

Liverpool: the Gateway to Sydney's Aerotropolis

Liverpool City Council
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Foreword

Unique is an overused word. But, with an international airport being built entirely in our backyard, we can say with some confidence that no other council in Australia faces the same opportunities that lie ahead of Liverpool in coming years.

For just the building and construction alone many councils might be tempted to pat themselves on the back for a job well done. After all, 11,000 construction jobs on a \$5.3 billion build will be a major shot in the arm for the Liverpool economy. Throw in associated roadworks and related infrastructure and there is even more reason to feel confident about the future.

But at Liverpool City Council our view has always been that the airport is just the start.

If we are to settle for an airport and nothing more, then 40 years of talking and studies, of reports and meetings, of lobbying and community engagement will have been in vain.

That is why we commissioned PwC to prepare this report on the Badgerys Creek Aerotropolis. The Aerotropolis is where the full value of the airport will be realised. Land-use planning and investment will facilitate the creation of a new urban environment built around the airport to speedily connect time-sensitive suppliers, manufacturers, distributors, and business people to distant customers, clients, and marketplaces.

Much of that will be built on land in the Liverpool Local Government Area and we stand ready to work with Federal and State governments as a willing partner to help capitalise on the opportunities – for the benefit of Liverpool but also for Western Sydney generally.

This PwC report builds on *A Western Sydney Aerotropolis*, a study written by the renowned aviation and aerotropolis expert John Kasarda.

This report shines a light on some of the specific industries which most readily stand to benefit from the

creation of an aerotropolis. Many will be entirely new players in our region; others, such as defence and market gardening, come with decades and more of experience and history in Liverpool. We can build a great future on the legacies of the past.

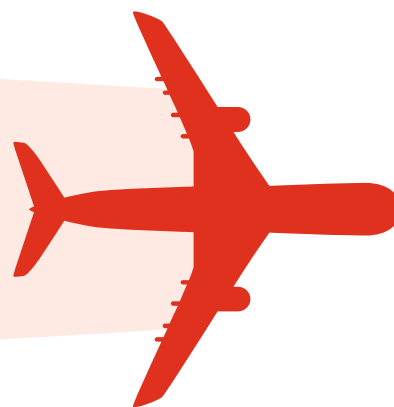
But that future is yet to be written. Initiatives yet to bear fruit will become the businesses of tomorrow.

At Liverpool City Council we stand ready to embrace them.



Wendy Waller
Liverpool City Council Mayor

Executive summary



Western Sydney Airport (WSA) is a once-in-many-generations opportunity for Western Sydney.

Rather than simply being a place that planes land, it is reasonable for WSA to be the centrepiece of a holistic development at the airport and in its surrounds, to maximise the economic and social benefits that the airport can provide.

With the right planning and investment, there is the potential for an 'aerotropolis' to form around WSA: a metropolitan sub-region whose infrastructure, land use and economy are centred on an airport.¹

A number of international airports have realised the compounding benefits of creating developments to house aviation-enabled businesses such as logistics and distribution, manufacturing, hotels, conference venues in one discrete area. Incheon Airport in Seoul and Dallas Fortworth International Airport in Texas have become major economic

hubs through the successful implementation of this strategy, demonstrating the mutually reinforcing benefits generated by an airport and the development of its surrounding areas (see Appendix B).

One of Australia's most significant airports

Success begins with the airport itself. WSA is positioned to become far more than an 'overflow' airport that only services the low-cost leisure market. Its 24-hour operations will ensure that WSA quickly becomes a nationally significant airfreight hub; and attract full-service airlines looking to capitalise on the need of business travellers for more convenient overnight connections to Asia and beyond.

Over time, the airport will become one of Australia's most significant airports, driven by Western Sydney's population and growing economy

(now the third largest in Australia), Sydney's overall position as Australia's most populous city and largest international trade hub, and increasing capacity constraints at Kingsford Smith Airport (KSA).

It is expected that slots at KSA will be fully allocated by around 2030. The WSA site on the other hand will have the flexibility for further expansion in response to passenger demand over time. Within 50 years it is expected to accommodate 82 million passenger movements per year; double the number that KSA does today and more than Heathrow Airport in London.

A new, greenfield international airport in a developed city is rare. WSA has the enviable opportunity to leap-frog efforts of its peers to improve the sustainability of operations and develop a smart aerotropolis that is consistent with 21st century practice.

¹ John Kasarda 2015, *A Western Sydney Aerotropolis: Maximising the benefits of Badgerys Creek*, p.9

Key opportunities

One of WSA's most significant advantages is that it will be curfew-free. The possibility for 24-hour connectivity to domestic and international markets opens up the opportunity to attract a number of sectors to locate around WSA. The most promising sectors identified in this report are not only those that will be enhanced by proximity to WSA but are those already poised for growth.



Logistics and distribution

- Creating a logistics hub around WSA would support Australia's growing airfreight task – expected to double by 2030 – and enable greater productivity and competitiveness within the logistics sector itself.



Food manufacturing and export

- Overseas demand for Australian perishable foods is the greatest driver of outbound airfreight. Creating a food hub near the airport to cluster advanced food-manufacturing, value-add processing, cold-storage and packing, offers both better connectivity into premium markets and closer proximity to other parts of what can be a sensitive supply chain.



Medical technologies

- An emerging health and education precinct in Liverpool has ambitions to become a hub for the development of health-related technology. The precincts core advantages, such as the presence of Liverpool's leading health and education institutions, will be further enhanced by the additional connectivity to domestic and overseas suppliers and markets provided by WSA and the rail and road network being developed to support it.



Defence and aerospace

- The NSW Department of Industry is looking to establish a defence and aerospace hub at WSA to support the growth of industry; an objective of both the NSW and Commonwealth Governments. The NSW Government has secured the commitment of its first anchor tenant: the global defence company Northrup Grumman.



Tourism

- WSA is expected to provide a significant boost to Western Sydney's visitor economy. New attractions and a focus on developing Western Sydney's supply and quality of accommodation will help to ensure that flows of passengers through WSA translate into greater overnight stays.

Liverpool's role as the leading edge city

The surrounding 'edge cities' of Liverpool, Penrith, Fairfield, Campbelltown and Camden have key roles to play in helping to support the growth of the aerotropolis as they offer centres of economic activity not in existence around the airport site.

The land in and around Badgerys Creek is primarily of rural-residential use. While industrial development is expected to form around the airport early on, it is likely that for some time this won't be supported by other commercial activity characteristic of a fully-fledged aerotropolis, such as professional and administrative services, retail and accommodation. This provides a vacuum that the edge cities can and should fill – none more so than Liverpool.

The importance of Liverpool is evident in the following features of the city (see Figure 1) – it:

- offers the largest commercial hub of the edge cities around WSA. It has a defined central business district (CBD), with great potential to add to its existing stock of commercial and office spaces
- is well-situated roughly midway between WSA and the Sydney CBD, offering an obvious hub from which business and people can access the city and the airport
- is also situated at roughly the midpoint between WSA and the existing KSA, potentially offering a convenient base from which companies can maintain freight operations across the two airports
- already has a diverse mix of strong industries including manufacturing, health, education and public administration (see Figure 17), and a young, well-educated, ethnically diverse population.

Leveraging these advantages, Liverpool has the opportunity to be the:

- CBD or the main 'edge city' of the aerotropolis, where airport-related businesses set up their Western Sydney (or even Sydney) offices/headquarters. That WSA Co has already done this provides confidence for others to follow
- place to stay for incoming tourists and business people. While there may be a number of transit hotels that set up near (or at WSA), Badgerys Creek is sufficiently remote that travellers will be more inclined to stay somewhere like Liverpool that's closer to other amenities.

Liverpool City Council has an important role in supporting WSA and the aerotropolis. Given that the airport site and a large portion of the Western Sydney Airport Priority Growth Area (WSA-PGA) falls within its Local Government Area (LGA), the Council will influence the nature of development around the airport as a regulator of land use and as the State Government's and WSA Co's key council partner.

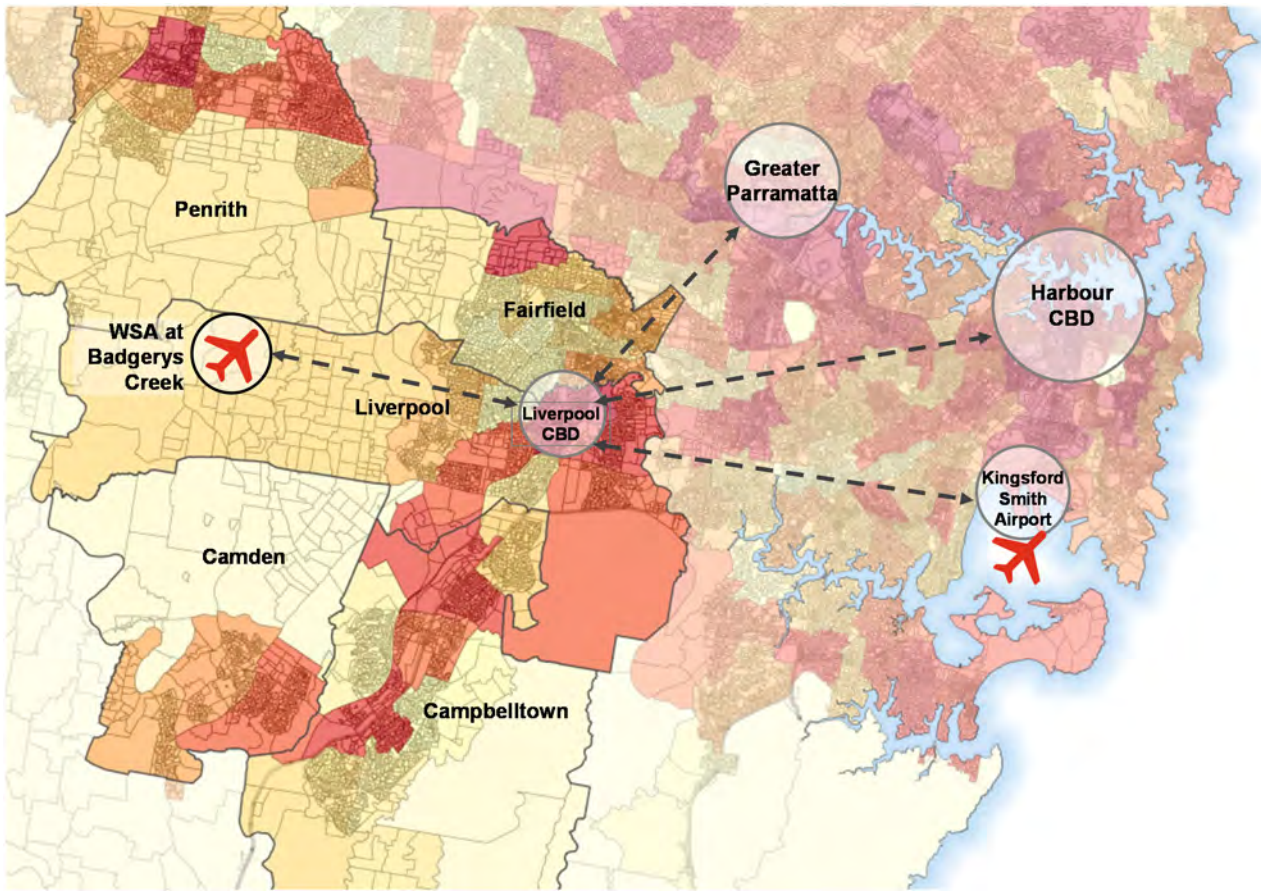
To ensure the success of the aerotropolis and that Liverpool can unlock the opportunities WSA provides, Liverpool City Council needs to ensure that:

- it advocates for good rail and road connectivity between the airport and Liverpool, and between Liverpool and the Sydney CBD. New rail connections are a priority, although stations on the lines can be developed over time as needed, rather than as an initial investment
- the land around WSA is protected and developed to promote the new industries setting up around it

- residential development around WSA does not compromise and constrain WSA's ongoing capacity to be a 24-hour airport. Conversely, the Liverpool City Council will need to have a say in how the airport operates as a 'good neighbour', to ensure its residents are sufficiently protected from any adverse impacts of WSA's operations and industrial activity around it
- businesses are given the confidence, and incentivised where appropriate, to locate to the aerotropolis early on. To assist this, the Council should:
 - advocate and support the development of targeted government incentives, such as a 'virtual investment attraction mechanism' to attract to the aerotropolis new investment in targeted industries
 - establish a business forum to provide a bond between Council and aerotropolis businesses, and to provide greater confidence for potential investors
- the Liverpool CBD and George's River precincts are enhanced to ensure that Liverpool is perceived as great place to live, visit, work and play. Sustainability principles should be an embedded characteristic in this and all development
- residents are skilled for the jobs of the future that will accompany the development of the aerotropolis.

