively high share of international passenger movements as a proportion of total movements with 36% of total movements in 2016-17 being international passenger movements, with only Sydney Airport having a higher proportion of international to total movements at 37%.

The following case study on Adelaide airport provides an example of the actions that are being taken to enhance international and domestic route development by smaller international airports. The recent opening of flights to Singapore and New Zealand from Canberra airport is another prominent example of route development by international airports.

Case study: Adelaide - International market expansion and route development

Adelaide Airport is Australia's fifth-largest domestic, and sixth-largest international airport. Its continued pursuit of new domestic and international markets and routes has earned it Travel + Leisure's 9th best international airport in the world in 2016.

In recent years, Adelaide Airport has actively invested in increasing the number of routes (domestic and international), available to passengers. Since 2016, three new international services have commenced operation out of Adelaide, operated by Qatar Airways, China Southern Airlines and Fiji Airways. On the domestic front, Jetstar has launched two new routes to Avalon and the Sunshine Coast.

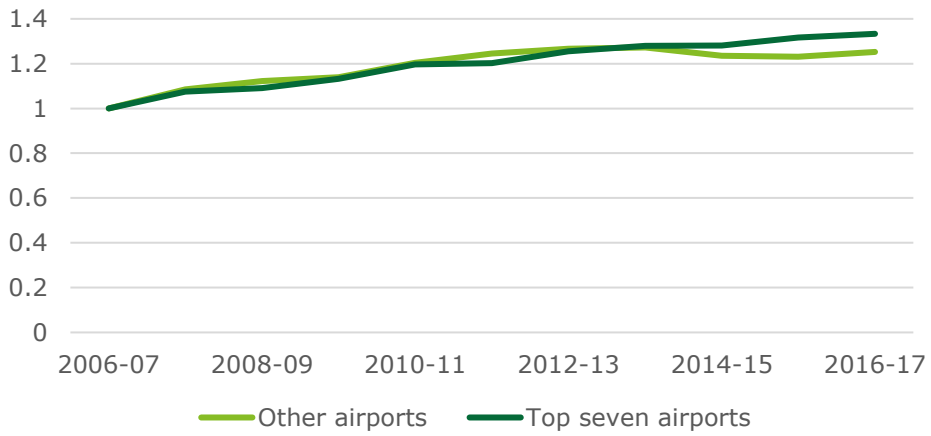
In addition to increasing the number of routes and locations serviced by the airport, the frequency of existing popular routes has been increased. In particular, Singapore Airlines seasonally increased their services from daily to a 10-a-week service in December 2016 and January 2017, and Cathay Pacific has recently added a fifth weekly year round service.

Most recently, on the domestic front, Qantas commenced Adelaide-Kangaroo Island flights in December 2017 and Adelaide Newcastle flights will commence in March 2018.

Source: Adelaide Airport

Australia's top seven airports were also responsible for 80% of domestic travel in 2016-17. Chart 2.5 shows that the top seven airports have experienced slightly stronger growth in domestic passengers than other airports over the last 10 years. An important cause of this slower growth has been the end of the construction phase of the resources boom. The impacts of this on regional airports are discussed in the following section.

Chart 2.5: Growth in domestic passengers (base year = 2006-07)



Source: BITRE Airport Traffic Statistics, 2017

2.2.2 The impacts of the mining sector on regional airports

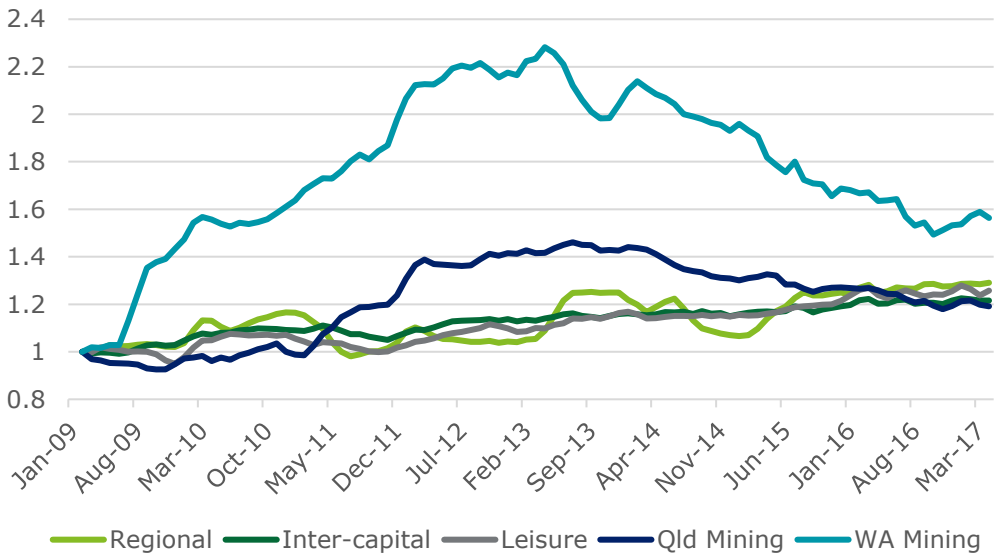
During the mining construction boom, many airlines expanded capacity to regional airports. However, the completion of a large number of major projects has seen a reduction in services for many regional airports.

As illustrated in Chart 2.6 below, mining routes for Queensland and Western Australia follow a similar pattern, with passenger activity falling after February 2013. Both the size of the rise and fall

in mining related aviation routes has been more pronounced in Western Australia than Queensland, reflecting the relative expansion and contraction of mining construction activity in that state and the heavier reliance on a FIFO workforce. Chart 2.7 shows that the decline in passenger movements has been particularly pronounced for Karratha, Mackay and Port Hedland.

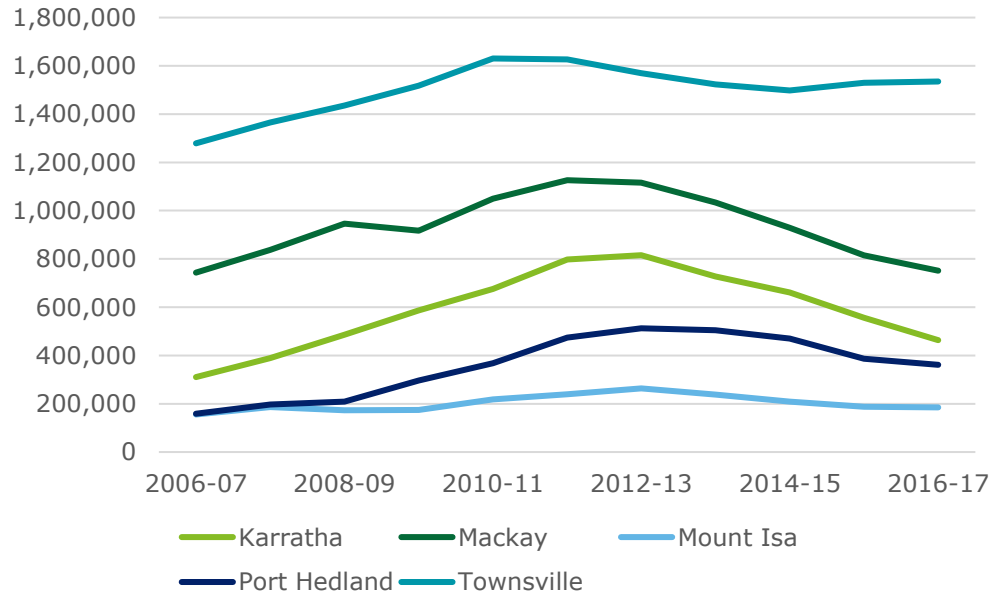
Overall, the adverse impacts of the decline of the mining sector construction, to a certain extent, have been offset by the strong growth in other types of travel, namely leisure travel and inter-capital travel. These types of travel have supported growth in the overall sector.

Chart 2.6: Domestic aviation passenger volume index by route type between 2009 and 2017



Source: BITRE, Deloitte Access Economics

Chart 2.7: Total passenger movements, selected regional airports in Queensland and WA, FY2009-FY2017



Source: BITRE, Deloitte Access Economics

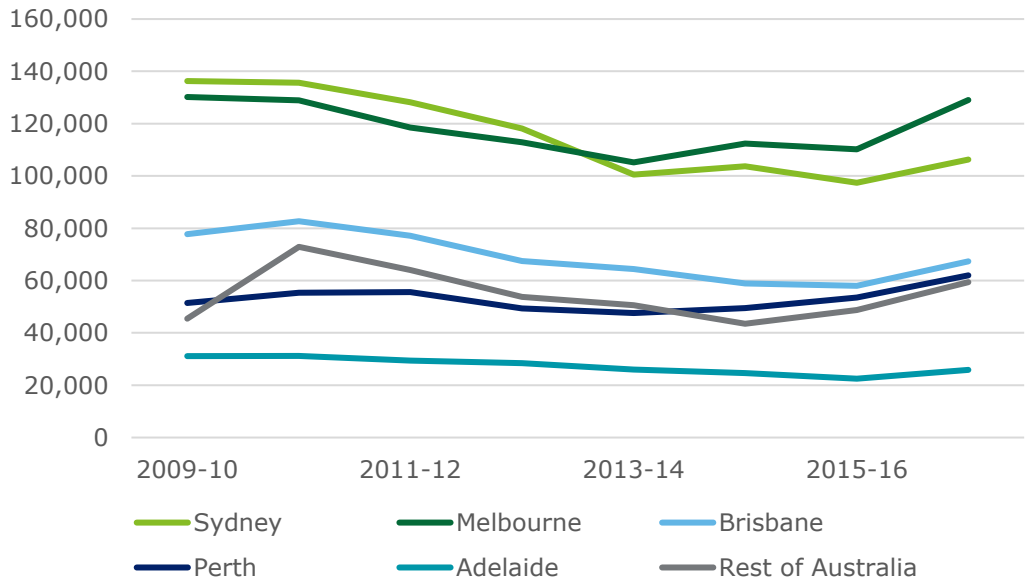
Many regional airports currently operate at a loss and depend heavily on local government subsidies. A submission by the Australian Airports Association to a review of regional airports by the Western Australian Parliament notes that close to 40% of Australian regional airports expect to run on an annual budget deficit over the next 10 years (Australian Airport Association, 2017).

2.2.3 Air freight

Due to great geographical distances between major cities of Australia and between Australia and the rest of the world, air freight has become increasingly important for transporting goods domestically and internationally. Goods transported by air are mostly low density, high value, and time critical commodities, such as eCommerce goods, seafood, fresh produce, jewellery and medical items. Although global air cargo only accounts for less than 1% of world trade shipments by volume, it makes up around 35% by value. The majority of air freight is carried in the belly of passenger planes.

Between 2009-10 and 2014-15, both major and regional airports experienced a gradual decline in domestic air freight in volume terms (tonnes of freight carried), with total freight volume declining from 472,400 tonnes in 2009-10 to 390,300 tonnes in 2015-16.[1] Nevertheless, domestic air freight picked up in 2016-17 with a 15% increase to 450,000 cargo tonnes. In the short to medium term, airline investment in larger aircraft, especially on popular routes, is expected to support the recovery of domestic air freight.

Chart 2.8: Domestic air freight arrivals and departure for the top five airports (tonnes)



Source: BITRE

Note: Airport cargo tonnes are the sum of cargo tonnes on arrivals and departures at each airport.

The volume of international air freight in terms of tonnes carried has increased by an average of 3% annually over the last decade, from 755,000 tonnes in 2006-07 to over 1 million tonnes in 2016-17. While carrying only 0.1% of Australia's international freight by weight, air freight makes up nearly 21% of freight by value (BITRE 2014). In 2011-12, airports facilitated over 750,000 tonnes of high-value and time sensitive freight, worth over $110 billion (BITRE, 2014).

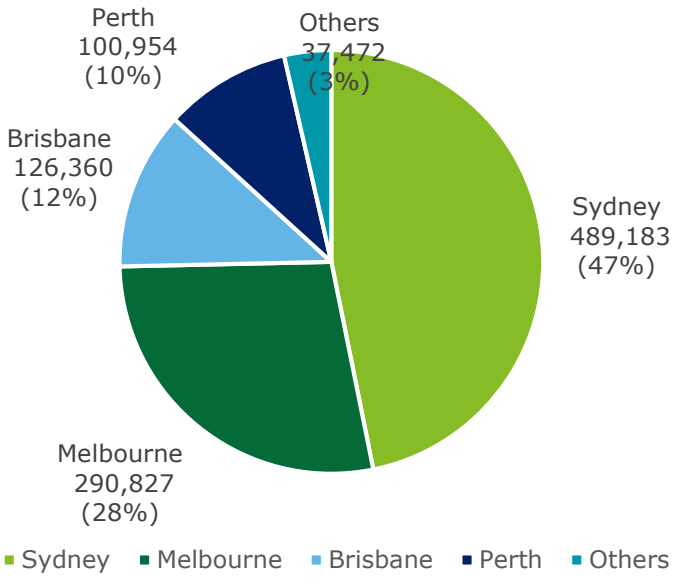
The strong growth in air freight have been supported by the increasing international demand for Australian perishable agricultural products such as livestock and fisheries products. The strong

[1] Total movements in the BITRE air freight data capture arrivals and departures so each movement is counted twice.

growth in international passengers, coupled with an increasing number of wide-body aircraft has helped provide additional capacity for international freight movements.

The four largest capital city airports are responsible for transporting the vast majority of international air freight in Australia, as illustrated in Chart 2.9 below. These four airports were responsible for transporting 97% all international freight into and out of Australia over the period.