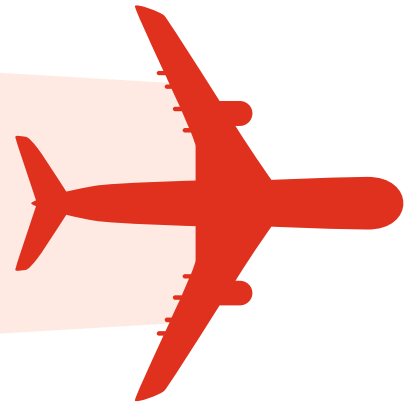
If implemented, these actions will increase the likelihood that WSA is itself a success and that the broader potential benefits of an aerotropolis are also realised.

Figure 1 Liverpool's position in the aerotropolis



Source: PwC, based on 2016 LGA boundaries published by the Australian Bureau of Statistics (ABS). Darker-shaded areas correspond to higher total economic output.

1 Introduction



A second airport for Sydney

After decades of deliberations over the need and potential location of a second Sydney airport, a decision was made in April 2014 to locate WSA at Badgerys Creek. Construction is expected to

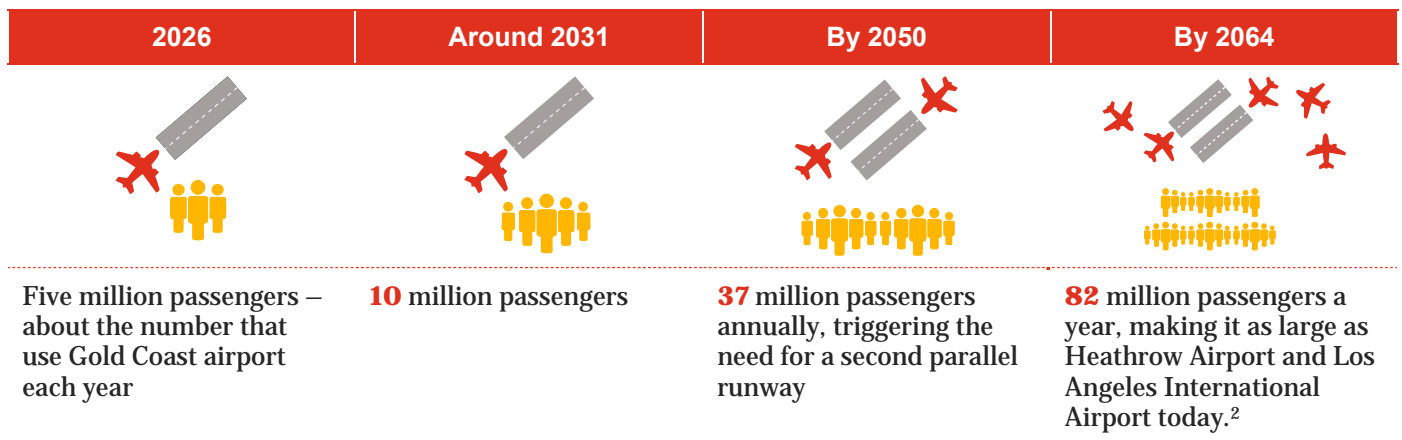
commence in 2018, with Stage 1 completed by 2026.

WSA will become one of Australia's most significant pieces of infrastructure. More than just meeting Sydney's growing passenger demand, WSA will improve access to aviation services for Western Sydney's population and improve

connectivity of Australian industry to global markets.

On opening in 2026, WSA will have a single runway around 3.7 kilometres in length. This is long enough to handle the full range of aircraft expected to operate from the airport, including the Airbus A380. Figure 2 sets out WSA's forecasted passenger numbers over time.

Figure 2: WSA forecasted annual passenger use



Source: Commonwealth of Australia, *Western Sydney Airport: Airport Plan*

The airport is expected initially to cater predominantly for the low-cost leisure market, with some full-service domestic and international carriers operating there. This profile will shift over time with increasing demand for different aviation services from Western Sydney's growing population and as Sydney Airport becomes increasingly capacity constrained. Airfreight is expected to be a key part of the airport's operations.

WSA is expected to provide significant economic benefits, with 11,000 direct jobs generated by its construction, 28,000 direct and indirect jobs created by the early 2030s and nearly 120,000 in the long term.³

It will also be the cornerstone for further investment in transport infrastructure to enable accessibility to the airport from within the region and the rest of Sydney. The confluence of additional transport

infrastructure and business investment will in turn open up further commercial and residential development opportunities in the areas around the airport.

With the right combination of investment and planning outcomes there is the potential for an 'aerotropolis' to form: a metropolitan sub-region whose infrastructure, land use and economy are centred on an airport.⁴

² Heathrow Airport's current annual passenger numbers are approximately 75 million. Los Angeles International Airport's are approximately 81 million.

³ Commonwealth of Australia 2017, *Jobs for Western Sydney: Building Western Sydney Airport*, p.2

⁴ John Kasarda 2015, *A Western Sydney Aerotropolis: Maximising the benefits of Badgerys Creek*, p.9

About this report

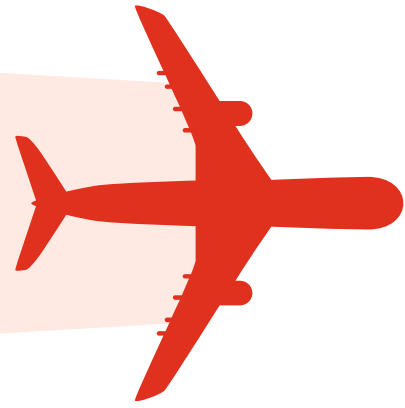
The objective of this report is to explore what is required to unlock the economic potential of WSA and drive the development of an aerotropolis around the airport. In doing so, we have looked at the existing advantages of the region surrounding the airport, with a focus on the Liverpool LGA where relevant, as well as the additional opportunities created by the airport

and how these can be maximised. The report is structured as follows:

- Chapter 2 — a brief description of the aerotropolis concept and the vision for one in Western Sydney.
- Chapter 3 — the key opportunities that may arise from the airport and the development of an aerotropolis and what is needed to seize them.
- Chapter 4 — the key factors on which the success of the aerotropolis depends.
- Chapter 5 — the role of Liverpool City Council in influencing the success of an aerotropolis and maximising the benefits of the airport for its residents.



2 The Badgerys Creek aerotropolis



There are great hopes for what the new airport will achieve for Western Sydney; it is often referred to as a 'once-in-a-generation opportunity' to transform the region.

Many airports around the world exist on the periphery of cities, reflecting traditional approaches to airport planning and development. And while these traditional airports stimulate economic productivity at a state and national level, there is no guarantee of more localised benefit.

Distance from existing economic centres can mean airports operate in isolation without fostering a great deal of additional activity around them. Opportunities are therefore limited for local residents who may already be in a disadvantaged position with a clustering of low-cost housing in areas exposed to high levels of noise, such as those near airports.

This is a second-best outcome that we should all plan to avoid. The aim is to maximise the economic benefits in Western Sydney, and the local areas around the airport in particular, by fostering an 'aerotropolis'.

The aerotropolis concept, or 'airport city', is defined by John Kasarda as: 'an urban form whereby cities are built around airports, speedily connecting time-sensitive suppliers, manufacturers, distributors and business people to distant customers, clients and marketplaces'.⁵ Kasarda also defines the aerotropolis more generally as 'a metropolitan subregion whose infrastructure, land use and economy are centred on an airport'.⁶

The aerotropolis concept hinges on the idea that mutually reinforcing benefits can be generated by a successful airport and the development of the areas surrounding it. To be viable, airports must be close to a strong regional economy whose population will use the airport. Equally, the airport also provides new opportunities to grow that economy through airport-related employment, support industries and opening doors to other sectors that benefit from enhanced connectivity to other domestic and international markets.

There is a common ambition across all levels of government for the new airport to drive the development of an aerotropolis. For example, the

NSW Premier, Gladys Berejiklian, has stated that:

“We want Western Sydney Airport to be about much more than just building an airport – we want it to be a fully integrated economic precinct that will deliver jobs and opportunities for the people of Western Sydney and across NSW.”

Similarly, the Greater Sydney Commission envisages a third Western city (after Eastern Sydney and Parramatta) with the airport being a key driver of development.

To help unlock the economic potential of the airport, the State Government is building significant transport infrastructure and is aiming to facilitate additional investment in industrial and residential development in the areas surrounding WSA. The forthcoming City Deal and designation of the Western and South West priority growth areas lay the planning policy framework to coordinate and optimise this investment.