Chart 2.9: International air freight in Australia (tonnes carried), 2016-17

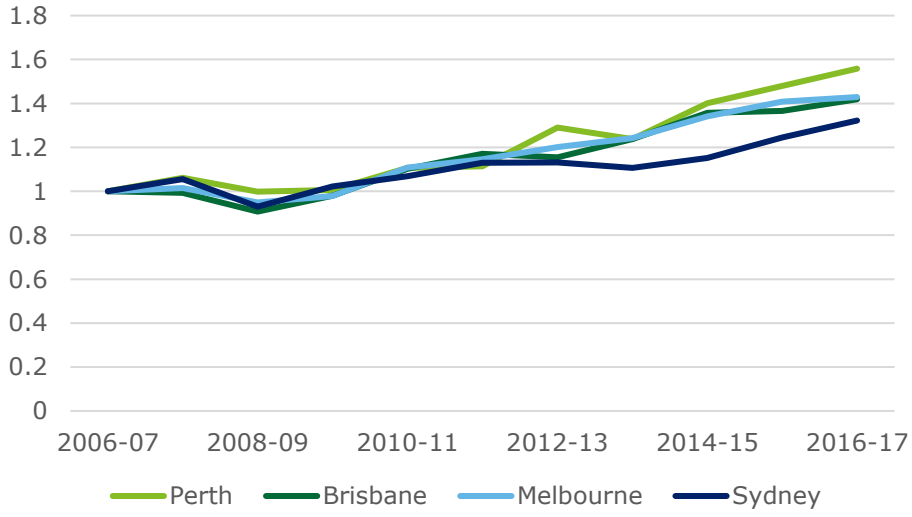


Source: BITRE Airport Traffic Statistics, 2017

The volume of air freight transported through Sydney, Melbourne, Brisbane and Perth airports have increased strongly over the last 10 years, with air freight in Perth airport having the most significant increase (56%). Among regional airports, the Gold Coast airport has experienced a notable increase in air freight, from only 63 tonnes in 2006-07 to 7,293 tonnes in 2016-17.

Charts 2.10 represents the growth in air freight movements among the fourth largest airports.

Chart 2.10: Growth air freight by volume of freight transported, 2006-07 to 2016-17



Source: BITRE Airport Traffic Statistics, 2017

2.3 Market dynamics

Airports have undoubtedly experienced significant disruptions to their operating environment in the last five years. Demands from travellers for an improved airport experience have led to a transformation in airports' value proposition. Modern airports are not only infrastructure providers to airlines but also service providers to travellers. Additionally, changes in the broader aviation industry have further influenced the direction in which airports have developed. This section provides a discussion on the major trends in the airport sectors.

2.3.1 Transformation in airports' value proposition

Traditionally, airports have been seen as providers of transport infrastructure, supporting the operation of airlines and aviation-related functions. While the need for transportation remains the primary reason for people to come to an airport, travellers now demand much more from their airport experience. They want a holistic airport experience, including convenient connection to the city centre, automatic check-in and baggage drop services, fast security clearance, automatic border control gates and a wide range of business and leisure opportunities available onsite.

While providing transport infrastructure remains the core function of airports, it is essential for airports to recognise traveller demand and transform to be more customer-centric. This transformation, similar to any other airport infrastructure development, requires careful planning and a significant amount of investment.

The transformation to improve customer experience is further disrupted by the unprecedented rate of digital development. The emergence of rideshare services has brought certain challenges to the management of vehicle movements. It has also added another dimension to the role of airports in balancing travellers' demand while maintaining the relationship between airports and traditional taxi services. Additionally, the increasing popularity of smartphones creates a new platform for airports to communicate important information with travellers via mobile apps efficiently and effectively.

2.3.2 Emerging Chinese markets

As the primary connection between Australia and the rest of the world, the Australian aviation sector is closely linked to changes in the world economy. The rapid economic development of China, as discussed further in section 5.1, has created significant demand for travel between Australia and China. In December 2016 the Australian and Chinese governments agreed to allow an open aviation market between the two countries, effectively removing all capacity restrictions for airlines of the two countries, liberalising the aviation market and creating a number of opportunities for the aviation sector of both countries.

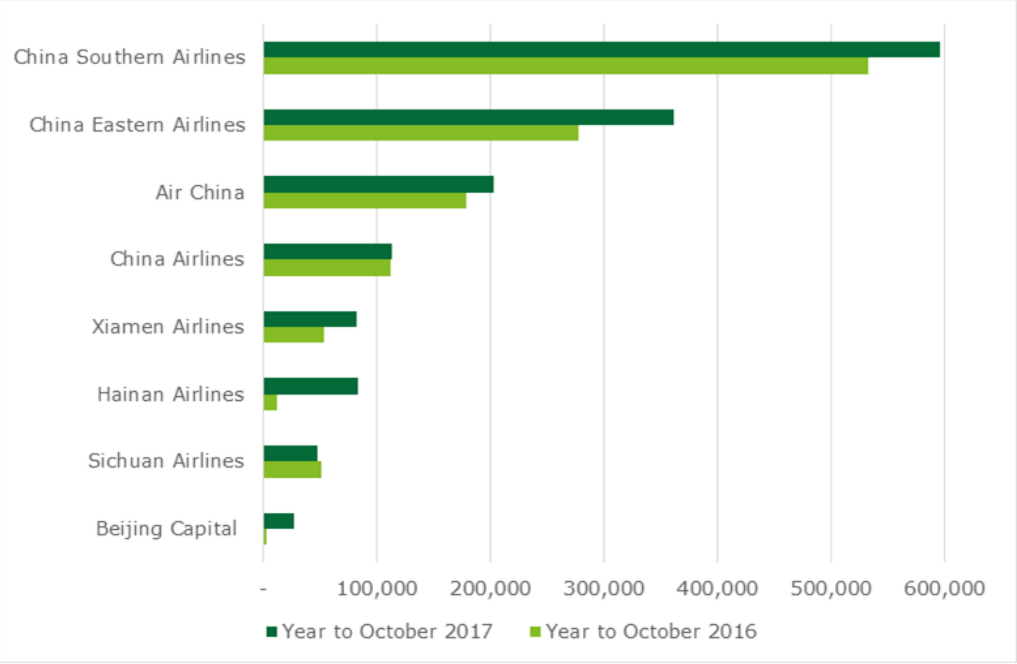
The recent collaborations with Chinese airlines and increase in Chinese passengers require Australian airports to find a way to cater to the specific needs of Chinese travellers. Many airports, including the Sydney and the Gold Coast airport, have employees speaking Mandarin to help Chinese passengers navigate through their airports. Information leaflets in Mandarin are also provided in some airports.

Case study: The growth of Chinese airlines

The rapid economic development in China, coupled with the removal of aviation restrictions between Australia and China has created significant opportunities for Chinese airlines. Seven new routes serviced by Chinese airlines were opened in the second half of 2017, connecting Sydney, Melbourne, Brisbane, and Cairns with Chinese cities. Chinese airlines currently operating in the Australian market are Air China, Beijing Capital, China Airlines, China Eastern Airlines, China Southern Airlines, Hainan Airlines, Xiamen Airlines and Sichuan Airlines.

Over the year to October 2017, these Chinese airlines carried 1.5 million passengers into Australia, representing a 24% increase in inbound passengers compared to the same period the previous year.

Number of passengers travelling to Australia



Source: BITRE

In October 2017, the three largest airlines – China Southern Airlines, China Eastern Airlines and Air China – accounted for 75% of total passengers travelling on Chinese airlines from China to Australia. China Southern Airlines is the largest carrier, providing transportation services to 595,971 inbound passengers over the year to October 2017. It was followed by China Eastern Airlines (361,553 passengers) and Air China (203,301 passengers).

The smaller airlines, including Xiamen Airlines, Hainan Airlines, Sichuan Airlines and Beijing Capital Airlines are relatively new to the Australian market. Hainan Airlines officially started their operation in October 2016 after seasonal flights in the previous year. It brought in 83,129 inbound passengers over the year to October 2017. Beijing Capital started in September 2016 and since then, it has an average of more than 2100 inbound passengers per month.

The expansion of China Southern Airlines and the entrance of other Chinese airlines facilitated the increase in Chinese airlines market share. Between October 2015 and October 2017, the market share of Chinese airlines has increased from 7% to 8%. In 2016-17, China Southern Airlines was the tenth largest international airline operating in Australia, accounting for 3% of international passenger travelling to and from Australia.

At the same time as Chinese airlines have experienced growing passenger numbers so has Qantas, which experienced a 64.4% increase in passenger numbers on Chinese routes over the year to October 2017 from 83,607 passengers to 137,249 almost part of this increase may have been due to cessation of Jetstar services to China in September 2016.

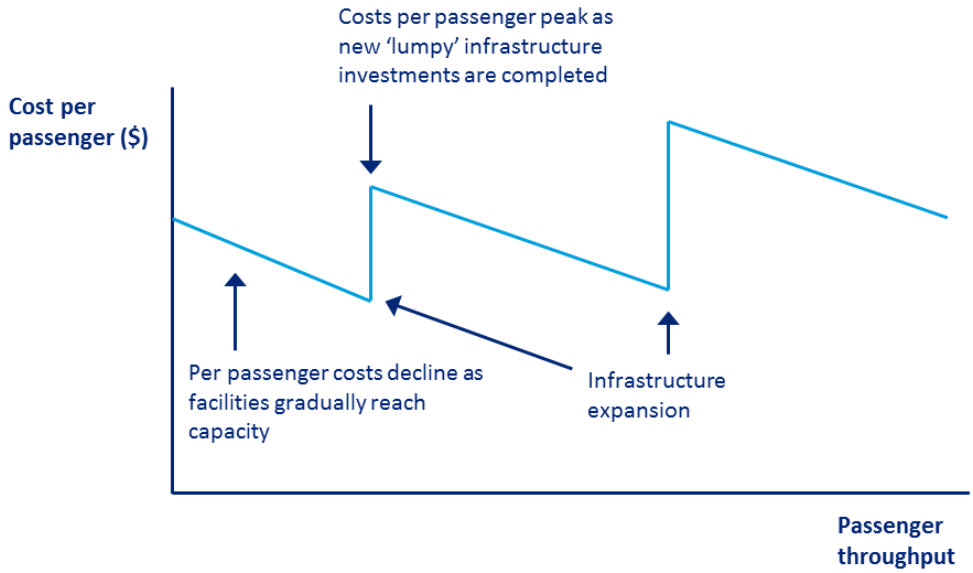
2.4 Investment by the sector

Airports are capital intensive businesses. Airport infrastructure has a long asset life and few, if any, alternative uses. Now more than ever, airports are also investing to enhance the quality and breadth of services they provide to improve the customer experience. The expectations for amenity levels in airport terminals also have increased over time, requiring upgrades to existing facilities. Some areas where investments have been required in recent years include: terminal and runway upgrades to handle larger aircraft; redevelopment of passenger terminals, extension of car parking facilities and property developments relating to logistics, retail and commercial activities.

2.4.1 A pipeline of infrastructure investment

As illustrated in Chart 2.11, airport infrastructure has to exhibit decreasing average costs over its economic life. Typically, the costs per passenger of additional infrastructure facilities are highest once they become operational, falling over time with greater usage as high fixed costs can be spread over a larger customer base. Increases in passenger usage will also dictate the timing of additional investments, with new infrastructure needed as critical capacity thresholds are reached. Infrastructure capacity will also be dictated by maximum load requirements, which may not be reached for some time or used very often.

Chart 2.11: Investment patterns at airports



Source: Deloitte Access Economics 2012.

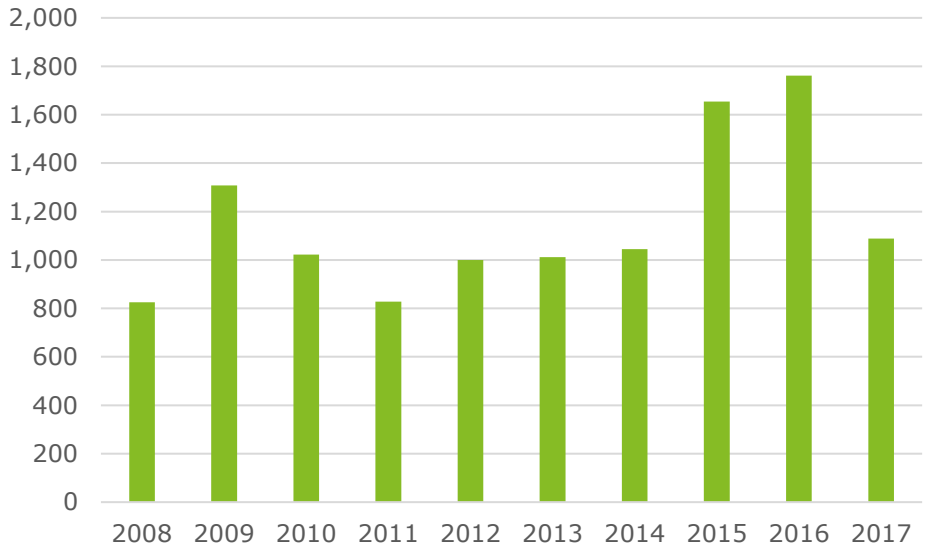
While airport infrastructure is characterised by an extremely long asset life, it is also associated with long lead in times. This means that expenditures made today, often take a period of several years to materialise into operational facilities. Therefore, in order to ensure market demand is met, airports are required to identify periodic expansion investments far in advance of any forecast shortfalls, usually through a Master Plan.

Given the level of activity at many of Australia's capital city and major regional airports, there has been a continuous stream of comparatively smaller investments associated with ongoing maintenance and refurbishments. Hence, the unprecedented growth in passenger traffic over the past few decades has, in some cases, exceeded the planned capacity of some key airports. As a result, the most substantial investments in the airport industry have stemmed from the large-scale expansion of aviation related and other aeronautical assets.

2.4.2 Levels of airport capital investment

Chart 2.12 below provides data on historical capital expenditure over time for the major airports. As can be seen from the chart there was significant growth over time with capital expenditure peaking in 2015 and 2016. The major airports have invested a total of $6.6 billion over the last five years and $11.5 billion over the last decade.

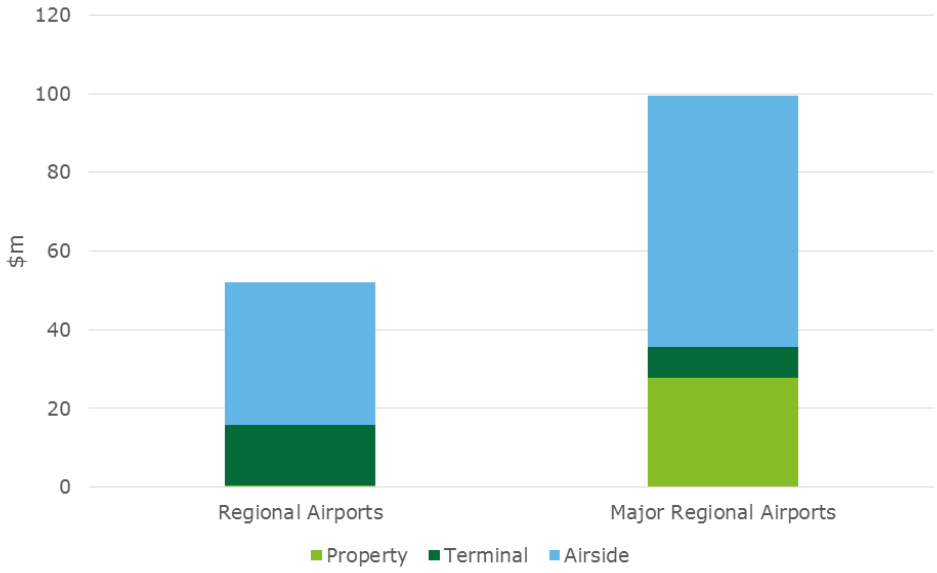
Chart 2.12 Capital expenditure over time for major airports ($ million)



Source: Australian Airports Association.