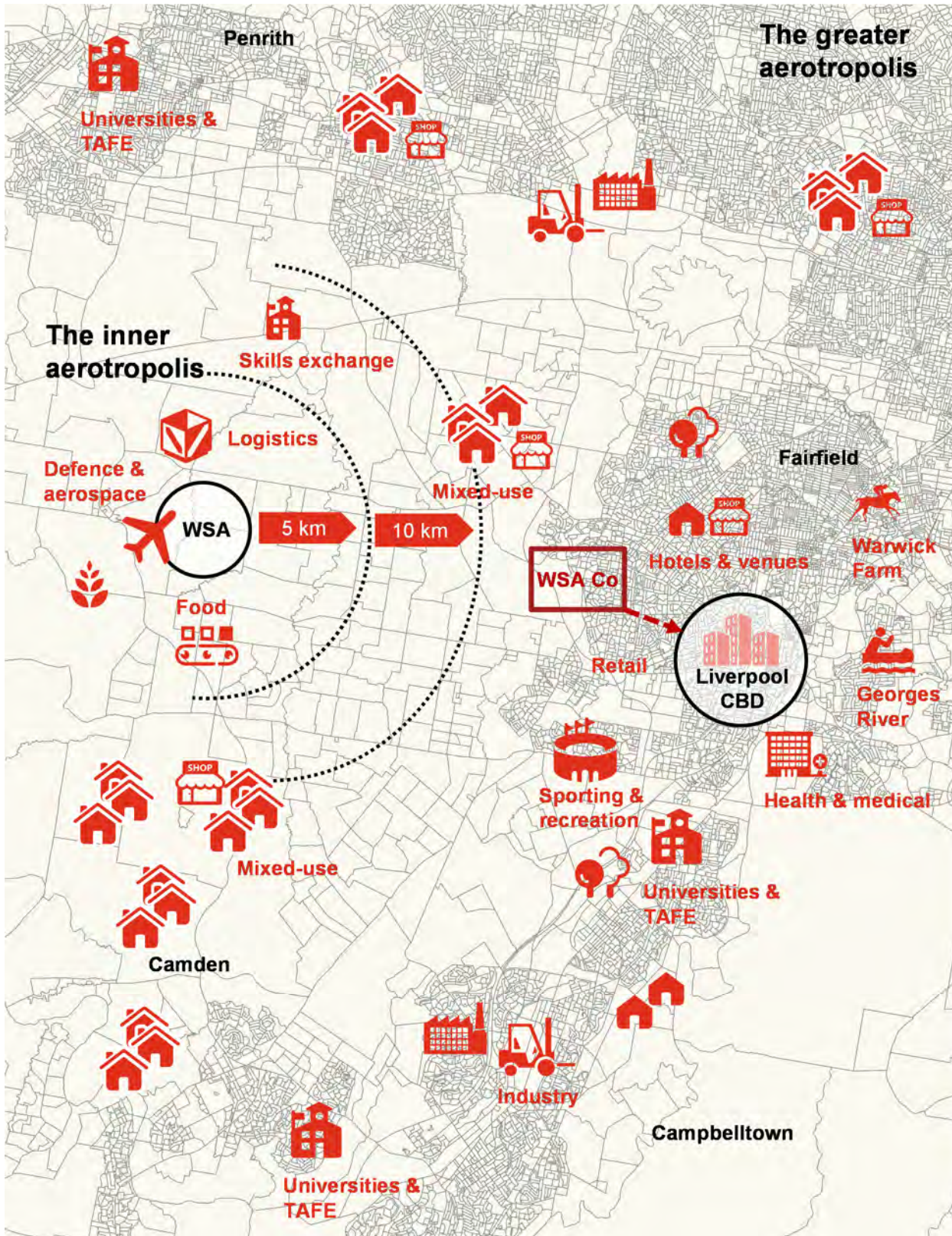
⁵ John Kasarda 2017, Aerotropolis, available at <http://www.aerotropolis.com/>

⁶ John Kasarda 2016, A Western Sydney Aerotropolis: Maximising the benefits of Badgerys Creek, p.9

Vision and viability for the aerotropolis

Figure 3 depicts our vision for the aerotropolis to encompass the geographic radius generally north, east and south of the airport. This area is made up of different components, beginning with WSA itself, expanding out to the 'inner aerotropolis', and expanding further to the 'greater aerotropolis'. It is named the 'Badgerys Creek aerotropolis' in reference to its origination.

Figure 3: The Badgerys Creek aerotropolis imagined



The airport

The successful development of a Badgerys Creek aerotropolis depends first and foremost on the airport itself. Many 'supplementary' airports thrive on capturing overflow demand from a city's main airport as populations grow. London, for example, has five airports servicing different market segments. Others, such as Mirabel Airport in Montreal, Canada and the Ciudad Real Airport in Madrid, Spain have failed and been abandoned.

Provided WSA has good connections with Western Sydney and eventually the Sydney CBD, 24-hour operations will position WSA well to attract a good share of passengers, airlines and dedicated freight carriers (see Box 1).

The 'inner aerotropolis'

Provided the right land use strategies are put in place, the enhanced connectivity and efficiency offered by a 24-hour airport also opens up the opportunity to attract time-sensitive, aviation-enabled industries to locate

near the airport. Employment opportunities arising from the airport and the businesses establishing around it should attract new residents who want to live near work. Growing population density will in turn open up other opportunities for businesses that need to locate where people live.

We envisage the 'inner aerotropolis' forming within the area approximately 10kms north, east and south of the airport site (i.e. that roughly aligning with the WSA-PGA). Within this area, the first 5kms around the airport ought to be reserved for industrial or environmental use. A key factor in encouraging industry agglomeration around the airport, and therefore maximising the economic potential of the airport, will be the availability of land very close to the airport that is suitable for industrial use. Zoning this area for industrial use also acts as a physical buffer between the airport and residential areas, helping to protect its 24-hour operations, being one of its key competitive advantages.

Our proposed distancing of residential areas at least 5kms from the airport is imprecise but aligns roughly with other Australian airports enjoying curfew-free operations – see Figure 16. Perth Airport still operates without a curfew despite being less than 2kms from residential areas. Proposed rezonings near the airport have at times raised concerns about the potential impact on the airport's ability to operate without a curfew and Brisbane's curfew-free status is regularly reviewed.

The encroachment of residential areas towards WSA is a scenario that government needs to prevent.

There are countless examples of airports that have been suffocated by the encroachment of residential communities around them. For example, both Heathrow and Los Angeles are inhibited by residential development.



Box 1: WSA's advantage as a connected 24-hour airport

There is a clear business case for WSA to capture 'overflow' from KSA as growing demand outstrips KSA's capacity. WSA Co's expectations are that during early operations much of passenger demand will come from Western Sydney's growing population and will be served largely by low-cost carriers. Qantas' CEO, Alan Joyce, has indicated the Qantas group its intention to use WSA as a new base for Jetstar. Full-service and international carriers are expected to move to the airport over time as KSA reaches capacity, which the Federal Government expects to occur between 2042 and 2048.⁷

Full-service international airlines could be part of the picture earlier on owing to the airport's proposed curfew-free status and greater slot availability. KSA's curfew and slot constraints significantly restrict the offering of international airlines, particularly those that are Asia-oriented.⁸ Singapore Airlines for example, one of the largest international carriers operating out of Sydney, offers five flights daily from Sydney to Singapore within a 10-hour window of 8am to 6pm. A later flight closer to the curfew would arrive in Singapore in the early hours of the morning, with very few connections available. A midnight flight from WSA which arrived in Singapore at 6am would, on the other hand, be ideal for business travellers, who help fill the front of the plane.

A useful comparison is curfew-free Melbourne Airport. Although it serves a smaller market and has around two-thirds the amount of international passenger movements of KSA, Singapore Airlines offers flights to Singapore four to five times daily including a midnight flight which arrives in Singapore at 6am. Indeed, there are over 30 flights taking off and landing in Melbourne overnight to and from Asia, the Middle East, the US and Europe.⁹

Melbourne Airport's curfew-free status is extremely valuable to the airport, allowing for the movement of an extra two million passengers a year and adding \$590 million to the Victorian economy through visitor spending.¹⁰ In the 10 years to 2015-16, the number of international passengers through Melbourne Airport doubled, growing far more strongly than KSA which has achieved growth of around 45%. Options for a rail link are now being explored and the airport is seeking approval to build a third runway.

More passengers bring additional capacity for airfreight. Approximately 80% of air freight in NSW is carried in the cargo holds of domestic and international passenger flights.¹¹ The remainder is carried in dedicated freight aircraft, most of which are operated by major passenger airlines.¹² KSA is Australia's international air freight hub, with around half of Australia's airfreight being loaded or discharged there.¹³

The curfew at KSA, which limits take-off and landing to a small number of aircraft types overnight, significantly limits the efficiency and convenience of airfreight services. The curfew has received significant focus in submissions to the Australian Government's Inquiry into National Freight and Supply Chain Priorities.¹⁴ Submissions note the inefficiency the curfew has created in the domestic airfreight network, where a Boeing 737 is able to operate overnight freight flights to other airports, but not to Sydney – meaning unloading and reloading to a different aircraft to reach Sydney.

Despite Sydney being a national airfreight hub, Melbourne's 24-hour operations mean it can now claim it is the top export market with 36% market share.¹⁵ With Amazon setting up their first Australian fulfilment centre in suburban Melbourne, there's likely to be even more domestic and international freight routed through the city. Lyell Strambi, Melbourne Airport CEO, attributes the airport's success to its 24-hour operations: 'If we're being frank that is one of the elements of our success story in recent years.'

Twenty-four hour operations would provide WSA with the opportunity to seize a large share of the airfreight market, which is increasing strongly thanks to growing demand for fast-delivered online shopping and increasingly global supply chains.

⁷ Department of Infrastructure and Regional Development, *Environmental Impact Statement 2016*, p.79

⁸ KSA has cap of 80 aircraft movements per hour.

⁹ Melbourne Airport, *Flight information*, available at: <http://melbournearport.com.au/flight-passenger-info/flight-information/schedule-search.html>

¹⁰ Melbourne Airport, *Community & partners*, available at: <http://melbournearport.com.au/about-melbourne-airport/melbourne-airport-partners/about-cacg/faqs-1389.html>

¹¹ Transport for NSW, *NSW air network*, available at: <https://www.transport.nsw.gov.au/operations/logistics-network/nsw-air-network>

¹² Sydney Airport 2017, *Re: Inquiry into National Freight and Supply Chain Priorities*, available at: https://infrastructure.gov.au/transport/freight/frieght-supply-chain-submissions/Sydney_Airport.pdf. Only one of the top five freight routes is operated by a dedicated freighter.

¹³ NSW Department of Industry, *Air logistics and air movements*, available at: <https://www.industry.nsw.gov.au/invest-in-nsw/about-nsw/economic-growth/developed-infrastructure/airport-logistics-and-air-movement>

¹⁴ Commonwealth of Australia 2017, *Inquiry into National Freight and Supply Chain Priorities: Discussion Paper – May 2017*

¹⁵ Australian Pacific Airports Corporation, *Annual Report 2015/16*

The ‘greater aerotropolis’

The vision described for the inner aerotropolis is theoretical, albeit based on other successful international aerotropolises (see Appendix B). As illustrated in Figure 1, economic activity in this area at present is low given it currently comprises mainly rural-residential uses.