Detailed information is not available on the capital expenditure levels of regional and remote airports. A handful of regional airports provided information on capital expenditure levels through the survey, which is contained in Chart 2.13.

Chart 2.13 Survey data on investments by regional and major regional airports in last three years



Source: Deloitte Access Economics Airport Survey.

Capital expenditure over the last three years was separated into three categories: airside which includes any improvements made to: aviation related facilities, including runways, aprons, taxiways, navigation aids and lighting; upgrades to the terminal; and property which includes any other improvements to the airport's property, such as electrical, internet or parking infrastructure.

In our sample the regional airports invested far more in airside infrastructure than terminal or other property improvements. Regional airports invested $36 million dollars in aviation related improvements, compared to only $15 million in terminal upgrade and $470,000 in property. Only one regional airport surveyed had invested in their terminal and two had invested in property improvements. In contrast, over half had invested in aviation infrastructure. Major regional airports invested $64 million in airside improvements, $28 million in property and $8 million in terminal upgrades. A third of major regional airports surveyed invested in their terminal, four in 10 upgraded their property and three quarters improved their airside facilities.

Respondents were also asked about capital expenditure planned for the next five years. Every respondent replied that their airport had some degree of investment planned for the coming five years. In total four in five respondents had airside improvement in the pipeline, showing the continued emphasis placed on aviation infrastructure investment of the last three years.

Of the airports surveyed over half indicated plans to invest in property improvements and over 40% indicated plans to invest in the airport's terminal. A slightly higher proportion of major regional airports have plans to invest in their terminal and property, with 45% and 73% percent respectively.

2.4.3 The economic benefits of investment at airports

Consistent with the considerable commercially-focused investment activity that is currently occurring and planned at airports, there are also appreciable economic benefits to related industries. In particular, there are direct employment gains to the construction and manufacturing industries involved in developing airport infrastructure projects. In this way, the stream of infrastructure investments in the airport industry helps support growth across the broader construction sector.

The benefits of infrastructure investments are more widespread as facilities become operational. Principally, the aeronautical capacity of airports can expand significantly once infrastructure investments are fully functional. As a consequence, further job opportunities are potentially created in the air transport sector and other industries operating on or near airport grounds (i.e. in commercial buildings developed by airport corporations).

Over time, the increase in passenger throughput facilitated by new infrastructure contributes to higher revenues at airports, potentially generating job opportunities both at the airport precinct and indirectly through the chain of suppliers which service the airport industry. Indeed, the current turnover of the airport industry has been largely enabled by infrastructure investment decisions made in the past.

Productivity and network efficiency

Airports play a pivotal role in broader transport networks, facilitating the time-sensitive movement of people and goods. Therefore, investments in airport infrastructure can play an important role in improving the functioning of the overall transport system — especially at larger capital city airports which have greater intermodal interface.

Additions to airport infrastructure, such as the development of large freight handling facilities, assist in building the capacity to not only process greater volumes of freight, but to do so with increased efficiency.

2.5 Innovation

In addition to investing in infrastructure, the airports that responded to our survey indicated they were investing in a range of innovations and initiatives to support their community.

In the Deloitte Access Economics survey, a number of airports noted that they had made a commitment to clean and renewable energy generation. Two airports had made investment in solar panels as part of an effort to reduce their carbon footprint, with Alice Springs airport having 85% of electricity usage coming from solar.

Business innovation focussed primarily on improving the customer experience at the airport. Of the airports who responded to the survey 22% of respondents stated that their airport had enhanced the customer experience through upgrades to the terminal. Improvements to the terminal included the introduction of retail shops, improvements to cafes, and implementation of disability access infrastructure such as hearing loops and accessibility ramps. Further enhancements were made to parking, security and baggage handling facilities.

Airports have also sought to expand the range of services that are available to airlines and local private aircraft operators. Two respondents noted that their airports had invested in infrastructure to attract different types of aircraft, with one upgrading their facilities to be able to host larger jet aircraft, while the other had established a light aircraft precinct to attract operators of smaller aircraft. Other improvements made by airports included runway upgrades to reduce congestion and improved facilities to accommodate an increase in demand for maintenance services. One respondent stated that they had assisted in establishing a new charter company at the airport and another said they were looking at bringing a new carrier to the airport in order to offer more reasonable ticket prices. Three respondents stated they were increasing business through advertising that focussed on attracting customers to the region, rather than promoting the airport itself.

At a national level, Airservices Australia is exploring the introduction of a number of initiatives to improve efficiency at airports and reduce the scope for passenger delays. The OneSKY program is expected to be rolled out by 2023 and will provide a harmonised civil and military aviation traffic system to replace the current separate civil and military aviation traffic systems which are reaching the end of their life.

The other innovation that Airservices Australia is working on is Airport Collaborative Decision Making (A-CDM). This is based on technology used in Europe to improve the ability of partners at an airport to share data and information to improve efficiency and timeliness of their operations and identify delays elsewhere in the system as early as possible. These sorts of innovations can help airports continue to improve customer service levels over time, and airports are working closely with Airservices Australia to realise the benefits of this work.

Case study: Brisbane - Passenger and customer service innovations

As one of the largest airports in Australia, servicing 67 destinations worldwide, Brisbane Airport is a major gateway to Australia. Being many passengers' first impression of Australia, passenger and customer service innovations are vital to ensuring passengers receive the best experience possible. In the last five years alone, Brisbane Airport has introduced a range of initiatives, primarily targeting accessibility, with investment totalling in excess of $3 million.

Brisbane Airport's Customer Experience program is award-winning (Customer Experience Award, National Australian Airports Association Awards 2017). Travellers are able to instantly lodge feedback and communicate with the airport and its staff directly through the use of interactive customer feedback systems installed in major thoroughfares including bathrooms. This allows for improved feedback turnaround and reporting, as well as real time data capture and analytics to allow for the rapid identification, resolution and improvement of customer issues.

Tailored disability training programs are provided to all airport staff, including front-line airline staff, volunteers, and security staff to ensure a consistent customer experience across the board.

In 2017, Brisbane Airport opened Australia's first dedicated 'changing places' bathroom facility for passengers with special needs and was named Australia's first dementia-friendly airport, after the development and implementation of a dementia-friendly action plan and resources kit integrated into customer service training for all airport staff, and the use of clear and concise signage. Accessibility is key to Brisbane Airport's operations, with the opening of Australia's first airside assistance animals facility in 2014, removing the need for travellers with assistance animals to leave the building and re-navigate security, customs and immigration screening each time their animal needs to be relieved.

Source: Brisbane Airport

2.6 Regulation of the sector

A range of regulations govern the operation of airports in Australia. In addition to being subject to the general application of Australia's competition and consumer laws, the Australian Consumer and Competition Commission (ACCC) undertakes price and quality monitoring of aeronautical and ground access services at Brisbane, Melbourne, Perth and Sydney airports. Commonwealth regulations apply to those airports leased from the Australian Government in relation to planning and development, ownership and control of airport infrastructure, protection of airspace, building control and environmental management as well as other regulations in relation to parking, slot management, liquor licensing and curfews. All Australian airports are subject to national laws relating to safety and security.

Evolution of economic airport regulation

The privatisation of Federal airports occurred between 1997 and 2003. A number of reviews of the sector during this period resulted in progressively light-handed regulation, with formal price regulation abandoned in 2002. Figure 2.1 summarises the evolution of airport regulation in Australia.

Figure 2.1 The history of airport regulation in Australia

Source: ACCC, Deloitte Access Economics

During the transition phase of privatisation, price cap regulation existed on aeronautical businesses only (dual-till regulation). There was no price regulation applied to non-aeronautical businesses to allow airports to develop these businesses. The aeronautical pricing regime consisted of:

- Allowing airports to increase prices for certain aeronautical charges by a notified percentage less than the Consumer Price Index (referred to as CPI-X);
- Price monitoring of certain aeronautical related services; and
- Cost pass through for new investment and Government mandated security requirements.

Airports were also subject to quality of service monitoring. In 2002, the Productivity Commission recommended that price capping be replaced by price and quality of service monitoring at the seven major airports (Adelaide, Brisbane, Canberra, Darwin, Melbourne, Perth and Sydney). A subsequent Productivity Commission report in 2006 recommended continued price monitoring at the five largest airports. In 2009 self-reporting arrangements were introduced for Canberra, Darwin, Gold Coast and Hobart airports.

In 2011, the Productivity Commission review of the economic regulation of airport services concluded that the existing price monitoring regime had led to strong increases in investment, generally good service provision and reasonable aeronautical charges when compared to international benchmarks. It recommended a continuation of price and quality of service monitoring for Sydney, Melbourne, Perth and Brisbane airports. In 2012 the government directed that prices, costs and profits related to aeronautical services and car parking services be continued to be monitored by the ACCC until 2020, along with quality of service monitoring.

Pricing at the four largest airports is implicitly constrained by the potential for the return of explicit price regulation if the airports are found to have misused their market power. Smaller major airports including Canberra, Darwin, Hobart, Adelaide and Gold Coast are subject to self-administered monitoring and disclose various pricing, quality of service and complaints handling measures through their website. Other airports were also encouraged to adopt web-based reporting of customer satisfaction measures and outcomes.

As noted above, a number of other regulatory frameworks apply to the airport industry, beyond price related regulation. Federally leased airports are required to update their Master Plans every five years, which provide information on future land use at airports including for non-aeronautical purposes. There are also other frameworks structuring the airport industry, aside from those related to prices and revenue. Privatised airports are required to adhere to airport Master Plans

which provide transparency about future land use at airports, including for non-aeronautical purposes. Planning Co-ordination Forums are designed to improve planning co-ordination between major airports and all levels of government, specifically addressing implications for traffic and public transport. Further, Community Aviation Consultation Groups aim to give local residents and businesses the opportunity to voice concerns and opinions related to airport planning and operations. Curfews are also in place between 11pm and 6am at Adelaide, Sydney, Gold Coast and Essendon airports.

Regional and remote airports generally face lower levels of regulation as they are less likely to have any market power or have adverse impacts on surrounding residents or businesses. These airports do benefit from actions by the Australian Government in negotiating access to foreign airlines – particularly for destinations beyond the four largest airports, or through increased capacity of routes between regional destinations and the four major airports.

3 Contribution to the economy

Airports are critical to the national infrastructure network that connects the economy. In facilitating passenger movement both domestically and internationally, airports connect population centres and markets, and thus support business activity, tourism and trade.

Australia's airport network is large and diverse, with information on the sector fragmented and incomplete in places. This Chapter outlines the economics of the airport sector, the approach to measuring its economic contribution and estimates of the direct and indirect economic contribution of both the 'core' activities of airports and the broader activity of other businesses on the precinct.

3.1 Economics of the sector

Revenues of airports can be classified into two categories: aeronautical and non-aeronautical revenue. Aeronautical revenues refer to the revenue from services and facilities at an airport that are necessary for the operation and maintenance of civil aviation at the airport, including both passenger-related and aircraft-related services and facilities. Non-aeronautical revenues refer to all other revenue streams, including parking, retail outlets, hotels, hangar and freight terminal rentals, corporate parks and factory outlets.

The latest ACCC Monitoring Report for 2015-16 notes that aeronautical revenue has grown in real terms over the last decade for the four largest airports it monitors (Sydney, Melbourne, Brisbane and Perth). Since 2006-07, revenue per passenger grew by 16% at Sydney Airport, 30.9% at Melbourne Airport, 42.9% at Perth Airport and 65.5% at Brisbane Airport in real terms.

The growth of aeronautical revenue per passenger, coupled with rising passenger volumes has meant that aeronautical revenue comprises a greater proportion of total revenue at the four major airports than it did in 2006-07. On average, across the four major airports, aeronautical revenue constituted 39.3% of total revenue in 2006-07 rising to 49.2% in 2015-16 (ACCC Monitoring Report 2015-16).

While aeronautical revenue now comprises a larger share of total revenue for the large airports, non-aeronautical revenue still plays an important role in helping airports manage risk by diversifying their revenue sources into areas that are less closely correlated with the performance of airline markets.

The relative reliance on aeronautical revenue will also vary between major airports and regional and remote airports as will the structure of underlying costs. For example, the non-labour cost structure varies slightly across major and major regional airports, as suggested in Table 3.1. The Survey results indicate that major regional airports spend a greater share of resources complying with relevant regulations, including mandatory audits and inspections. On average, major regional airports attribute 6% of total expenses for regulation and compliance purposes, compared to 0.3% at major airports.

Table 3.1: Non-labour cost structure by airport size, 2016-17

Component of non-labour cost	Major airports	Major regional airports
Services and utilities	31.5%	19.9%
Other operational costs	10.7%	21.7%
Property and maintenance	18.9%	21.8%
Security recoverables	22.6%	19.3%
Regulation and compliance	0.3%	6.0%
Other costs	16%	11.3%
Total	100%	100%

Source: Deloitte Access Economics AAA Survey 2017

3.1.2 Profitability

Most of the registered airports and aerodromes in Australia are quite small. Additionally, there are numerous much smaller facilities across the country which are used for more irregular aircraft operations. These facilities, many of which are owned and operated by local councils, have little broader industry profile, yet provide vital services to their communities.

Results from the survey emphasise a clear pattern between profitability and airport size. The major airports surveyed recorded an average profit level of approximately $700 million. By comparison, the major regional airports and regional airports are typically operating at break even or a loss.

Case study: Narrabri - Overcoming regional airport challenges

All regular air transport to Narrabri, a small town in North Western NSW, ceased in 2014 following the collapse of Vincent Aviation and Brindabella Airlines. Many thought that these two insolvencies, in conjunction with QantasLink's decision not to fly to Narrabri Airport, would mean the end of regular public transport to the farming and mining town.