The ‘greater aerotropolis’ offers the economic foundation for the aerotropolis by providing:

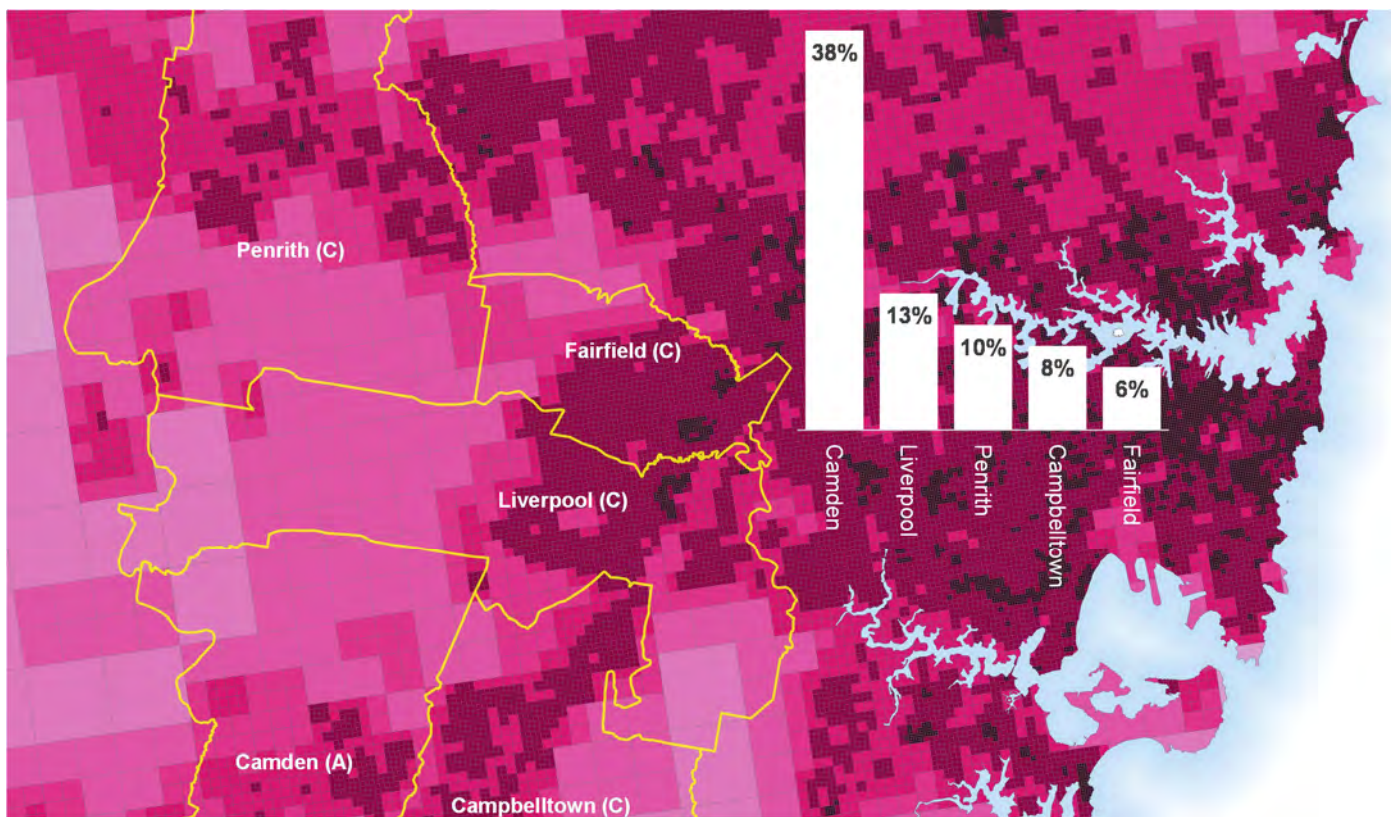
- A growing population – Western Sydney is the fastest growing region in Greater Sydney. A good share of growth in recent years has been driven by the LGAs near the airport site (see Figure 4). The current population of two

million, is expected to grow by another one million people over the next 20 years, including almost 500,000 in the West and South West Districts.¹⁶ These projections indicate the potential for strong and growing aviation demand in the future from local areas alone. WSA Co reports that at present Western Sydney’s population accounts for a quarter of all air passengers. This share is expected to grow in line with the population. It is estimated that local demand alone could contribute an additional 3.4 million trips at WSA by 2035 and 6 million by 2060.¹⁷

- Strong economic performance – in addition to population growth, the economic output of Western Sydney is growing strongly and it

is now Australia’s third-largest economy. As shown in Figure 5, the LGAs around the airport are performing well, led by the Liverpool LGA. A strong regional economy provides the building blocks for an aerotropolis, offering capacity and capability from existing industry and a skilled workforce. Businesses have an incentive to locate in areas with access to the largest numbers of potential employees and customers. Likewise, people have incentives to settle where they can access the greatest number of employment opportunities, goods and services. In the early operations of the airport, the far greater share of these factors will exist in the greater aerotropolis.

Figure 4: Population density in FY 2016 and growth (2011-2016) in greater Sydney



Source: PwC, based on 2016 LGA boundaries published by the Australian Bureau of Statistics (ABS).

The cities of Liverpool, Penrith, Fairfield, Camden and Campbelltown will become ‘edge cities’ to the airport as they lie beyond the inner aerotropolis but

are indeed of greatest importance to its formation given they offer the closest concentrations of existing infrastructure, industries and

populations with the services and labour they provide.

Liverpool has the opportunity to position itself as the key edge city or

¹⁶ Department of the Prime Minister and Cabinet 2017, *The Western Sydney City Deal*, available

at <https://cities.dpvc.gov.au/western-sydney-city-deal>

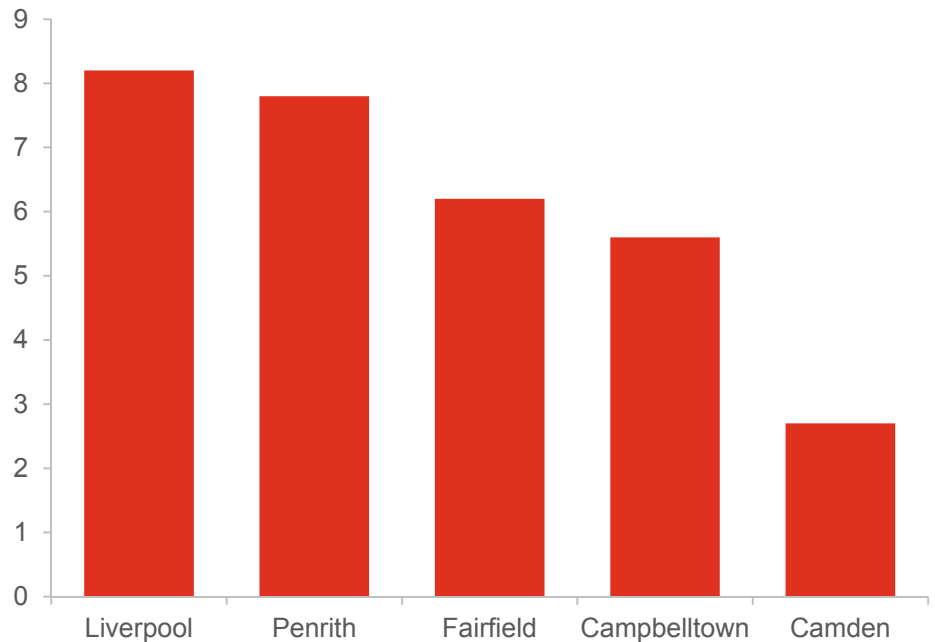
¹⁷ John Kasarda 2015, *A Western Sydney Aerotropolis: Maximising the benefits of Badgerys Creek*, p.29

the 'CBD' of the aerotropolis, where airport-related businesses set up their Western Sydney (or even Sydney) offices/headquarters and where incoming tourists and business people come to stay. That WSA Co has already set up in Liverpool City should provide the confidence for other businesses to follow.

The importance of Liverpool is evident in the city's following existing features:

- Liverpool City offers the largest commercial hub of the edge cities proximal to WSA. It has a defined CBD, with good potential to add to its existing stock of commercial and office spaces.
- It is well-situated midway between WSA and the Sydney central business district (CBD), offering an obvious hub from which business and people can access both the city and the airport.
- It is also situated at roughly the midpoint between WSA and KSA, potentially offering a convenient base for companies to maintain freight operations across the two airports.
- Liverpool already has a diverse mix of strong industries including manufacturing, health, education and public administration.

Figure 5: Economic output in FY 2015 for the LGAs proximal to Badgerys Creek (\$billion)



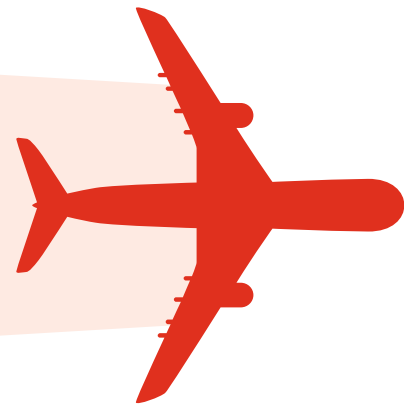
Source: PwC, based on 2016 LGA boundaries published by the Australian Bureau of Statistics (ABS).

- It is home to leading-edge anchor institutions who are working together to forge a health and education precinct in Liverpool (see Figure 6). These institutions will support the skills development of the region's local workforce, as well as providing R&D capacity to support the development of new sectors such as food manufacturing, medical technologies, defence and aerospace.
- Liverpool has a young, well-educated and ethnically diverse population. A significant proportion of the population is under 30 and there are more families with children compared to the rest of Sydney.

Figure 6: Liverpool health and education precinct



3 Key opportunities



3.1 Key sectoral opportunities

This section explores the key sectoral opportunities for the aerotropolis. These include those that are most likely to benefit from close proximity to a 24-hour airport, as well as those sectors whose operations aren't as closely linked to aviation but are well-positioned to build on existing or proposed investments in the region and will also benefit from more timely receipt of airfreighted equipment and suppliers.

These are sectors that, regardless of WSA, are poised for growth in NSW.

3.1.1 Logistics, distribution and freight forwarders

As a 24-hour airport that can support Australia's growing airfreight, WSA is primed to attract complementary logistics and distributions businesses to locate around it. Indeed, there should be government support to create a major logistics hub adjacent to WSA.

The economic importance of creating synergies between airside freight handling and local logistics operators is underlined by the establishment of major logistics hubs at several airports around the world. These include two of the best known aerotropolis airports, Incheon and DFW, as well as Melbourne Airport. By creating adjoining logistics centres, the following airports have been able to support and grow cargo operations, and significantly enhance the logistics sectors in their respective cities:

- Incheon Airport continues to expand its logistics centres, to secure its position as the world's second-biggest cargo hub.
- Dallas Fort Worth Airport also has significant logistics facilities, enabling its position as the leading cargo airport in Texas. Its International Commerce Park provides over 3,000 jobs and is estimated to generate economic contributions of approximately \$329 million to the DFW region.¹⁸
- Melbourne Airport's Business Park, south west of the airport, was created with the aim to become a world-class logistics hub. To date, 77 hectares have been developed for some of the world's largest logistics companies.

Despite KSA being Australia's international airfreight hub, a lack of appropriate and affordable land options around the airport has resulted in major logistics companies being scattered across the city without any concentration in a particular area. Distance from KSA and increasing congestion around it, is increasing industry costs and inefficiency. One of KSA's strategic priorities is to work with the Government to find road transport solutions to help alleviate the issue.

With Australia's airfreight task expected to more than double by 2030 and a significant share of airfreight movements expected to occur out of WSA (see Box 1), attracting the logistics sector to WSA should be a priority.¹⁹ Creating a logistics hub around the airport would support the further growth of

airfreight at WSA, generate significant employment opportunities and would facilitate improvements in productivity and competitiveness within the logistics sector itself. As an example of the potential employment opportunities, Melbourne Airport and the site around it is now one of the biggest employment clusters outside of Melbourne's CBD. It is estimated that of the 14,300 jobs directly generated by the airport precinct, around one-quarter are related to non-aviation activities such as logistics and distribution.

WSA plans include a business park, although details of its composition are yet to be defined. The Commonwealth Government has suggested that it will house substantial office-based employment across a range of industries such as wholesale trade, IT and media services, retail, financial services, education and training, as well as the manufacturing industry. This suggests that an additional dedicated facility should be planned for logistics operators either on the airport site or adjacent to it.