Narrabri Council, determined to get the airport back up and running, decided to spend $10.5 million upgrading the airport facilities. The upgrade included a runway extension and resurfacing, as well as new apron aircraft parking bays. It was funded through a Voluntary Planning Agreement with one of the local mines, as well as grants and a small loan taken out by the council.

The decision ultimately paid off. Narrabri Airport now has regular public transport services to Brisbane and Sydney.

The regular services also follow 12 months of negotiations with Australian carrier, Fly Corporate. While the Narrabri Council provided some incentives to attract Fly Corporate, the benefits have been mutual. The Brisbane service, which has been operating since 2016, has both exceeded Fly Corporate's sales expectations and improved the towns access to specialist health services as well as increased potential tourism to the magnificent natural rock formations that surround Narrabri.

Source: AAA

3.2 Overview of approach to measuring the economic size of the sector

The economic size of the sector is measured in this report using an economic contribution approach. Economic contribution studies estimate the impact of a given entity on the wider economy at a point in time. An entity's economic contribution arises from its:

- Direct contribution through the company or industries' own operations; and
- Indirect contribution, as the impact of the entities or industries' activities flow-on to the wider economy.

Financial measures, such as revenue and cost of goods sold, are applied to estimate a company's direct contribution to the economy. The direct contribution is estimated by using the income approach to Gross Domestic Product (GDP) which sums returns to capital and returns to labour. Returns to capital are calculated through Gross Operating Surplus (GOS) with returns to labour determined through wages and salaries. This approach is consistent with the framework used by the Australian Bureau of Statistics in compiling the *Australian National Accounts*. While revenue is more commonly reported in financial accounts, value added provides a more accurate assessment of an airport's contribution to the overall economy, as it isolates the unique value created by its operations.

Following estimation of the direct contribution, the demand for upstream inputs and further interlinkages with other sectors of the economy can be estimated. This expenditure drives the indirect contribution.[2]

The direct component of the contribution is estimated by determining the returns to labour and the returns to capital, derived from airports' financial data through financial reports and data from the survey. Where data from the survey was not available, estimates of these measures were derived by scaling aircraft and passenger movements for each airport relative to other airports in the same category (see Table 2.1) who responded to the survey.

The indirect contribution estimates the flow-on contribution of the airport's activities. The indirect contribution calculates the value added created by the industries that produce inputs for Australian airports and is based on the profit and wages that are generated as a result of airports' expenditure in these industries. Only intermediate input expenditure occurring in Australia was included, with internationally sourced inputs excluded from the analysis.

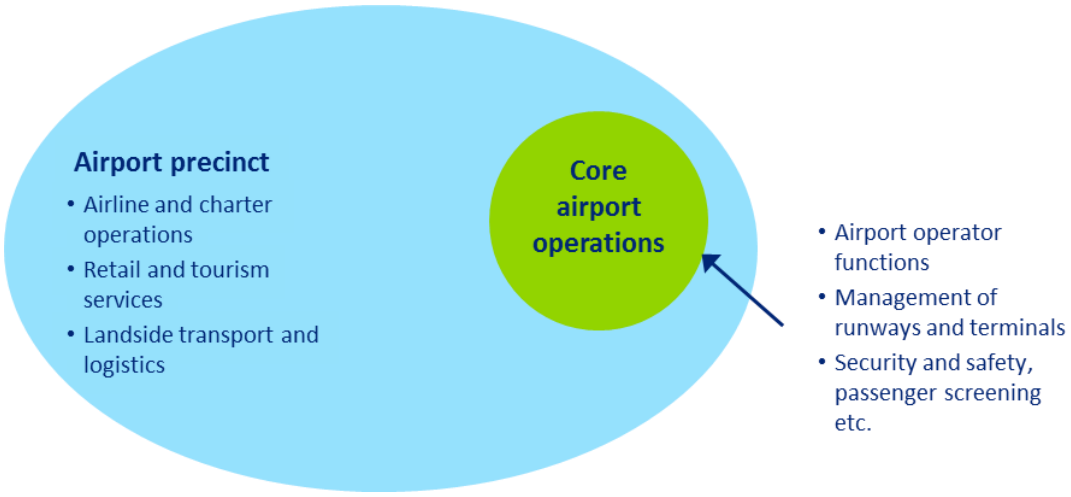
3.2.1 Distinguishing between the core and precinct

Airport revenues can also be disaggregated into revenues from "core" and "precinct" activities. Operational core activities, comprise the central operation of an airport facility as captured by the financials of the airport itself.

"Precinct" activities refer to activities by other businesses other than the airport that nonetheless occur on the airport precinct including retail and tourism services, headquartered airline operations, general aviation and aircraft maintenance, transport, activities by Airservices Australia, the Australian Border Force and broader non-aeronautical commercial activities. These functions are shown in Figure 3.1.

[2] For detailed explanation, please refer to Appendix A.

Figure 3.1: An economic profile of airports



Source: Deloitte Access Economics

Estimating the size of these broader activities at airport precincts is particularly challenging, especially across such a large and diverse sector. The focus of the survey conducted for this study was to unpack the size and dimensions of central facility operations across the airport sector, as well as to gather data on the level of employment on the airport precinct.

Precinct level activity was estimated using a combination of data from past airport studies completed by Deloitte Access Economics for major airports and data on direct precinct employment provided as part of the airport survey. More specifically, ratios of direct and indirect value added to direct employment were calculated using IO tables (based on the industry profile of direct employment at airport precincts found in previous studies) and were applied to measures of precinct level employment provided by airports as part of the survey.[3]

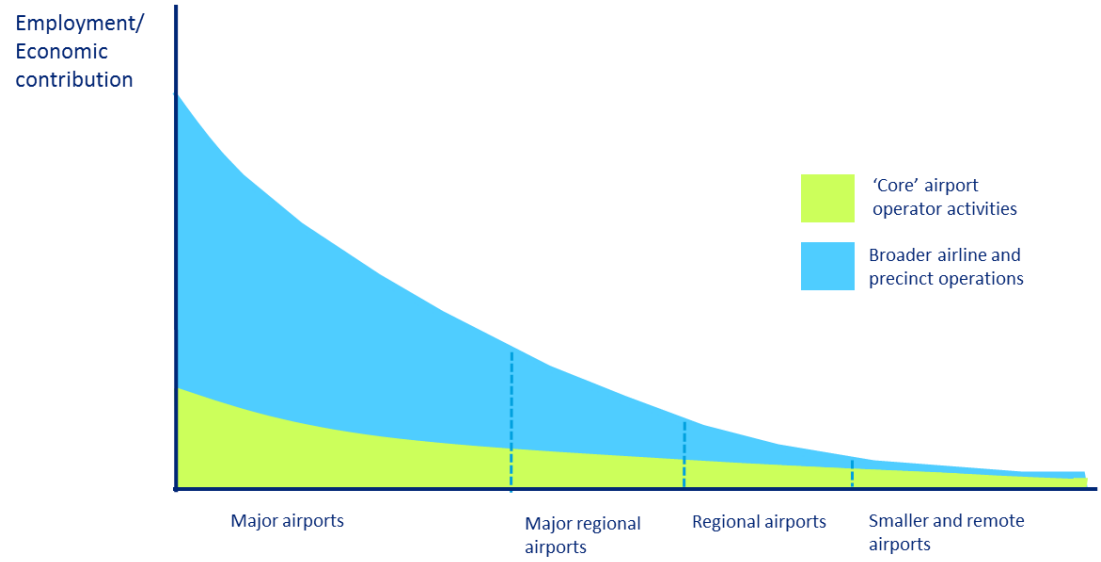
3.3 Total economic contribution

The total economic contribution of Australia's airports and their precincts was estimated for 2016-17. Total industry value added was estimated to be $34.6 billion, which equates to around 2.0% of Australia's GDP. Overall employment at airport sites was estimated to be around 206,400 full-time equivalent (FTE) staff.

As shown in the figure below, the economic contribution from core and precinct activities differs in accordance with the size of the airport. For smaller and remote airports, core activities make up a much larger share of the economic contribution as compared to major airports.

[3] Slightly different terminology is used in the report on the Economic Contribution of Victoria's major airports undertaken by Deloitte Access Economics for the Department of Economic Development, Jobs, Transport and Resources where the term 'direct precinct' is used to capture both core and precinct activities. The terminology in this report has been used for consistency with the previous 2012 study for the Australian Airports Association. It should be noted that some reports for individual airports may include the economic contribution of freight activity in measures of the airport's contribution, where detailed airport level data is available.

Figure 3.2: Economic contribution



Source: Deloitte Access Economics.

3.4 Economic contribution of airport core operations

Table 3.2 and Table 3.3 provide a breakdown of the economic contribution for airport core activities into direct and indirect, respectively. The airport sector directly contributed $3.8 billion of value added and a further $1.1 billion indirectly, and directly supported 2,560 FTEs and 6,162 FTEs indirectly as a result of demand for intermediate inputs from suppliers.

Direct employment here captures those who are employed by the airport itself (e.g. Sydney Airport Corporation Limited) and indirect employment captures employment for those companies that supply the organisations that run airports (e.g. Sydney Airport Corporation Limited). For example, employment in companies providing office supplies or cleaning services to Sydney Airport Corporation Limited would be captured as indirect employment for airport core activities. Employees of other organisations that may be present on the airport precinct e.g. the Australian Border Force, retail outlets and Airservices Australia are captured under direct employment at the precinct discussed in section 3.5 below. Similarly, direct value added captures the value added of the airport itself (e.g. Sydney Airport Corporation Limited) and indirect value added captures the value added attributable to those who supply products to the airport as a corporate entity.

In 2016-17, the total economic contribution of airport core activities[4] was estimated at $4.9 billion, which includes direct contribution and indirect contribution[5], for the 183 Australian airports studied. This include $3.8 billion in Gross Operation Surplus (GOS) and $1.1 billion in wage payments, as outlined in Table 3.4 below.

The economic contribution of major airports, such as Sydney or Melbourne airports, is much larger than their secondary or regional counterparts. This is unsurprising given that major airports, by definition, are much larger. Major airports serve substantially more passengers, contributing to higher revenues and staffing requirements.

[4] These do not include the direct employment and direct activities occurred by airlines, i.e. aviation.
[5] Flow-on economic impact generated as a result of primary factors being used, i.e. the impact attributable by intermediate goods.

Table 3.2: Direct economic contribution of airport core activities, 2016-17

	GOS ($m)	Value Added ($m)	Wages ($m)	FTEs
Major airports	3,149	3,462	313	1,897
Major regional/ federally leased secondary/metro airports	159	219	61	441
Regional airports	24	96	71	171
Remote airports	1	8	7	51
Total	**3,333**	**3,786**	**452**	**2,560**

Source: Deloitte Access Economics
Note: Numbers may not add to totals due to rounding errors.

Table 3.3: Indirect economic contribution of airport core activities, 2016-17

	GOS ($m)	Value Added ($m)	Wages ($m)	FTEs
Major airports	423	949	526	5,200
Major regional/ federally leased secondary/metro airports	36	83	47	503
Regional airports	19	48	29	314
Remote airports	9	22	13	144
Total	**487**	**1,102**	**615**	**6,162**

Source: Deloitte Access Economics
Note: Numbers may not add to totals due to rounding errors.

Table 3.4: Total economic contribution of airport core activities, 2016-17

Total Economic Contribution	GOS ($m)	Value Added ($m)	Wages ($m)	FTEs
Major airports	3,572	4,411	839	7,097
Major regional/ federally leased secondary/metro airports	194	303	109	945
Regional airports	43	144	100	485
Remote airports	10	30	20	195
Total	**3,820**	**4,888**	**1,067**	**8,722**

Source: Deloitte Access Economics
Note: Numbers may not add to totals due to rounding errors.

3.5 Economic contribution of the broader precinct

The airport precinct which includes businesses such as office parks, retail, logistics operations and airlines in many cases covers a much wider range of economic activity than the core component of airport operations. The total economic contribution of airport activities on the precinct is estimated

to be $29.7 billion as shown in Table 3.5.[6] This figure excludes the economic contribution of core airport operations (discussed above in section 3.4) and in doing so excludes purchases of intermediate inputs by businesses on the precinct from the airport corporations themselves (such as rental payments) which would be otherwise captured in the economic contribution of core airport operations.[7]

Table 3.5 Economic contribution of airport precinct activities, 2016-17

	Direct value added ($m)	Indirect value added ($m)	Total value added ($m)
Major airports	15,388	12,500	27,888
Major regional/Federally leased airports	943	424	1,366
Regional airports	318	124	443
Remote airports	25	22	47
Total	**16,673**	**13,070**	**29,744**

Source: Deloitte Access Economics
Note: Numbers may not add to totals due to rounding errors.

Similarly, economic activity on the precinct was estimated to support the employment of over 197,600 FTEs, as shown in Table iv.

Table 3.6 Contribution of airport precinct activities to employment (FTEs), 2016-17

	Direct	Indirect	Total
Major airports	97,241	86,270	183,511
Major regional/Federally leased airports	6,092	4,186	10,279
Regional airports	2,409	1,146	3,555
Remote airports	186	159	345
Total	**105,929**	**91,761**	**197,690**

Source: Deloitte Access Economics
Note: Numbers may not add to totals due to rounding errors.

3.5.1 Caveats and data limitations

Given the range of different businesses that operate on the airport precinct, and the number of airports that make up the sector, it is challenging to estimate the economic activity that occurs on airport precincts with a high level of precision without undertaking a survey and potentially a consultation processes with every business that operates on an airport precinct in Australia.

Additional data would be required to provide a more conclusive picture of the industry — one which accurately captures the differences in respective tenancy bases, especially across major airport

[6] While Deloitte Access Economics (2015) identified the total economic contribution of Sydney Airport to be over $30 billion this included facilitated freight and tourism. The total value added associated with the precinct alone was $10 billion which is comparable to the results shown here.
[7] It is difficult to precisely estimate the proportion of core airport revenue that consists of services provided to businesses on the precinct without undertaking a comprehensive precinct level survey of every airport. This report conservatively assumes that all revenue is provided to tenants on the precinct for major airports and major regional airports and that 50% of revenue comes from tenants on the precinct for regional and federally leased secondary and metro airports as it is assumed that for the latter some aeronautical revenue is gained from businesses operating outside the precinct.

facilities. Specific analysis of the indirect or spillover economic effects of airport precincts, and the nature of the economic linkages to the broader economy, would be a useful area for further research.

Given these data limitations, our approach has been to estimate the precinct activity level based on information on direct employment at the precinct from survey data and through applying a range of multiplier ratios including: direct value added to direct precinct employment; indirect value added to direct precinct employment; and indirect precinct employment to direct precinct employment. These multipliers were based on employment by industry on major airport precincts found in previous studies. These ratios may not always be appropriate for the wider sector including regional and remote airports.

More broadly, results for regional and remote airports that did not respond to the survey relied on scaling of economic activity based on factors such as aircraft and passenger movements. In cases where no such data on aircraft or passenger movements was available, airports were conservatively assumed to have 50% of the value added and employment of those in their category who responded to the survey. This was less of an issue for the major airports as financial data was publicly available for most of these airports.

The precinct level results in this report should not be directly compared to those in the previous 2012 report to assess the growth of on-airport activity in the sector. The estimates contained in the 2012 report were very much exploratory in nature. This report has been able to draw on a range of recently published studies of precinct level activities at major airports and also information on precinct activity from the survey which was not available in the 2012 study to estimate the size of precinct level activity, although there remains a degree of imprecision around these estimates as noted above.

By comparison, results for core airport operations are comparable and the growth in value added is generally consistent with the growth in passenger movements over this period (18%) coupled with growth in nominal revenue per passenger trends at major airports, which have risen by around 30% over this period.

3.6 The wider economic gains generated by airports

In addition to their contribution to value added and employment, airports also support a number of other sectors of the economy and can support greater productivity and investment. These wider economic gains are discussed briefly below.

3.6.1 Linkages with other sectors of the economy

While many industries have relied on transport networks to effectively operate, the wider availability and declining costs of aviation as a mode of transport has served to significantly increase the demand for aeronautical and related services in the economy. As the only point of access to these services, there has been a growing economy-wide reliance on the airport industry. Indeed, it is possible to infer which sectors are 'airport intensive' by analysing the dependence of business operations upon air service accessibility. There are a number of factors that determine which sectors are more likely to be reliant on airport industry goods and services. In general terms, some of these factors include:

- Industries with a trade element, either through exporting or importing their inputs of production or goods for sale;
- Sectors in which business models necessitate the time-sensitive movement of freight or people; and
- Businesses which specialise in high-value market offerings, often needing a greater degree of physical collaboration between staff, suppliers and consumers.

Varying levels of reliance on aviation and related services has been observed across almost all parts of the economy. For instance, sectors such as manufacturing and agriculture utilise airport networks to import large amounts of goods from international markets. In a similar way, sectors such as retail and wholesale trade use air services to obtain products for sale to consumers or

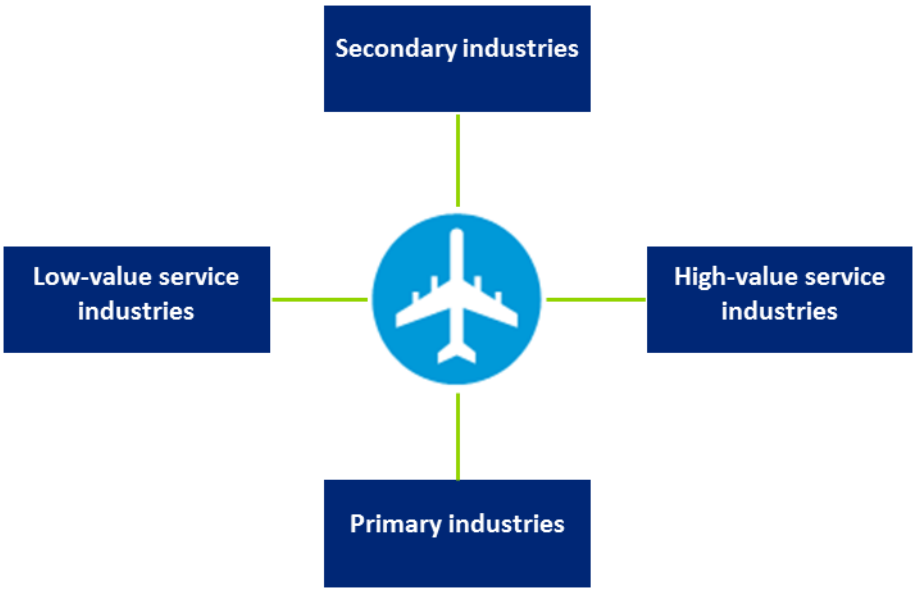
other businesses. However, the escalation in air services use over time remains an enduring trend in the industry. This aligns with the greater economic integration between Australian and global markets over the same period.

To approximate the extent of linkages with the airport industry, other sectors in the economy were classed in terms of four broad groups:

- **Primary industries** — sectors that are involved in the development and production of raw materials. These include agriculture and mining.
- **Secondary industries** — sectors which focus on the development, processing and construction finished goods. Such industries cover manufacturing, construction and energy utilities.
- **Low-value service industries** — sectors that provide services to the general population and to businesses. Activities associated with this sector include wholesale and retail trade, transport and distribution, entertainment and tourism.
- **High-value service industries** — sectors that are based on knowledge-intensive service offerings, often requiring greater levels of skill, innovation and collaboration to produce. Examples include creative industries, financial and professional services, education services and information media and telecommunications.

Figure 3.3 illustrates the different industry groups that depend on access to aviation services, and subsequently, airports.

Figure 3.3: The various parts of the economy supported by airports



Source: Deloitte Access Economics

Over time, as the employment and income gains of those employed at airports, or those who rely on airport services spread across the economy, the ongoing contribution of the airport industry can be even higher. The following discussion around the induced and catalytic impacts represent economic benefits that have a temporal dimension, that is, they have a time-based pattern of development and as a consequence may not be apparent in a snapshot analysis.

3.6.2 Catalytic impacts

It is widely recognised that beyond their immediate contributions, the link between airports and access to air services has helped transform the functioning of the Australian economy, in effect, strengthening and accelerating trade and social connections across the country and abroad. The

extent to which the existence of airports and the air services they enable boosts the performance of other industries and indeed the overall economy, are typically termed 'catalytic impacts'.

More specifically, catalytic impacts involve a range of positive spillover effects, including:

- **Global accessibility and trade** — One of the most significant advantages of airports is to facilitate, through delivery of air services, better access to larger markets. The wider availability and falling price of air transport over past decades has assisted in making trade with distant markets possible for all types of organisations.

  International trade is commonly recognised as a key driver of economic growth and rising living standards. Essentially, trade allows countries to specialise in producing the goods and services in which they have a comparative advantage in exchange for products that domestic consumers demand, but are produced more efficiently elsewhere. The net result is an increase in the overall value of goods and services available in an economy.
- **Productivity** — By facilitating increased mobility, the airport sector plays a vital role in supporting the productive operation of other sectors in the economy. Mobility is a predicator of economic activity, as it satisfies the basic need of moving from one location to another, a need that is shared among passengers, freight and information services. Airports enable organisations to exploit geographical comparative advantages and promote the development of economies of scale, further extending their scope through the access to air services.

The use of air services has become exceedingly important in light of the greater economic integration between national and global markets. Airports provide easier access to suppliers, staff and customers, particularly over longer distances, increasing business efficiency and thereby contributing to stronger productivity performance and economic growth. The application of FIFO charters highlights the way in which the airport sector, in conjunction with airline operators, has effectively supported new resource developments across the country.

- **Inward investment** — Airports have become a part of multi-modal transport hubs. As road and rail links to airports improve, airports with large areas of available adjacent land are able to capitalise and develop as national or regional centres of logistics.

  This has been supported by the growth in air freight, where manufacturers of high-value, low-density products trade-off the savings in inventory costs for costs of using air travel more frequently. Products such as fashion garments and perishable goods are increasingly using air travel as the preferred transport mode (see Section 2.2.3). This trend has translated into a greater number of freight-forwarding firms basing operations at, or in close proximity to, airports.
- **Tourism** — Airport services facilitate passenger entry and exit to one destination, generating income and employment in the Australian tourism industry and related sectors of the economy. Segments of the tourism industry in which airports and air travel are of particular significance include: international tourism, short domestic breaks, conventions and exhibitions and long haul tourism.

  Expenditure by tourists can form a major part of the economic impact attributable, at least in part, to the existence of an airport (see Section 4.1 for further discussion).
- **Commercial activity** — Better connections to domestic and international markets have the potential to attract businesses to locate at or within close proximity to airports. Those industries that need air services to conduct their operations gain efficiency when located near airport networks. In addition, sectors with a trade element also benefit from geographical proximity to airports. These advantages can be seen in the broader 'off-airport' precinct around major airport facilities.

Australia's high-value services composition necessitates the frequent use of air travel to coordinate with suppliers, and liaise with customers and staff. Air travel enables organisations to be managed more effectively, by making it easier for executives to visit subsidiaries or parent companies in another location. In this way, management expertise can also be transferred across offices, further enhancing the propensity for collaboration, innovation and networking.

4 Broader contribution to the community

This chapter examines the broader contribution that airports make to Australia beyond the economic contribution of airport precincts. Section 4.1 estimates the contribution of tourism expenditure that airports facilitate as a result of helping to transport international passengers into and around Australia and Section 4.2 discusses the contribution of the domestic tourism activity that airports facilitate. Section 4.3 examines the broader social contribution that airports make to their local communities.

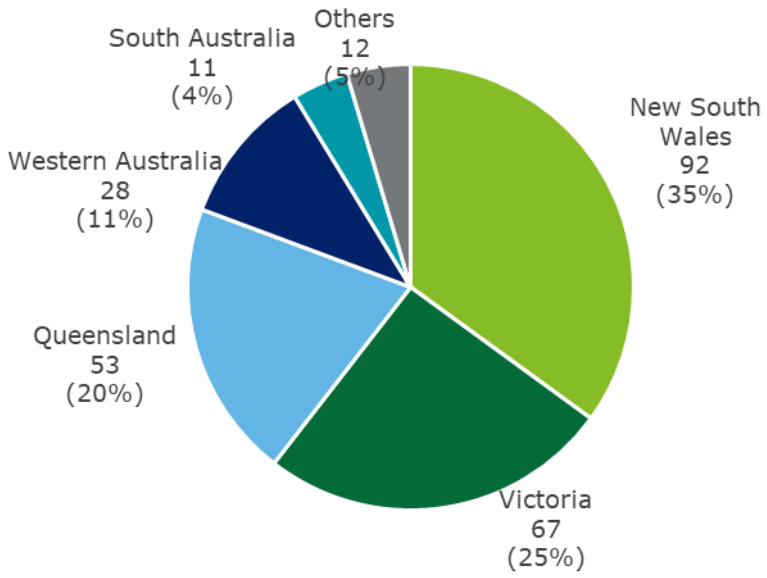
4.1 Facilitated international tourism

Australia's tourism industry is heavily reliant on the aviation sector. In 2016-17, 8 million international tourists travelled to Australia by plane, representing 97% of total international tourists travelling to Australia.

While airports play a pivotal role in facilitating international tourist travel to Australia, it is important to note that the nexus between airports and economic activity in the tourism sector is less immediate than for economic activity occurring on airport precincts which is examined in Chapter 3. In general airports are one of a number of industries that help *facilitate* activity in the tourism sector. In this respect the connection between airports and tourism is less direct than activity occurring on their precinct.

To capture the size of tourism activity facilitated by airports, the analysis here focuses on all expenditure by tourists who travel by air. The number of international tourists who travel by air has increased by 4.5% annually over the last 10 years. Chart 4.1 presents the number of international tourist visitor nights facilitated by the aviation sector in 2016-17 and the proportion of tourist visitor nights in each state relative to the Australian total.

Chart 4.1: International tourist visitor nights supported by air travel, 2016-17 (millions)



Sources: IVS Tourism Research Australia

In 2016-17, international tourists who travelled to Australia by air spent $26.6 billion in Australia. The majority of the expenditure is generated in New South Wales ($9 billion), Victoria ($7 billion),[8] and Queensland ($5 billion). International tourists to South Australia spend the most per night compared to international tourists in other states, with an average of $106 per night. This is followed by tourists staying in Victoria ($105 per night) and the ACT ($104 per night). International tourism expenditure facilitated by the aviation sector is presented in Table 4.1.

Table 4.1: International tourism expenditure facilitated by the aviation sector, 2016-17

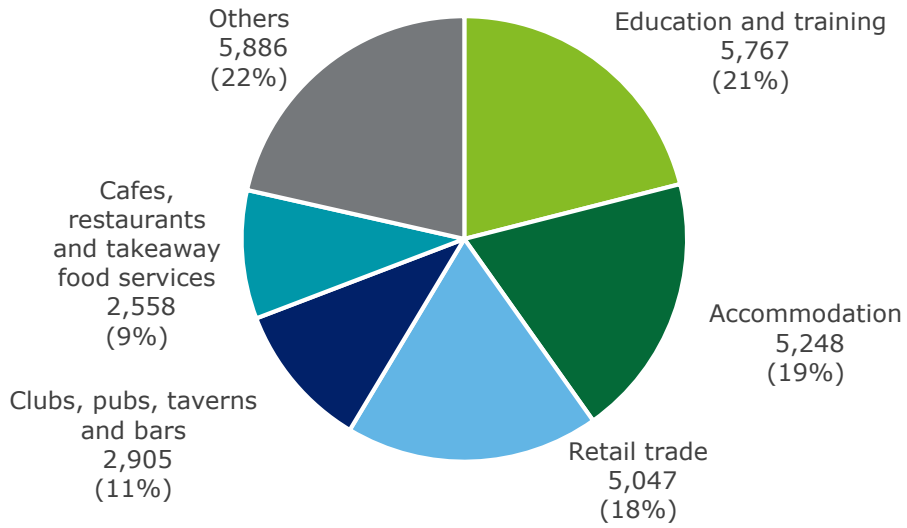
	Visitor nights (000)	Average expenditure per night ($ per night)	Total expenditure ($m)
New South Wales	92,291	100	9,266
Victoria	67,159	105	7,067
Queensland	53,174	97	5,166
South Australia	10,758	106	1,137
Western Australia	27,990	99	2,770
Tasmania	3,695	102	376
Northern Territory	3,900	92	358
ACT	4,583	104	479
National	**263,551**	**101**	**26,617**

Source: Deloitte Access Economics
Note: Numbers may not add to totals due to rounding errors.

Chart 4.2 shows that the top three industries which benefit from international tourism expenditure are education and training, accommodation, and retail. Together these industries account for more than half of the total expenditure generated by international tourists.