3.1.2 Advanced food manufacturing and exportation

Amongst the general air freight and complementary logistics activities expected to flow to WSA, growth in the transport of food presents a particularly promising opportunity that should be seized.

¹⁸ DFW Airport 2017, *International Commerce Park*, available at

<https://www.dfwairport.com/landhere/commercepark/index.php>

¹⁹ Department of Infrastructure and Regional Development 2013, *Trends: Infrastructure and Transport to 2030*

Rising overseas demand for Australian food, particularly from Asia, is the key driver of Australia's growing air freight task. Food represents the largest category of exports, in volume, that are air freighted out of Australia. Food comprised almost 60 per cent of air freight volumes exported out of KSA in 2016 (see Figure 7). Providing that 24-hour operations are assured, WSA is expected to attract greater air freight activity by enabling more efficient access for food producers to overseas markets. Furthermore, as food supply chains evolve and become increasingly consolidated, there is potential for clustering and aggregation of food manufacturing and value-add processing to be established near the airport.

Growing demand for Australian perishables

Growing populations and rising incomes in emerging Asian economies, such as China, India and

Indonesia, are driving greater demand for food (see Figure 8). The number of middle-class consumers in the Asia-Pacific region is forecast to grow from 525 million in 2009 to approximately 3,228 million by 2030 – an increase of over 500%.²⁰ In Indonesia alone it is estimated that around five million Indonesians are entering the 'consuming class' each year.²¹

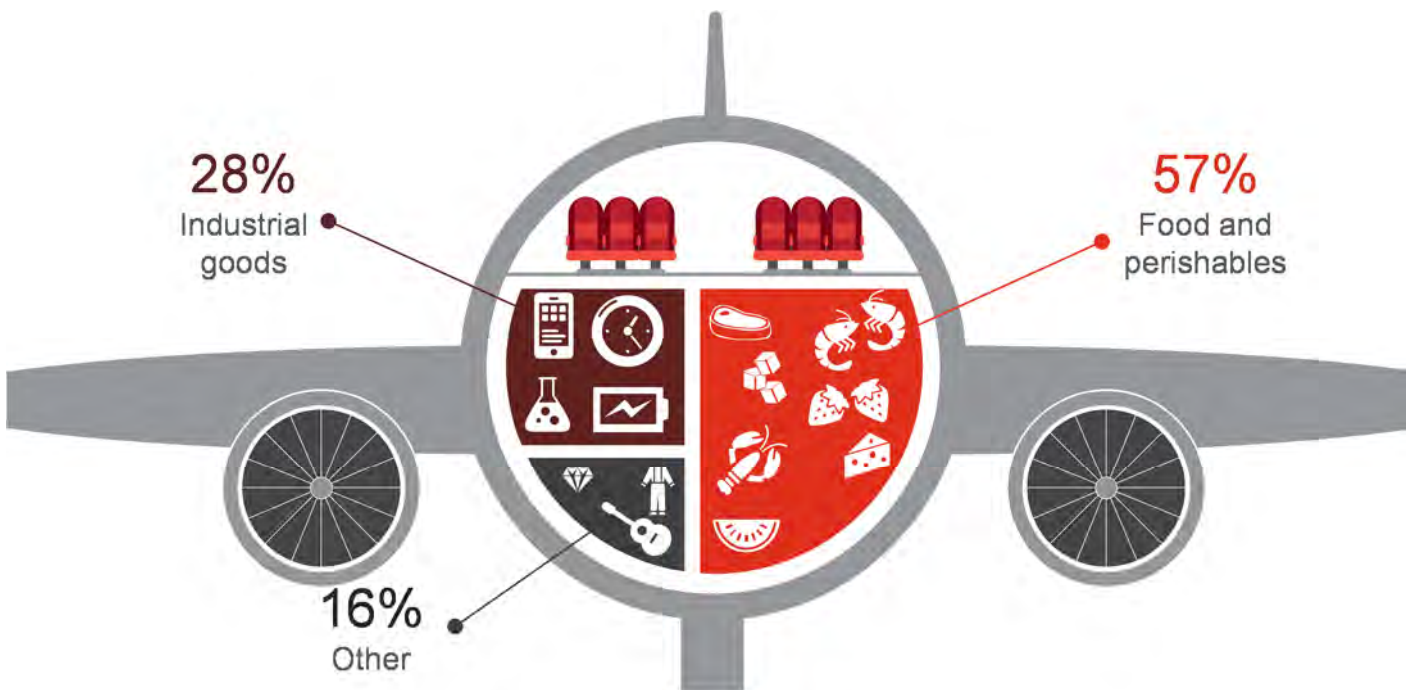
Australian food producers are responding to demand with an increasing share of national food production going overseas, Asia being our top food export market. A growing preference for healthy, premium, convenient foods is also shifting demand towards high value food types like fruit, vegetables, meat, dairy and seafood. Asian local food production cannot meet demand levels and Australia's food comes with a 'clean, green, safe' brand that is increasingly sought after. Export of these perishable food

items is worth around \$20 billion to the Australian economy, roughly half the value of all food exports.²²

Perishable foods need fast and direct transport into overseas markets that only airfreight can offer. For example, table grapes can be picked, packed and airfreighted to markets in Asia within 48-60 hours or sent by sea within 16 days.²³ As Australian food producers are competing in premium markets, the higher margin on these perishable goods is able to justify the increased cost involved with airfreighting them.

The strength of demand for such products is being demonstrated at Toowoomba's Wellcamp airport. Cathay Pacific began operating dedicated weekly freight flights into Hong Kong late last year, with goods such as chilled beef and dairy comprising the bulk of the freight load.

Figure 7: KSA's outbound airfreight composition



Source: Transport for NSW, NSW Air Network

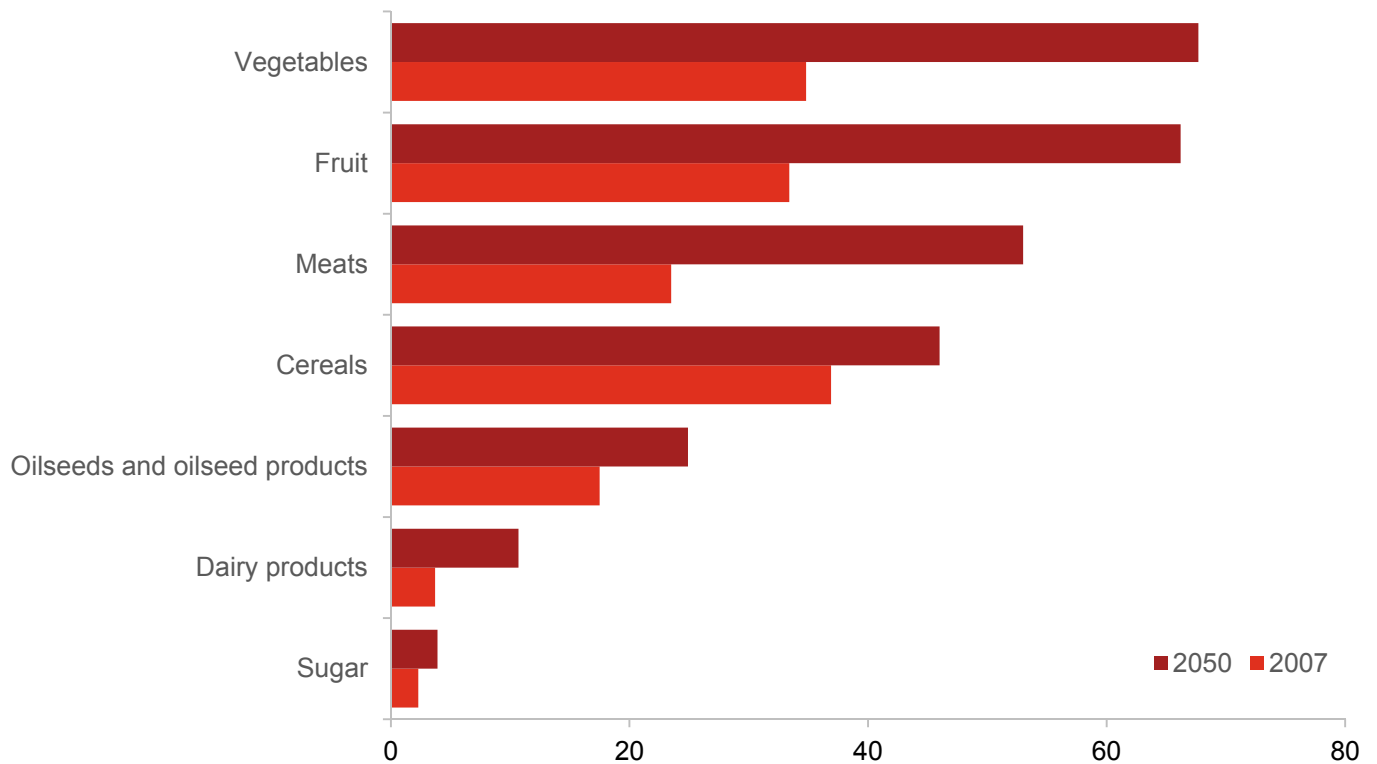
²⁰ Austrade 2015, *Investment opportunities in Australian agribusiness and food*

²¹ McKinsey&Company 2016, *The Life Journey Indonesia*

²² Austrade 2015, *Op cit.*

²³ Austrade 2015, *Op cit.*

Figure 8: Expected ASEAN Agri-food Consumption, 2007 and 2050 forecast (US\$bn)



Source: ABARE 2016

Creating a food manufacturing and processing hub at Badgerys Creek

The opportunity for WSA and the aerotropolis more broadly, doesn't just come from the diversion of food freight from KSA to WSA, it also comes from attracting high-value food manufacturing and processing to locate near the airport. Perishable foods are often moved long distances along sensitive supply chains to reach international airports just in time for loading onto aircraft. Australian food producers are increasingly looking for ways to concentrate supply chains and reduce risks and inefficiencies associated with greater intermediation.

A dedicated food precinct near the airport could also offer significant efficiencies to companies, firstly by cutting down on expensive cold-chain transportation from final processing locations to the airport, but also by offering proximity to, and collaboration with, other parts of the

Figure 9: Paddock to plane – Simplified food supply chain in the aerotropolis



supply chain such as packing and cold-storage facilities. Figure 9 represents this potential model.

Any improvements to supply-chain efficiency will be a vital element in ensuring the long-term competitiveness of Australia's food exports.

As an example of such investment, construction is underway on the Toowoomba Integrated Milk Project which is strategically located next to Wellcamp Airport. The first stage of production at the factory will focus on infant formula, to be followed by development of fresh and UHT milk for domestic and international markets.

Internationally, other airports are also trying to unlock growth opportunities for food exporters by improving onsite handling

capabilities. DFW Airport for example has just added 4,300 square metres of refrigerated storage space. The new facility will assist distributors and freight forwarders in the transfer of high-value, temperature- and time-sensitive products such as pharmaceuticals, flowers and fresh foods through the airport and on to DFW's 180 markets.

Advanced food manufacturing and value-add processing

Given the desire to attract high-value sectors to Badgerys Creek, and also renew manufacturing in Western Sydney, advanced food manufacturing and value-add processing is an ideal sector to foster and attract to the food hub envisaged. Its activities, which could involve machinery and heavy vehicle movement, are also compatible with the operations of a 24-hour airport.

Australia has a strong history of food research and development that has fostered cutting-edge farming techniques and technologies and a sophisticated use of biotechnology. Australian companies are on the forefront of research and application in functional foods, nanotechnology and new processing technologies.²⁴ Some of these technologies are being employed in state-of-the-art facilities in Sydney's South West. Freedom Foods, for example, recently set up a new dairy processing facility in Ingleburn, employing the latest advancements in UHT technology to create fresh products that also have a longer shelf-life.

A testament to the strength of Australia's food manufacturing sector is the level of international investment it is attracting (see Box 2).

Box 2: International investment in Australian food manufacturing

Campbell Soup Company

Campbell Arnott's, a division of the Campbell Soup Company (USA), has invested more than A\$400 million in the past decade to upgrade its existing Australian facilities with state-of-the-art manufacturing technologies. One-third of this was spent on a new biscuit production line in Brisbane, Queensland, based on Australian design technology, with additional funds invested in automating existing production.

Longley Farm

British dairy company Longley Farm has invested more than A\$100 million in a high-tech milk processing facility in Casino, New South Wales, developing a unique export business based on a patented 'fast-freeze' technology. Under local subsidiary Richmond Dairies, the company is exporting 10-kilogram blocks of high-quality frozen cream for use by premium ice-cream manufacturers, patisseries and bakeries in the Middle East, South West Asia and Japan. The plant also produces yoghurt concentrate and skim milk powder.

Charoen Pokphand Group (CP Group)

CP Group, Thailand's largest private company, is signalling its confidence in Australia's premium food brand in Asia by signing a Memorandum of Understanding with Australia's largest family-owned meat processor, Thomas Foods International. The MoU is the first step ahead of the two companies establishing a joint venture to build a large-scale advanced food processing centre that will produce ready-made beef and lamb meals for export.

New Hope Group

In 2015 the Chinese conglomerate New Hope Group entered into a joint venture (JV) with two of Australia's leading dairy farming groups to establish Australian Fresh Milk Holdings. The JV is focused on expanding its dairy product offering across Australia, as well as into China and South East Asia.

Source: Austrade 2015, *Investment Opportunities in Australian Agribusiness and Food*

²⁴ Examples of new processing technologies include irradiation, high-pressure processing, low-energy electron beam processing, pulsed

electric field processing – Austrade 2015, *Investment opportunities in Australian agribusiness and food*.

As Australia's agribusiness and food industry grows, NSW has the opportunity to strengthen its position in the industry. Creating a food hub at Badgerys Creek for growing, manufacturing, processing and export preparation offers businesses enhanced connectivity into regional supply chains and the potential efficiency benefits of industry clustering.

Such a hub could open up new opportunities for existing businesses like the Sydney Markets. The Markets have publicly stated that they are analysing the future needs of the business, including whether it needs to be moved to a larger site to accommodate future growth in its operations. Regardless of whether this current investigation results in the relocation of the existing Flemington site, a hub at Badgerys Creek could create the opportunity for the Markets to establish ancillary operations. Proximity to a 24-hour WSA airport could provide the following opportunities to the Markets:

- greater efficiency in the way it imports certain perishables (like fresh flowers and out-of-season produce)
- expansion of its relatively small export business
- the ability to act as an aggregator in the food airfreight value chain (i.e. offering packing services, cold storage etc.).

3.1.3 Medical technologies

The CSIRO has identified the opportunity and importance of Australia taking a larger share of the global Medical Technologies and Pharmaceuticals (MTP) industry, which is expected to grow to almost \$3 trillion globally by 2025. Growing Australia's industry would benefit the economy through the more cost-effective provision of health services, as well as through the flow-on effects of a successful industry such as greater jobs and potential exports.

Key MTP sub-sectors identified by the CSIRO include:

- smart devices, implants and bionics
- accelerated pharmaceutical development
- manufacturing high-value pharmaceuticals
- diagnostics and informatics products and services.

Against this backdrop, a health and education precinct is emerging in Liverpool, through partnership and collaboration amongst its leading health and education institutions including:

- South Western Sydney Local Health District
- Liverpool Public Hospital
- South West Sydney Primary Health Network
- Ingham Institute of Applied Medical Research
- Sydney Business Chamber
- NSW Health Infrastructure
- Liverpool City Council
- TAFE NSW
- University of Wollongong
- University of New South Wales
- Western Sydney University.²⁵

This alliance of organisations is significant as individually they are already providing world-class care, education and research.

The health and education sector as a whole is growing in Liverpool. There are more than 15,000 health and knowledge workers in the Liverpool LGA, equating to round 20 per cent of total workers. This proportion is expected to increase to 25 per cent by 2036.

The objective is for the precinct to become a hub for development of health-related technology such as

robotics and advanced materials including medical devices, prosthetics and pharmaceuticals. The precinct is well placed to pursue this opportunity due to their access to:

- technology through university and industry partnerships
- development funds with university and industry joint projects
- the varied population to trial developments
- skilled local labour markets in manufacturing and health
- proximity to WSA, the Moorebank Intermodal Terminal freight precinct as well as the road and rail network.

Whilst proximity to WSA isn't a key enabler of a thriving medical technology sector, it provides the additional efficiency benefit of reduced ground transport requirements when importing or exporting equipment or supplies. Proximity to the Moorebank Intermodal Terminal may also provide greater efficiency for interstate distribution. Improvements to the road and rail network within the region will also provide more efficient distribution to other health centres in Penrith and Campbelltown.

3.1.4 Defence and aerospace

The NSW Department of Industry wants to develop a defence and aerospace precinct near the airport, as part of the State Government's plan to grow the industry in NSW.²⁶

At a national level, the Australian Government is focused on increasing the home-grown defence industry. The objective of the Government is not just to boost Australia's own defence capabilities but also to improve the commercialisation of the industry and the export potential of companies in the industry.

²⁵ See PwC 2017, *Reimagining ... the Liverpool Health, Education, Research and Innovation Precinct*

²⁶ NSW Government 2017, *New South Wales: Strong, smart and connected – The NSW*

Private defence companies contribute to the production and maintenance of Australia's aircraft and equipment, but are primarily focused on the domestic market with exports comprising a smaller proportion of sales. Australia ranks as only the 20th largest exporter of defence material. By comparison, the industry relies on a significant amount of imported defence material, making Australia the fifth-largest importer. Positioning companies to compete on a global stage has the potential to strengthen the industry overall, by opening up new markets, driving innovation and ultimately allowing it to grow.

The strategy to grow the industry in NSW specifically is a logical one. The defence industry is already at an advantage in NSW, with the largest number of defence bases and capabilities of any state or territory. Today it employs around 26,500 people in NSW, including in many regional areas. Its investments and expenditure amounted to \$7.9 billion in 2014-15. Defence also positively impacts a wide range of other industries and has a strong track record of working with universities to develop and disseminate technology and develop the workforce required by the industry.

The WSA defence and aerospace hub envisaged by the NSW Government will seek to attract small, medium and large businesses specialising in the manufacture and maintenance of aircraft, equipment and systems. Like the medical technology industry, a thriving defence and aerospace industry doesn't necessarily rely on proximity to an airport. Nonetheless, clustering of activities near WSA would support the industry's growth objectives by:

- providing companies with links to new export partners and markets
- enabling better connections between prime contractors and original equipment manufacturers
- opening up training and skills development opportunities
- enhancing potential for collaboration on innovation and research through Liverpool's universities and other R&D institutions
- facilitating the maintenance of operational aircraft

Creating the precinct hinges on getting the right anchor tenants. The NSW Department of Industry has received the commitment of Northrop Grumman to build a \$50 million Electronic Sustainment Centre of Excellence to support

electronic warfare equipment and advanced electronics. Northrop Grumman will also aim to forge relationships with universities to train highly-skilled technicians:

“ It really makes sense for us ... we've got this \$50 million investment in electronics repair capability we wanted that to be in location that made sense from a supply chain point of view, from the point of view of having great workforce availability, university proximity and that new defence industry precinct, the university precinct out there at Badgerys Creek that's being developed, it just seems perfect for us to be able to do that, so we stepped up and said we would be a foundation tenant at that location. ”²⁷

Other major defence companies are needed as tenants and, in some cases, short- to medium-term incentives may be needed to induce key players to locate to Australia and the precinct. Such incentives are further discussed in Section 4.3.



²⁷ Amelia McMahon, "Western Sydney and RAAF Base Richmond to become key facilities for prime", 3 July 2017, available at:

<https://www.defenceconnect.com.au/key-enablers/901-western-sydney-and-raaf-base-richmond-to-become-key-facilities-for-prime>

3.1.5 Tourism

WSA is expected to provide a significant boost to Western Sydney's visitor economy. Currently, the dominant purpose for visiting Western Sydney is to visit family and relatives or 'VFR' (see Figure 10). The VFR market comprises 45 per cent of international visitors and almost half of domestic visitors to Western Sydney, in part a reflection of the region's diverse and multicultural resident population. The VFR market will continue to be a key segment once WSA opens. However, the opening of the airport may also increase the share of international and domestic passengers visiting for the purpose of 'Holiday', particularly given WSA is expected to initially mainly cater for lower-cost leisure travellers.

Whilst many visitors to Sydney come to enjoy sites around the Sydney CBD and the eastern suburbs, the arrival of WSA, coupled with the likely dominance of the VFR market will mean there is a good opportunity for Western Sydney to capture visitors when they arrive or before they leave.

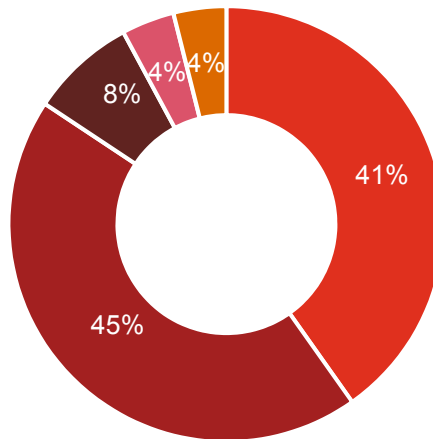
Growing the overnight visitor economy

The NSW Government's *Western Sydney Visitor Economy Strategy for 2016/17 – 2020/21* (the 'Strategy') sets the strategic priorities for developing tourism in Western Sydney. A key objective of the strategy as a whole is to increase the proportion of visitors who stay overnight. Domestic day trips make up around three-quarters of all visits but only contribute 22 per cent in expenditure. Greater numbers of domestic and international passengers flowing through Western Sydney have the potential to boost overnight stays, if visitors can be encouraged to make Western Sydney part of their plans. International visitors are particularly beneficial, as they tend to stay longer and spend more (see Figure 11).