[8] The total facilitated tourism contribution to Victoria in this report is estimated to be $7.3 billion. This is slightly higher than the $6.8 billion reported in the Deloitte Access Economics report for Victorian airports on behalf of the Department of Economic Development, Jobs, Transport and Resources. The $6.8 billion figure is lower because it related to the previous financial year (2015-16) and only covered Melbourne and Avalon airports. The report also contained an estimate of the facilitated tourism attributable to Melbourne and Adelaide airports to Australia as a whole. As this figure captured all expenditure in Australia by those who transited through Melbourne, not just expenditure in Victoria, it is not directly comparable to the results reported here. A similar approach to this in estimating the contribution to Australia as a whole has been used in the 2015 Deloitte Access Economics reports for Sydney Airport so again is not directly comparable to the results provided here.

Chart 4.2: Expenditure of international tourists by industry, 2016-17 ($m)



Source: IVS Tourism Research Australia

The international tourist expenditure that airports facilitate in turn creates additional demand for Australian goods and services. As noted in Chapter 3, the most appropriate measure of an industry's economic contribution is value added.

As shown in Table 4.2, Deloitte Access Economics estimates that international tourism activity facilitated by the aviation sector directly contributes $12 billion in value added to the Australian economy. This contribution further stimulates economic activities in upstream industries, creating an additional $9.5 billion of indirect value added. The total economic contribution of the tourism activity facilitated by the aviation sector is $21.6 billion, which is equivalent to 1.3% of the national economy. The economic contribution of international tourism activity supported by the aviation sector is presented in Table 4.2.

Table 4.2: Economic contribution of international tourism supported by the aviation sector, 2016-17

	Direct value added ($m)	Indirect value added	Total value added	% GSP
New South Wales	4,280	3,433	7,713	1.4%
Victoria	3,133	2,522	5,655	1.4%
Queensland	2,359	1,901	4,261	1.4%
South Australia	505	410	915	0.9%
Western Australia	1,194	914	2,108	0.9%
Tasmania	162	134	295	1.0%
Northern Territory	148	114	261	1.0%
ACT	256	174	430	1.1%
National	**12,036**	**9,601**	**21,637**	**1.3%**

Source: Deloitte Access Economics
Note: Numbers may not add to totals due to rounding errors.

It is estimated that international tourism activity facilitated by the airport sector contributes to 218,500 jobs in Australia, including jobs created in industries that have direct contact with tourists and upstream industries. The number of jobs created is highest in New South Wales, Victoria and Queensland. Jobs created by tourism expenditure facilitated by airports are relatively more important to ACT and New South Wales, in which tourism activities account for 1.9% of the total employment in these states. Table 4.3 outlines the number of jobs supported by tourism activity facilitated by the airport sector.

Table 4.3 Economic contribution of international tourism supported by the aviation sector, 2016-17

	Direct employment	Indirect employment	Total employment	% State employment
New South Wales	48,201	24,090	72,291	1.9%
Victoria	39,012	18,455	57,467	1.8%
Queensland	28,896	15,448	44,344	1.8%
South Australia	6,579	3,456	10,035	1.2%
Western Australia	16,727	6,700	23,426	1.7%
Tasmania	2,336	2,157	4,494	1.8%
Northern Territory	1,488	873	2,361	1.7%
ACT	2,712	1,391	4,104	1.9%
National	**145,952**	**72,570**	**218,521**	**1.8%**

Source: Deloitte Access Economics
Note: Numbers may not add to totals due to rounding errors.

4.2 Facilitated domestic tourism

Airports also play an important role in facilitating domestic tourism through facilitating domestic air travel. Based on the proportion of domestic tourists who travel by air, it was estimated that airports facilitated $14.7 billion in expenditure nationally.[9]

The contribution of airports in facilitating tourism activity is summarised in Table 4.4 and Table 4.5. As shown in Table 4.4, Deloitte Access Economics estimates that this expenditure directly contributes $5.3 billion in value added to the Australian economy. This contribution further stimulates economic activities in upstream industries, creating an additional $5.4 billion of indirect value added. The total economic contribution of the domestic tourism activity facilitated by the aviation sector is $10.6 billion, which is equivalent to 0.6% of the national economy.

Table 4.4: Economic contribution of domestic tourism activity by the aviation sector, 2016-17

	Direct value added ($m)	Indirect value added	Total value added	% GSP
New South Wales	988	1,033	2,020	0.4%
Victoria	809	867	1,676	0.4%
Queensland	1,664	1,674	3,338	1.1%
South Australia	274	293	567	0.6%
Western Australia	844	811	1,655	0.7%
Tasmania	268	286	555	1.9%
Northern Territory	294	274	568	2.2%
ACT	140	129	269	0.7%
National	**5,280**	**5,367**	**10,647**	**0.6%**

Source: Deloitte Access Economics
Note: Numbers may not add to totals due to rounding errors.

It is estimated that domestic tourism activity facilitated by the airport sector contributes to 121,200 jobs in Australia, including jobs created in industries that have direct contact with tourists and upstream industries. Jobs created by domestic tourism expenditure facilitated by airports are relatively more important to Tasmania and the Northern Territory, in which tourism activities account for 3.8% and 3.9% of the total employment respectively in these states. 4.5 outlines the number of jobs supported by tourism activity facilitated by the airport sector.

[9] As for international tourism, the connection between airports and domestic tourism activity is less immediate than for activity on airport precincts. Acknowledging that an economic contribution framework such as the one adopted here does not attempt to gauge the degree to which economic activity generates net value to the economy, there are nevertheless differences between international and domestic tourism which should be borne in mind in interpreting the results presented here. In particular, from a national perspective, domestic tourism will generally involve a reallocation of expenditure from one region within Australia to another. The exception to this is where domestic travellers substitute local destinations for international ones.

Table 4.5 Economic contribution of domestic tourism activity by the aviation sector, 2016-17

	Direct employment	Indirect employment	Total employment	% State employment
New South Wales	13,158	7,199	20,357	0.5%
Victoria	13,489	6,297	19,786	0.6%
Queensland	23,239	13,509	36,748	1.5%
South Australia	4,421	2,451	6,873	0.8%
Western Australia	13,901	5,902	19,803	1.4%
Tasmania	4,817	4,575	9,391	3.8%
Northern Territory	3,245	2,091	5,336	3.9%
ACT	1,894	1,024	2,917	1.3%
National	**78,165**	**43,047**	**121,212**	**1.0%**

Source: Deloitte Access Economics
Note: Numbers may not add to totals due to rounding errors.

To explore the impact of tourism on local communities in more depth, two case studies on Hobart and Darwin are included below.

Case study: Hobart - Contribution to Southern Tasmania region

Hobart Airport, is Tasmania's largest airport and the ninth largest airport in Australia. The airport is curfew free and is a proud part of the Tasmanian community.

Hobart Airport plays an important role in the development of the regional economy by facilitating over 60% of the Tasmania's passenger movements. The number of visitors travelling through Hobart Airport has been increasing steadily since 2006-07. In 2016-17, Hobart Airport facilitated 883,000 visitors, representing average annual growth of 3% over the last 10 years. The majority of visitors to Hobart and surrounding are interstate overnight visitors and international visitors, who make up 61% and 37% of visitor nights in the region respectively.

These visitors stimulate demand for goods and services in the region. The tourism activity facilitated by Hobart Airport is estimated to contribute $338 million directly in value added and a further $202 million indirectly. This activity is associated with a total of 7,858 jobs, including 4,677 jobs in industries directly supported by tourism.

Table 4.4: Contribution of tourism activity facilitated by Hobart Airport to Hobart and the surrounding area

Economic contribution ($ million)	Consumption	Output	GVA	Employed
Day-trippers	6	3	1	
Intrastate	5	4	2	
Interstate	745	473	219	
International	355	226	116	
Direct	**1,111**	**705**	**338**	**4,677**
Indirect		**497**	**202**	**3,181**
Total		**1,202**	**540**	**7,858**

Note: Numbers may not add to totals due to rounding errors.

Hobart Airport continues to grow and contribute to the wider region through partnerships with key private sector members, as well as the Tasmanian State Government through an Access Working Group bringing together the airlines industry and the State Government. Through these partnerships, the region has experienced growth in the winter season, in part due to the success of two large festivals; Dark Mofo and the Festival of Voices.

Collaboration and partnership with key industry stakeholders has also enabled Hobart Airport to be exposed to a wider range of domestic and international opportunities, including the potential for future international passenger routes, and new domestic routes. This has been facilitated through a range of developments including a runway extension and a terminal redevelopment.

Source: Deloitte Access Economics, Hobart Airport

Case study: Darwin - Creating and driving regional tourism growth

Darwin International Airport is a key commercial, travel, services and military transport facility for northern Australia, located 13 kilometres from the city centre. Given the vast majority of visitors to the Northern Territory arrive by air, the airport makes a significant contribution to the Northern Territory economy, facilitating air travel for domestic and international visitors to Darwin and the surrounding region. It is a major gateway to Asia, with direct routes to Singapore, Denpasar-Bali and Dili. Domestic destinations are also well-covered, with direct routes to all State capitals except Hobart and Canberra. General aviation operators connect remote Northern Territory communities to Darwin.

The airport's operations have directly contributed to the Northern Territory economy, providing over 5000 jobs, and generating over $500 million annually, primarily through visitor spending at the airport. In 2012/13, international visitors to the Northern Territory spent over 3 million nights, and $330 million in regional centres. Domestic visitors spent over $1,447 million over the same period.

It is expected that the airport's direct contribution to the Northern Territory economy in terms of jobs and income over the next 20 years will more than double, due in part to Darwin International Airport's commitment to route development, and the enhancement of its facilities.

Source: Darwin Airport, ACIL Allen Consulting

4.3 Broader social contribution to local communities

In addition to their economic contribution, airports make an important social contribution to their communities. This social contribution is difficult to quantify as it often represents non-market activities that nonetheless provide important welfare gains to the local community.

At a fundamental level, airports fulfil the basic social function of **connecting individuals**, families and communities with the rest of country and indeed the world. They also play an important role in offsetting the geographical disadvantages of living in remote parts of Australia by **delivering essential and emergency services**. Additionally, airports provide **training facilities** to provide practical experience for people in aviation industries and also support the community by **sponsoring community programs and events**.

Connecting individuals

The primary role of airports is to connect people, making it easier to visit friends and relatives across the State, country and internationally. This is particularly valuable in a nation such as Australia, which is marked by considerable distances between major urban hubs, and between us and the rest of the world.

Internationally, air travel allows Australians to maintain physical contact with family and friends overseas. Given Australia's multicultural composition, with over 28% of Australians being born overseas, this is an important part of modern life.

Within Australia, capital city and regional airports help bridge the gap between cities and rural areas. In this sense, airports support the economic and social vibrancy of rural communities, enhancing their liveability, social connectedness and prosperity.

Delivering essential and emergency services to rural areas

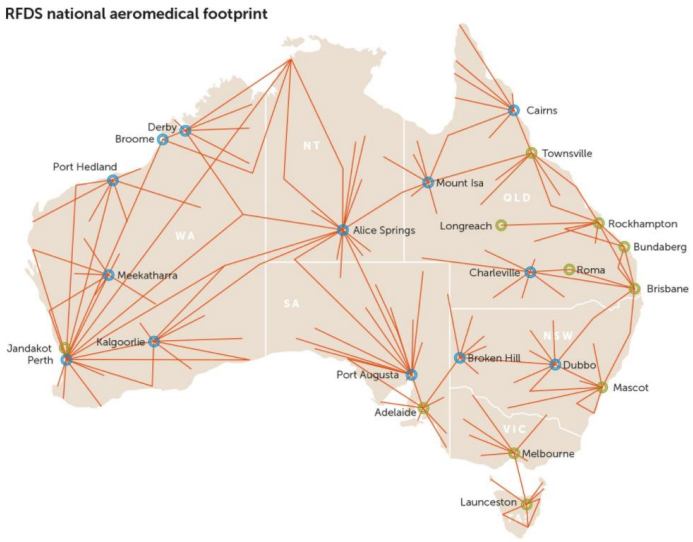
Airports can help narrow the gap in services between rural and urban areas, providing a key access point for regional communities.

Airports are essential infrastructure in the management of, and emergency response to, bushfires. For example in Victoria, the Country Fire Authority and the Department of Environment, Land,

Water and Planning use aircraft as an integral part of managed burns to prevent fires and in the coordinated emergency response to bushfires. For instance, each year at the start of the bushfire season Victoria's aircraft fleet is strategically deployed to various airports to help protect people and physical assets from fire damage.

Medical services needed by people living in rural and remote areas of Australia are no different to services required in large cities, but the vast distances that small rural populations have to overcome to access health services provide a significant challenge. Through collaborating with theRoyal Flying Doctor Service, airports help to bring medical services to the most remote areas in Australia (see Figure 4.1 below). The Royal Flying Doctor Service uses dedicated aircraft to provide emergency evacuations throughout rural and remote Australia for people who require urgent medical attention. In 2016-17, they provided 4,604 emergency evacuations. This essential emergency service provides assurance to people living, working and travelling in rural and remote Australia, where there are often few other health services available.

Figure 4.1: Royal Flying Doctor Service national aeromedical footprint



Source: Royal Flying Doctor Service

Facilitating aviation skill training

The aviation industry requires a highly skilled and diverse workforce. In 2016, there were approximately 50,000 FTEs working in the Air and Space Transport sector in Australia (ABS 2017)**.**

Australia has a comparative advantage in the global aviation and training market. The vast landscape of the Australian continent has allowed the expansion of training facilities across many major regional airports. For instance, regional airports such as Wagga is selected as the site for the Australian Airline Pilot Academy (AAPA) as it possesses ideal training conditions, including extensive training areas, conducive weather for training, runway options, and an instrument landing system.

While regional airports can easily support flight training requirements without conflicting with commercial flight paths and with minimal noise impacts on residential areas; major airports provide access to specialised training facilities. For example, a purpose-built aviation fire training ground was opened in 2013 in Melbourne Airport to simulate firefighting and rescue situations and enable training of new recruits to Airservices Aviation Rescue and Firefighting service.

Broader social and environmental activities

Airports are valuable parts of their local communities. They connect with their local communities through a range of activities.

Larger airports often partner with community groups to invest in local programs. In 2016, Sydney Airport invested more than $3 million in the community across the focus areas of health, environment, education and families in need. They partnered with the Inner West Council to provide healthy meals, transport and fitness activities to vulnerable and disadvantaged youth. Melbourne Airport, through the Melbourne Airport Community Fund, supports a range of community programs including providing tutoring and scholarships to students from disadvantaged backgrounds, and undertaking environmental protection and rehabilitation activities. Perth Airport through its Community Support Program has provided around $1 million per annum over the last five years to schools, community groups and not-for-profit organisations and charities.