This reinforces the importance of one of the opportunities identified by the strategy, which is to develop touring routes and packages. Such packages could bundle tours to key

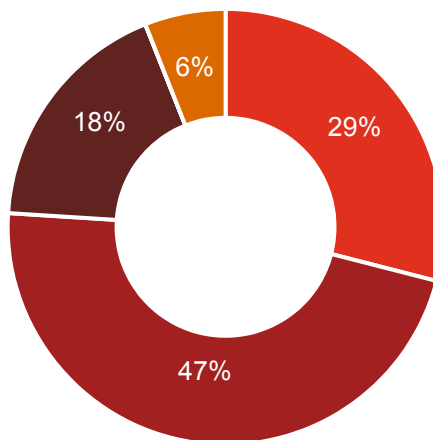
Figure 10: Purpose of visit – visitors to Western Sydney

Visitors Share 2016 International visitors



| | |
|--------------------------------|-----|
| Holiday | 41% |
| Visiting friends and relatives | 45% |
| Business | 8% |
| Education | 4% |
| Other | 4% |

Purpose of Visit – Domestic visitors



| | |
|--------------------------------|------|
| Holiday | 29% |
| Visiting friends and relatives | 47% |
| Business | 18% |
| Education | n.p. |
| Other | 6% |

Legend: Holiday (red), Visiting friends and relatives (dark red), Business (brown), Education (pink), Other (orange).
 Source: Destination NSW 2017, Western Sydney Visitor Economy Strategy 2017/18 – 2020/21

natural attractions such as the Blue Mountains and World Heritage Areas, as well as visits to the region's new recreational offerings. Major developments include:

- the new Wonderland, now 'Worlds of Wonder', will open in Western Sydney in 2021, with the ambition of becoming one of Australia's top theme parks
- Sydney's newest zoo in Blacktown
- a new water park in Prairiewood is set to be open in the summer of 2017

While many of these new attractions exist outside Liverpool's LGA, it has the opportunity to capitalise on growth in visitation by growing its accommodation sector. There may be a number of transit hotels that eventually set up near or at WSA, however Badgerys Creek is sufficiently remote that travellers (particularly the VFR market) will be more inclined to stay somewhere that's close to other amenities and importantly, close to their friends and relatives.

Furthermore, while in the short term WSA will predominantly cater for the leisure market, its passenger profile will shift over time with an

increasing share of domestic and international business travellers coming through WSA. Western Sydney as a whole is lacking in sufficient accommodation stock, variety and quality. Also lacking are its facilities for business conferences and events.

By increasing its supply and diversity of visitor accommodation, as well as developing venues for business events, Liverpool can cement its reputation as the city adjoining the airport, to which it just makes sense to go.

Educational tourism

The *Strategy* also sees international visitation being lifted through short study tours offered by universities. Building on this idea, study tours could be developed that harness the new sectors of the aerotropolis like Medical Technology and Food. And they don't need to just target students but could be created for business delegations that have an interest in Australian investment opportunities.

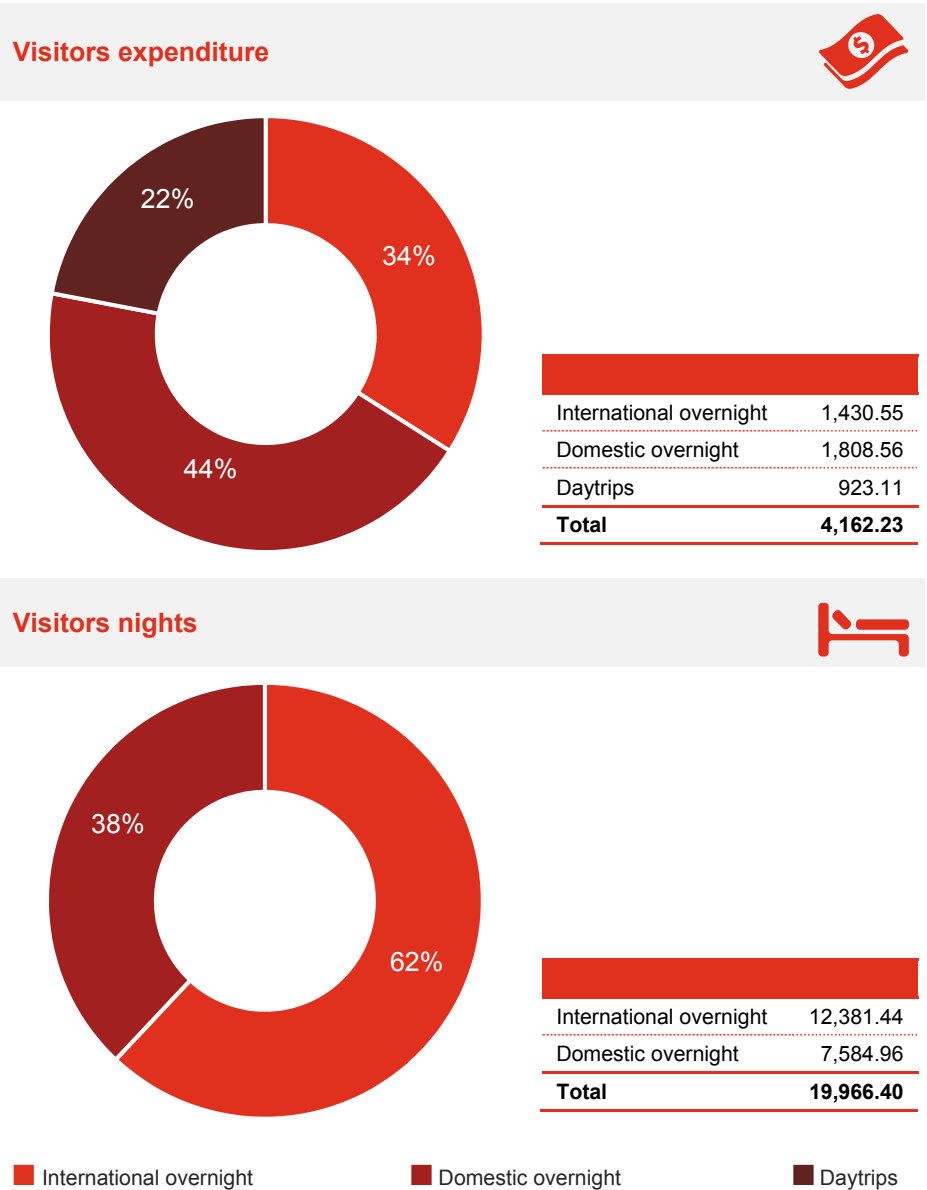
The food manufacturing and trade precinct envisaged could be a major focal point for overseas government agencies and businesses looking to understand Australian food and agriculture opportunities and what is needed to create more enabling trading conditions with Australia. For example, Adelaide University recently hosted a high-level ministerial and private sector delegation of 72 officials taking part in a Department of Foreign Affairs and Trade funded short course on Standards and Regulations Familiarisation. If the Sydney Markets were to establish operations in Liverpool, it could also develop into a destination in its own right, showcasing the best of Australian produce and production to domestic and international visitors.

Sporting facilities and events

The *Strategy* also recognises visitor economy growth will be reliant on attracting new events to the region, such as major sporting events.

One of Liverpool's existing advantages to be leveraged is its

Figure 11: Western Sydney visitor economy



Source: Destination NSW 2017, Western Sydney Visitor Economy Strategy 2017/18 – 2020/21

equine industry, based around the Australian Turf Club's racetrack at Warwick Farm and the new Inglis Riverside Stables complex being developed after moving from its current home at Randwick. The complex is being developed into a major lifestyle destination. In addition to providing the premier venue for Sydney's horse sales, the \$140m development will also include a hotel, restaurants, bars and a day spa.

The combination of these assets could significantly enhance visitation to Liverpool, with visitors ranging from domestic and international industry participants (horse owners,

trainers, breeders and buyers) to occasional racegoers. Across NSW, and nationwide, the horse racing industry is growing, attracting greater levels of domestic as well as international patronage. Anecdotally, regional racetracks like Warwick Farm are experiencing increasing popularity amongst younger racegoers as a result of efforts to glamourise venues and events, while still offering a more casual environment than major racetracks like Randwick and Flemington. The arrival of WSA should open up the potential for greater interstate and even international visitation.

Liverpool's opportunity could be even further enhanced by establishing other equine-related activities near these venues. For example, horse trails could be created along the Georges River

shoreline emanating from the precinct.

There is potential also to create an agribusiness campus in close proximity.

Another ambitious yet conceivable idea could be to create a new multi-purpose sporting facility to house a new A-League football team in Liverpool (see Box 3).

Box 3: Liverpool – the home of a third A-league team for Sydney?

The expansion of the A-league is on the horizon with the Football Federation of Australia (FFA) announcing in early 2017 that it was considering adding another two teams. Whilst there haven't been any clear announcements regarding the timing of such a decision, it is expected that it will be firmly on the table once the FFA completes its current restructuring process.

With Sydney's population of six million and the population of Western Sydney expected to grow to three million in the next twenty years, there is a good potential for a third Sydney team. The FFA is likely to be analysing population growth across the country, overlaid with an analysis of visitation trends, which we believe should position Liverpool and the South West more generally, well. The other benefit of Liverpool is its relative connectivity to larger populations in the east and west of Sydney, compared to areas further south of Sydney. This large catchment area offers a large and sustainable supporter base, with a strong sporting culture, allowing a new stadium to viably co-exist with the new Parramatta Stadium without resulting in a dilution of supporters.

A new sporting team would need a home ground in Liverpool.

The NSW Government's *State Infrastructure Strategy* includes a commitment to build a new outer Western Sydney sporting venue. The development is a longer-term priority, slated for ten to 15 years' time, but none-the-less remains a firm commitment of the State Government. We assume the NSW Government will consider areas like Liverpool with a growing population and a strong support base. And while the stadium doesn't rely on proximity to the airport, the positive trajectory of population growth in the South West, combined with the additional investment that will flow to the area provide a good basis for a Liverpool stadium.

To maximise the benefits of such an investment, it should be developed into a multi-purpose community facility, with adult and children's sporting and fitness facilities that could be utilised by Liverpool's nearby universities, schools and community members in general, as well as areas for entertainment, business events and community social activities. The stadium would need to be close the Liverpool CBD in an area readily accessible by rail and bus transport.

3.2 A smart airport for a smart city

The collective planning visions for Western Sydney, as found in the NSW Government's *Metropolitan Plan* and the Australian Government's *Smart Cities Plan*, envisage a smart city that is more connected, more innovative and more sustainable. WSA will be a nationally significant piece of infrastructure and the cornerstone of future infrastructure investment in Western Sydney. And whilst it the airport's early operations may experience moderate patronage and activity, in decades to come it will be a major international airport with more than double the capacity of KSA. It should reflect the smart city that government would like Western Sydney to become, incorporating best

practice in terms of innovation and sustainability.

3.2.1 Sustainability

The global aviation industry's response to the threat of climate change is becoming increasingly ambitious and it is the first industry to collectively commit to emissions reductions targets. Currently 192 airports, representing almost forty per cent of global air passenger traffic, are certified at one of the four levels of Airport Carbon Accreditation (a program set up by the Airports Council International). KSA is one of these. Thirty-five airports are carbon neutral, with twenty-eight in Europe, five in Asia, one in North America and one in Africa.

Whilst technological advancements are enabling environmental

improvements, many airports must retro-fit existing terminals and implement ongoing initiatives, to steadily make headway in improving energy efficiency, or use terminal expansions as an opportunity to do so.

WSA has the rare opportunity to be able to cost-effectively incorporate sustainability right from the design phase, through to construction and operations. The WSA plan states that it will incorporate best practice features such as clean-energy ground support vehicles, energy-efficient heating and cooling plants, fixed electrical ground power for aircraft sitting at gates, and preconditioned

air supply to reduce aircraft burning fuel when stationed at gates.²⁸

We recommend that WSA also look to procure a large portion of its energy supply from clean sources, rather than just aiming to optimise energy efficiency. This would be a prudent measure to help futureproof against rising energy needs as the airport's operations grow. It will also help to minimise the financial risks associated with changing energy market dynamics and potentially stronger government regulation on the horizon to address climate change.