Airports regularly host community events which can range in size from small musical performances at Latrobe Airport (Latrobe Regional Airport 2015) through to large international events, such as the Australian International Airshow at Avalon Airport, which attracts around 200,000 attendees to view specialist exhibits and demonstrations. Many airports also house aviation museums, with the largest – the Australian National Aviation Museum – located at Moorabbin Airport. With an extensive aeronautical collection, the Museum seeks to teach visitors about the history of flight and Australia's role in its development.

Airports also adopt and pioneer new technologies and environmental strategies. These often aim to prevent, control and reduce their production of noise and carbon pollution. For example, in 2016 Mildura Airport installed a solar power grid to the roof of the terminal and administration building, reducing its carbon footprint and increasing its energy reliability.

Results from the Survey indicated that airports are involved in a wide-range of community activities including waiving fees for community events or offering sponsorship for activities including festivals, education, the arts, and sport. The types of support are similarly diverse, including airports waiving fees for community organisations, partnering with events, workplace giving programs, and offering sponsorship. Airports also offered support to the local community with initiatives including subsidies for hospital and health passengers' parking, cheap community fares and concessions for locals. A number of airports also affirmed their connection to their community through committing to locally sourcing labour and products sold in the airport.

A number of regional airports indicated that their airports provide subsidies and infrastructure to the RFDS, as well as offering monetary and in-kind contributions. A number of other airports surveyed stated that they offered similar support to other community services and government organisations such as the Rural Fire Service and the Bureau of Meteorology, through donations and free tenancy.

Case study: Canberra - Promoting local sports, arts, and social initiatives

Canberra Airport, owned and managed by Capital Airport Group, is a fixture in the Canberra community. The airport, as well as The Snow Foundation, support and facilitate the development of numerous grassroots sporting activities and social enterprises, as well as promoting local arts and culture.

A firm commitment to public art and the promotion of regional artists has seen the installation of over 19 artworks throughout the terminal and business park precinct, with more to come. The works provide a stimulating point of difference to the airport, and reflects Canberra's emerging reputation as a world-class destination.

Local sporting endeavours and sportspeople are also promoted and supported by the airport group. The airport has a partnership with the Canberra Raiders rugby team and the airport has also recently signed local BMX star Caroline Buchanan as an 'influencer', fronting marketing campaigns and speaking at airport events.

The Snow Foundation was established by the airport's owners to benefit the disadvantaged community in Canberra, and enable others to introduce positive change. The Foundation has been prominent in establishing numerous initiatives, including The Funding Network Australia, which annually, raises money through live crowdfunding for three local grassroots organisations addressing social disadvantage in the Canberra community. In its inaugural year, over $80,000 was raised, along with hundreds of thousands of dollars in pro bono work from individuals and businesses in the community.

In addition, the Foundation, in conjunction with other ACT financial institutions and businesses, has invested in a range of local community groups. The organisations combined have donated over $230,000 to a microfinance facility for victims of domestic violence. The facility provides interest-free loans of up to $5,000 to people who are unable to access other financial assistance after fleeing domestic violence.

In the 26 years since it was established, The Snow Foundation has assisted 264 different organisations and over 243 individuals, providing well over $20 million in funding which includes $614,726 to individuals.

Source: Canberra Airport

Together, these examples highlight the breadth of ways that Australian airports contribute to their local communities.

5 Strategic implications

Australia's extensive network of airports plays a crucial role in connecting individuals, facilitating economic activity, and providing critical services for remote communities. The sector's performance and its future, therefore, have meaningful impacts on many areas of the economy, especially those most heavily reliant on air transportation.

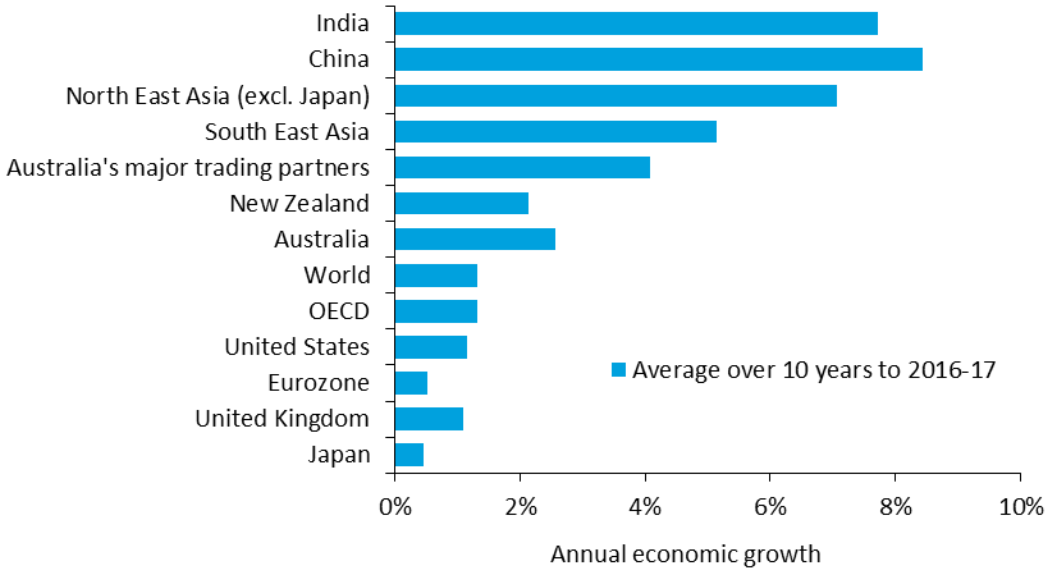
This section discusses economic and social factors that are significant to the future development of airports and their implications for the sector.

5.1 Macroeconomic outlook

Recent global economic growth has been concentrated in Asia, primarily through rapid growth in China and India. India and North-East Asia in general, are expected to achieve strong near-future growth through uplifts in global trade, and growth in national manufacturing capacities. Increased global trade is expected to increase activity in Australian airports, especially through increased freight imports.

Major world economies, including the US, Europe, and New Zealand, have begun to return to a stable economic growth path following the GFC. This growth is expected to continue over the period 2020 with New Zealand forecast to grow at an average annual rate of 2.6% over the next three years and the US forecast to grow at an average pace a touch above 2% p.a. (Deloitte Access Economics, 2017). The Eurozone and New Zealand, in particular, have reported increased consumer spending, increasing demand for international holidays, and Australian goods. This effect, when considered in conjunction with a favourable Australian dollar and strong expected growth trajectories in Asia, is expected to lead to strong growth in international visitor arrivals. Chart 5.1 presents a global economic growth outlook for some of the world's major economies.

Chart 5.1: Global economic growth over the past 10 years



Source: Deloitte Access Economics

5.1.2 China and Asian growth

The economic performance of China has been primarily led by the high level of investment and exports, facilitated by expansionary monetary policy. This growth strategy has also caused inefficient operations of state-owned enterprises and exacerbation of debt. Recognising the risks

associated with the current growth path, the Chinese government has acted to gradually shift the economy to a consumption-led economy. China is forecast to grow at 6% p.a. over the period to 2020 (Deloitte Access Economics 2017).

The economic expansion in India is expected to continue being strong, supported by a low interest rate, healthy domestic consumption, and a gradual move towards a digital economy. The next three years are projected to see India's GDP growth outpace China by around a full percentage point.

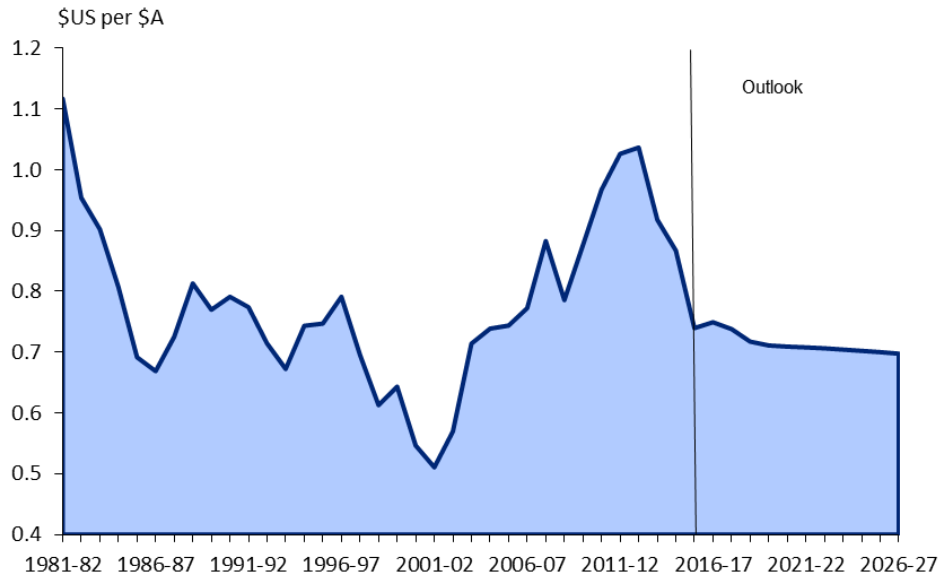
The expansion of Asian economies will likely increase the demand to travel to Australia for business and leisure as well as demand for international trade between Australia and Asian economies. The expansion of Asian economies has also led to growth in visiting friends and relatives from Asian countries choosing to visit Australia.

The growth of Asia, and in particular the growth of the Asian middle class, has been one of the most important factors driving growth in international visitation to Australia. Tourist arrivals from Asian source countries have accounted for more than two thirds of the growth in tourist arrivals to Australia over the last decade. This trend is expected to continue. Kharas (2017) predicts that between 2015 and 2025 the size of the middle class in the Asia-Pacific region will more than double from 1.38 billion to 2.78 billion people, which will continue to support strong growth in inbound tourism to Australia.

5.1.3 Australian dollar

A high Australian dollar makes Australia a comparatively more expensive tourist and trade destination, affecting the demand for air services. The Australian dollar appreciated over 2016, after a long fall from its peak earlier in the decade. Chart 5.2 illustrates past exchange rate movements, and projects rates into the future. Activity and demand from China continues to be a key influence on the Australian dollar, with recent increases in demand for mining commodities contributing to uplifts in the dollar.

Chart 5.2: Exchange rate outlook



Source: Deloitte Access Economics

It is expected that as China transitions from investment to consumption activities, growth in the demand for commodities will slow, resulting in the Australian dollar settling in the medium term to around $0.70 USD (Deloitte Access Economics, 2017). A weak Australian dollar will provide

opportunities for Australian businesses to benefit from a competitive standpoint, as well as from increased tourism demand, stimulating the air services sector.

5.1.4 Tourism outlook

The positive economic outlook presented in the previous sections facilitates tourism activity and demand for air travel. Both international and domestic travel are expected to experience a strong growth over the medium term, with a 6.9% increase in international tourists and 3.4% increase in domestic tourist numbers (Deloitte Access Economics, 2017).

The growth in international tourist trips is supported by the continued expansion of Asian economies and the moderate Australian dollar. In 2016-17, nine new international routes have been opened by both Australian and foreign airlines, seven of which connect an Australian city with an Asian city (Tourism Queensland website, 2017).

On the domestic front, the growth in domestic travel has been supported by an annual increase in income of 1.8% in 2016-17. This growth has been forecast to accelerate to 2.8% over the next three years, providing further support to domestic travel (Deloitte Access Economics, 2017).

While the increase in demand for air travel will undoubtedly bring positive changes to the airport sector overall, benefits associated with the increase in air travel are not distributed evenly across Australian airports. As discussed in Chapter 2, the growth in both international and domestic passenger movements in regional airports have not been as strong as in major airports.

5.2 Exposure to airline related risks

The demand for airport services is mainly driven by the need for aircraft movements, which is subsequently driven by the demand for air passenger services and air freight (Figure 5.1). In economic terms, the demand for airport services is 'derived' demand as it is derived from the demand for other services. This relationship implies that any factors that affect the airline industry ultimately have impacts on airports. In other words, airports are not immune to airline related risks.

Figure 5.1: Relationship between individuals, airlines, and airports

Source: Deloitte Access Economics

The airline industry, due to its nature, is subject to a wide range of uncontrollable risks, including fuel prices, terrorism, pandemics and natural disasters. Each of these factors have materialised at some time over the last decade and created significant economic consequences to the airline industry.

Fuel price is arguably the most significant source of uncertainty to airlines. The global airline industry's fuel bill is estimated to total US$130 billion in 2016-17, accounting for over 17% of

operating expenses at US$54.2/barrel Brent of oil (IATA, 2017). While this bill is 3 times higher than the 2003 level (US$44 billion), it is much lower than the 2013 level (US$230 billion, 32% of operating costs) when the fuel price was US$108.8 per Barrel. While major airlines tend to have robust hedging strategies to manage short to medium term fuel costs, price increases in the longer term are typically passed on to customers through explicit surcharges. This increases the costs of air travel and reduce demand.

Since 9/11, terrorism has become an important factor that has brought detrimental impacts on the global airline industry. It is estimated that European airlines lost approximately US$2.5 billion in revenue as a result of the 2015-2016 attacks in Paris and Brussels (IATA website, 2017). In mid-2017, two men were arrested and charged for planning a terrorist incident aboard a passenger aircraft departing an Australian airport. This event has made Australians more aware of the risks associated with international travel and triggered increased security at several Australian airports.

Importantly, the close relationship between airlines and airports means that what is good for airlines tends to be good for airports. Airlines and airports cannot operate without one another, as a result, both sectors share a common long term interest in the continued viability of Australia's air transport system.

5.3 Development costs

Substantial development activities are occurring across Australia's airports. Notably, $5.3 billion is being invested in Western Sydney Airport, which is set to open in 2026 to satisfy the growing demand for air transport in the region. There are two million people who currently live in Western Sydney, meaning that it would be Australia's fourth-largest city and third-largest economy in its own right. Another million people are expected to move into the region by the 2030s. More detail on the level of historical capital investment undertaken by major airports is contained in Chapter 2 of this report.

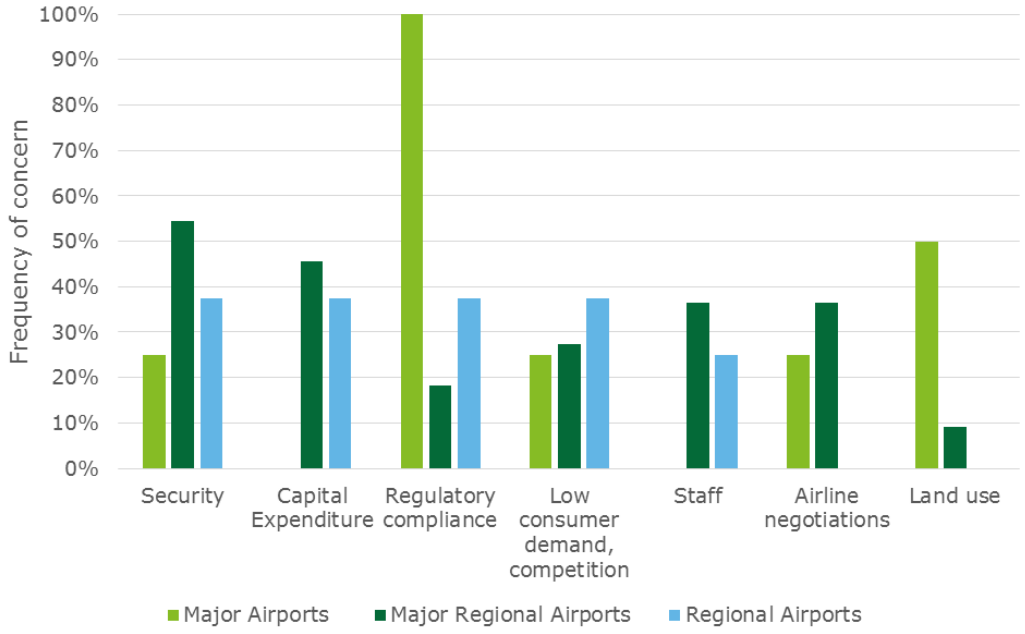
Airport infrastructure, whether terminal facilities or airfield infrastructure, are among the most expensive forms of construction. The costs of building new infrastructure has increased due to rising construction costs, shortages of skilled labour, and increased customer expectations. For regional airports, in particular, construction costs have increased as a result of the growing need to service wide-body aircrafts on regional routes. The location of regional airports further increases per unit development costs, making it significantly higher than those incurred by airports in the major population centres.

Despite the significant capital investment involved in developing airports, future services at airports, particularly regional airports, are inherently difficult to predict and uncertain. Demand for airport services, and in general aviation services, are strongly influenced by general economic conditions and unforeseen events such as the discovery of nearby mineral resources. Consequently, airports bear substantial demand risk. This can impede forward investment decisions on infrastructure and terminal facilities.

5.4 Future industry challenges

Deloitte Access Economics' Survey of airports asked respondents to list the three key challenges they expected to face over the next five years. The most common categories of concern by type of airport are displayed in Chart 5.3 below.

Chart 5.3: Key challenges identified in the survey by type of airport



Source: Deloitte Access Economics Airport survey.

The most common concern for survey respondents was the **cost of complying with security requirements**. Airports cited the short life-span of screening equipment and the possibility of stricter regulations requiring an upgrade to security infrastructure as sources of financial pressure. Concerns surrounding the cost of meeting security requirements were most common among major regional airports, one respondent stating that they were concerned their security requirements may be brought into line with major airports. Regional airports were less concerned with meeting current security requirements, but rather with the expenses associated with implementing new infrastructure if required.

Airports commit significant resources to ensure they comply with various forms of regulation. Compliance with regulations was seen as a key issue that was shared by 40% of all airports who responded to the survey and all major airports. Regional airports were particularly concerned with the **operational costs associated with regulatory compliance**, particularly changing environmental and safety regulations. Further some regional airports noted that compliance is made difficult by a shortage of staff qualified to properly implement regulations.

Concerns around staffing and capital expenditure were exclusively raised by regional airports. The responses indicated that attracting staff to regional areas is difficult and increases labour costs. Regional airports were concerned with a lack of funds for capital works and an insufficient availability of grant funding.

Low consumer demand and increased competition were economic concerns that were shared by 30% of respondents and appeared to impact airports of all sizes. Respondents stated that without an increase in consumer demand the return on investment for capital works is limited, while compliance and maintenance costs do not change or increase. These economic factors are impacting profitability and putting significant financial pressure on some respondents.

Airline negotiations were only listed as a concern by smaller major airports and major regional airports.

Land use was a less common concern, listed by 13% of respondents but by 50% of major airports. These airports were concerned that their ability to expand both the airport and ancillary services in the future was being limited by the zoning and development of land surrounding the

airport. Further an increase in residential areas around airports can limit airspace and increases the imperative to reduce the impact of aircraft noise.

References

AAA Submission, 2017, Inquiry Into Regional Airfares In Western Australia.

Australian Competition and Consumer Commission 2017, Airport Monitoring Report 2015-16.

Bureau of Infrastructure, Transport and Regional Economics (BITRE) 2013, Air Transport Service Trends in Regional Australia.

Bureau of Infrastructure, Transport and Regional Economics (BITRE) 2014, Freightline 1 – Australian freight transport overview, BITRE, Canberra, ACT.

Bureau of Infrastructure, Transport and Regional Economics (BITRE), 2015, available at: https://infrastructure.gov.au/aviation/airport/index.aspx [Accessed 13th November, 2017].

Bureau of Infrastructure, Transport and Regional Economics (BITRE), 2017, available at: https://bitre.gov.au/publications/ongoing/airport_traffic_data.aspx [Accessed 13th November, 2017].

Deloitte Access Economics 2017, Tourism and Hotel Market Outlook.

IATA 2017, Terror attacks cost European airlines $2.5 billion in revenue, available at: http://atwonline.com/airline-traffic/iata-terror-attacks-cost-european-airlines-25-billion-revenue.

IATA 2017, Fact Sheet-Fuel, available at: https://www.iata.org/pressroom/facts_figures/fact_sheets/Documents/fact-sheet-fuel.pdf.

Kharas, H. 2017, 'The unprecedented expansion of the global middle class: an update', Brookings Global Economy and Development Working Paper 100.

Tourism Research Australia 2017, *International Visitor Survey June 2017.*

Tourism Research Australia 2017, *National Visitor Survey June 2017.*

Tourism Research Australia 2017, *State Tourism Satellite Accounts 2015-16.*

Appendix A: Economic Contribution modelling framework

A.1. Methodology

Economic contribution studies are intended to quantify measures such as value added, exports, imports and employment associated with a given industry or firm, in a historical reference year. The economic contribution is a measure of the value of production by a firm or industry.

All direct, indirect and total contributions are reported as gross operating surplus (GOS), labour income, value added and employment (with these terms defined in Table i: Definitions of economic contribution estimates).

Table i: Definitions of economic contribution estimates

Estimate	Definition
Gross operating surplus (GOS)	GOS represents the value of income generated by the entity's direct capital inputs, generally measured as the earnings before interest, tax, depreciation, and amortisation (EBITDA).
Labour income	Labour income is a subcomponent of value add. It represents the value of output generated by the entity's direct labour inputs, as measured by the income to labour.
Value added	Value added measures the value of output (i.e. goods and services) generated by the entity's factors of production (i.e. labour and capital) as measured in the income to those factors of production. The sum of value added across all entities in the economy equals gross domestic product. Given the relationship to GDP, the value added measure can be thought of as the increased contribution to welfare.
Employment (FTE)	Employment is a fundamentally different measure of activity to those above. It measures the number of workers (measured in full-time equivalent terms) that are employed by the entity, rather than the value of the workers' output.
Direct economic contribution	The direct economic contribution is a representation of the flow from labour and capital committed in the economic activity.

Indirect economic contribution	The indirect contribution is a measure of the demand for goods and services produced in other sectors as a result of demand generated by economic activity.
Total economic contribution	The total economic contribution to the economy is the sum of the direct and indirect economic contributions.

Source: Deloitte (2017)

A.1.1. Value added

The measures of economic activity provided by this contribution study are consistent with those provided by the Australian Bureau of Statistics. For example, value added is the contribution the sector makes to total factor income and gross domestic product (GDP).

There are a number of ways to measure GDP, including:

- expenditure approach – measures expenditure: of households, on investment, government and net exports; and
- income approach – measures the income in an economy by measuring the payments of wages and profits to workers and owners.

Below is a discussion measuring the value added by an industry using the income approach.

A.1.2. Measuring the economic contribution – income approach

There are several commonly used measures of economic activity, each of which describes a different aspect of an industry's economic contribution:

- Value added measures the value of output (i.e. goods and services) generated by the entity's factors of production (i.e. labour and capital) as measured in the income to those factors of production. The sum of value added across all entities in the economy equals gross domestic product. Given the relationship to GDP, the value added measure can be thought of as the increased contribution to welfare.

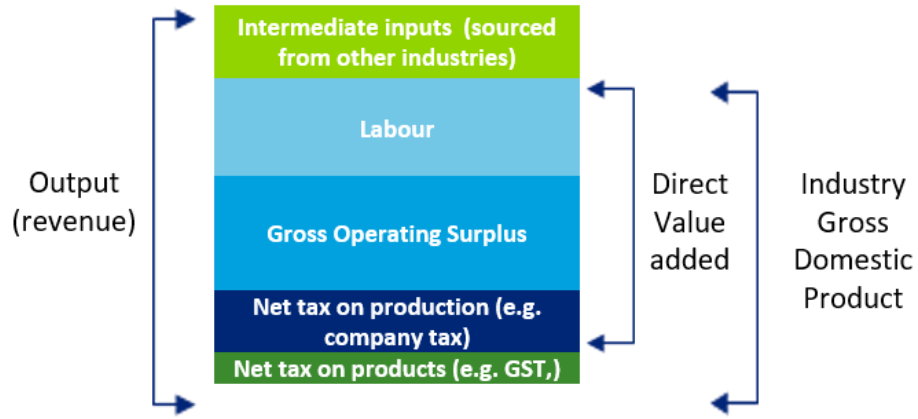
  Value added is the sum of:

  - Gross operating surplus (GOS) represents the value of income generated by the entity's capital inputs, generally measured as the earnings before interest, tax, depreciation and amortisation (EBITDA).
  - Tax on production less subsidy provided for production. Note: given the manner in which returns to capital before tax are calculated, company tax is not included or this would double-count that tax. In addition, it excludes goods and services tax, which is a tax on consumption (i.e. levied on households).
  - Labour income is a subcomponent of value added. It represents the value of output generated by the entity's direct labour inputs, as measured by the income to labour.

Figure A.1 shows the accounting framework used to evaluate economic activity, along with the components that make up output. Output is the sum of value added and the value of intermediate inputs used by the firm.

The value of intermediate inputs can also be calculated directly by summing up expenses related to non-primary factor inputs.

Figure A.1 Economic activity accounting framework



Source: Deloitte

Contribution studies generally outline employment generated by a sector. Employment is a fundamentally different measure of activity to those above. It measures the number of workers that are employed by the entity, rather than the value of the workers' output.

A.1.3. Direct and indirect contributions

The **direct** economic contribution is a representation of the flow from labour and capital in the company.

The **indirect** contribution is a measure of the demand for goods and services produced in other sectors as a result of demand generated by the direct economic activity of SJD Group. Estimation of the indirect economic contribution is undertaken in an input-output (IO) framework using Australian Bureau of Statistics IO tables which report the inputs and outputs of specific sectors of the economy (ABS 2013).

The total economic contribution to the economy is the sum of the direct and indirect economic contributions.

Other measures, such as total revenue or total exports are useful measures of economic activity, but these measures alone cannot account for the contribution made to GDP. Such measures overstate the contribution to value added because they include activity by external firms supplying inputs. In addition, they do not discount the inputs supplied from outside Australia.

A.1.4. Limitations of economic contribution studies

While describing the geographic origin of production inputs may be a guide to a firm's linkages with the local economy, it should be recognised that these are the type of normal industry linkages that characterise all economic activities.

Unless there is unused capacity in the economy (such as unemployed labour) there may not be a strong relationship between a firm's economic contribution as measured by value added (or other static aggregates) and the welfare or living standard of the community. The use of labour and capital by demand created from the industry comes at an opportunity cost as it may reduce the amount of resources available to spend on other economic activities. This is not to say that the economic contribution, including employment, is not important. As stated by the Productivity Commission in the context of Australia's gambling industries[10]:

[10] Productivity Commission (1999), *Australia's Gambling Industries*, Report No. 10, AusInfo, Canberra, (page 4.19).

> Value added trade and job creation arguments need to be considered in the context of the economy as a whole … income from trade uses real resources, which could have been employed to generate benefits elsewhere. These arguments do not mean that jobs, trade and activity are unimportant in an economy. To the contrary they are critical to people's well-being. However, any particular industry's contribution to these benefits is much smaller than might at first be thought, because substitute industries could produce similar, though not equal gains.

In a fundamental sense, economic contribution studies are simply historical accounting exercises. No 'what-if', or counterfactual inferences – such as 'what would happen to living standards if the firm disappeared?' – should be drawn from them.

The analysis – as discussed in the report – relies on a national IO table modelling framework and there are some limitations to this modelling framework. The analysis assumes that goods and services provided to the sector are produced by factors of production that are located completely within the state or region defined and that income flows do not leak to other states.

The IO framework and the derivation of the multipliers also assume that the relevant economic activity takes place within an unconstrained environment. That is, an increase in economic activity in one area of the economy does not increase prices and subsequently crowd out economic activity in another area of the economy. As a result, the modelled total and indirect contribution can be regarded as an upper-bound estimate of the contribution made by the supply of intermediate inputs.

Similarly, the IO framework does not account for further flow-on benefits as captured in a more dynamic modelling environment like a Computerised General Equilibrium (CGE) model.

A.1.5. Input-output analysis

Input-output tables are required to account for the intermediate flows between sectors. These tables measure the direct economic activity of every sector in the economy at the national level. Importantly, these tables allow intermediate inputs to be further broken down by source. These detailed intermediate flows can be used to derive the total change in economic activity associated with a given direct change in activity for a given sector.

A widely used measure of the spill-over of activity from one sector to another is captured by the ratio of the total to direct change in economic activity. The resulting estimate is typically referred to as 'the multiplier'. A multiplier greater than one implies some indirect activity, with higher multipliers indicating relatively larger indirect and total activity flowing from a given level of direct activity.

The IO matrix used for Australia is derived from the ABS FY17 IO tables (2016-17). The industry classification used for IO tables is based on the Australian and New Zealand Standard Industrial Classification (ANZSIC), with 114 sectors in the modelling framework.

Limitation of our work

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