In 2016, Adelaide Airport installed a solar PV array on the roof of its short-term car park. This year, Brisbane has begun installing a six megawatt system across six sites, consisting of 22,000 panels spanning an area of 36,000 square metres.²⁹ The total installation will be the largest commercial rooftop solar system in the Southern Hemisphere. The system will account for almost 20 per cent of the airport's electricity consumption, saving around \$1 million in electricity bills each year.³⁰ Krishan Tangri, the airport's General Manager Assets, said 'electricity is one of the biggest expenses to running Brisbane Airport with dozens of large buildings requiring cooling, lighting and heating 24 hours a day, 365 days a year'.³¹

It would be a missed opportunity not to calibrate WSA's power supply to feed off a large amount of renewable energy from day one. This could be achieved through on-site generation like in Adelaide and Brisbane or through a power purchase agreement with a large-scale solar farm (perhaps one built near WSA). Royal Schiphol Group in The Netherlands is leading the way internationally in terms of its sourcing of off-site renewable energy. Its five airports are to be entirely powered by wind power

from 2020, enabling its energy retailer to commission new wind farms in order to meet the group's requirements.

3.2.2 Innovation

A number of Australian airports, including KSA and Brisbane Airport, are implementing electric buses to reduce the environmental footprint of ground transport around the airport site. WSA's *Airport Plan* also includes plans to roll-out cleaner ground support vehicles.

The next frontier in the mainstreaming of modern vehicle technology will be the adoption of driverless vehicles. Driverless vehicles offer good potential for use in airports. They offer greater safety and fuel efficiency and airport precincts offer a confined zone for operation and maintenance.³² Driverless vehicles are being trialled at several airports around the globe including Adelaide and further afield, Heathrow Airport. They are also already used in many recreational precincts such as Singapore's Gardens by the Bay where they offer a unique visitor experience. Reduced labour

costs result in a more economical method to shuttle visitors around, particularly during times of the day when the vehicles are not in high use.

With WSA's opening almost decade away, it is not difficult to envisage a scenario in which driverless vehicles are used throughout and around the airport site. Indeed, the NSW Government will investigate the potential for a Connected and Autonomous Vehicles (CAVs) zone near the aerotropolis, thus enabling piloting of CAV technology. A new, greenfield international airport in a developed city is rare. Government should not miss the opportunity to plan for an airport that incorporates the best features of modern sustainable design from day one.

Box 4: Dutch airports to be powered by renewable energy from 2018

From 2020, all of the power consumed by Royal Schiphol Group's airports will come from new Dutch wind farms run by energy company Eneco. These include Schiphol, Rotterdam, The Hague Airport, Eindhoven Airport and Lelystad Airport. From 2018, energy for the airports will come partly from existing renewable energy sources, but from 2020 the airports will be powered solely from Eneco's newly built wind farms.



²⁸ Department of Infrastructure and Regional Development 2017, *Air quality*, available at: <http://westernsydneyairport.gov.au/environment-heritage/environment/air-quality.aspx>

²⁹ Brisbane Airport Corporation 2017, 'Australia's largest rooftop solar system set to slash BNE's energy needs', available at: <http://newsroom.bne.com.au/australias-largest-rooftop-solar-system-set-to-slash-bne-energy-needs>

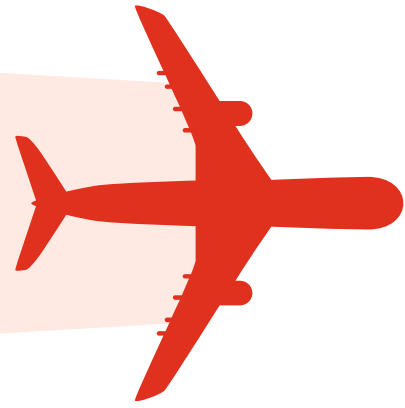
largest-rooftop-solar-system-set-to-slash-bne-energy-needs

³⁰ Nick Lenaghan, 'Brisbane Airport to save \$1m a year from massive solar array', 19 September 2017, available at: <http://www.afr.com/real-estate/brisbane-airport-to-save-1m-a-year-from-massive-solar-array-20170915-gyikfc>

³¹ Brisbane Airport Corporation 2017, 'Australia's largest rooftop solar system set to slash BNE's energy needs', available at: <http://newsroom.bne.com.au/australias-largest-rooftop-solar-system-set-to-slash-bne-energy-needs>

³² PwC 2017, *Nudging people into autonomous vehicles*, pp.7-9

4 What needs to happen



There are a number of opportunities identified in Chapter 3. Here we explore the key requirements to realise these opportunities, with a particular emphasis on what Liverpool City Council can do to take advantage of them.

4.1 Connectivity

4.1.1 Airport access

The success of WSA as a second airport, and accordingly the aerotropolis, depends on efficient transport connections to and from WSA.

Longer travel time to an airport not only reinforces perceptions of distance and inconvenience but also adds to a passenger's travel costs, diminishing an airport's appeal, as was evident in the failure of Canada's Mirabel Airport (see Box 5). In considering whether to establish routes at WSA, airlines will need confidence in the appeal of the airport to passengers. Similarly, businesses considering locating in the aerotropolis will need confidence in the connectivity of their operations with suppliers, customers and employees.

In the early to medium-term stages of the airport's operations, a large portion of WSA's passenger market and workforce is likely to come from Western Sydney. Hence, a key priority of the Government must be to integrate the airport with the aerotropolis and other regional cities of Western Sydney. Connectivity between Sydney's airports is also considered important. In the early stages of operations not all international and domestic connections will be available and passengers will require easy transfers between airports.

Box 5: Mirabel Airport, Montreal Canada

The now-abandoned Mirabel Airport is 60km from the city centre of Montreal, Canada.

Though forecast to accommodate up to 40 million passengers by 2025, demand did not meet expectations and the airport which opened in 1975, was closed to air traffic in 2004.

The appeal of the airport quickly diminished as passengers has to expend large taxi fares to travel to and from the airport. While having better facilities than the older Dorval Airport, it lacked convenient highway and transit links to the city, making it a hassle for passengers to commute from Mirabel to the heart of Montreal.

Initially, the Canadian government forced international airlines to use the Mirabel airport, and kept the first airport, Dorval airport, for domestic flights. As a result, passengers on international airlines did not have ease of access to domestic transfers. Passengers preferred to go to the first airport, closely located 20 minutes from the city, and airlines followed steadily removing flights and diverting them to Dorval airport.



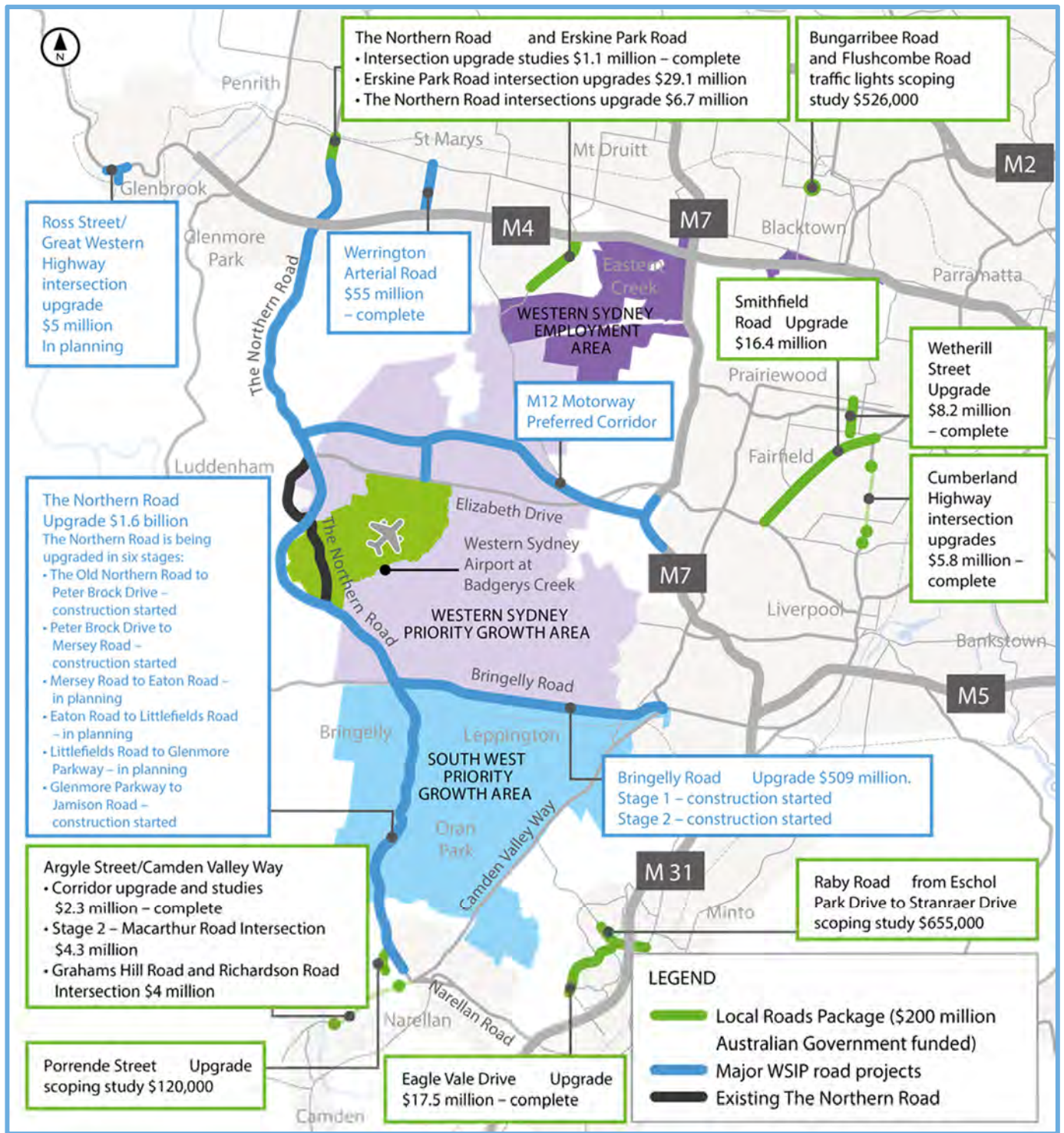
Mirabel Airport abandoned in Montreal Canada

Source: Richard de Neufville 2005, 'The Future of Secondary Airports: Nodes of a parallel air transport network', Massachusetts Institute of Technology, Cambridge

So far the Australian and NSW governments have committed to funding a \$3.6 billion roads package – the *Western Sydney Infrastructure Plan* – to support the integration of WSA with the region (see Figure 12). The package includes the construction of the new M12 Motorway, upgrade of the Northern Road and Bringelly Road to a minimum of four lanes each.³³

³³ Department of Infrastructure and Regional Development 2017, *Western Sydney Infrastructure Plan*

Figure 12: Western Sydney Infrastructure Plan



Source: Department of Infrastructure and Regional Development 2017, Western Sydney Infrastructure Plan

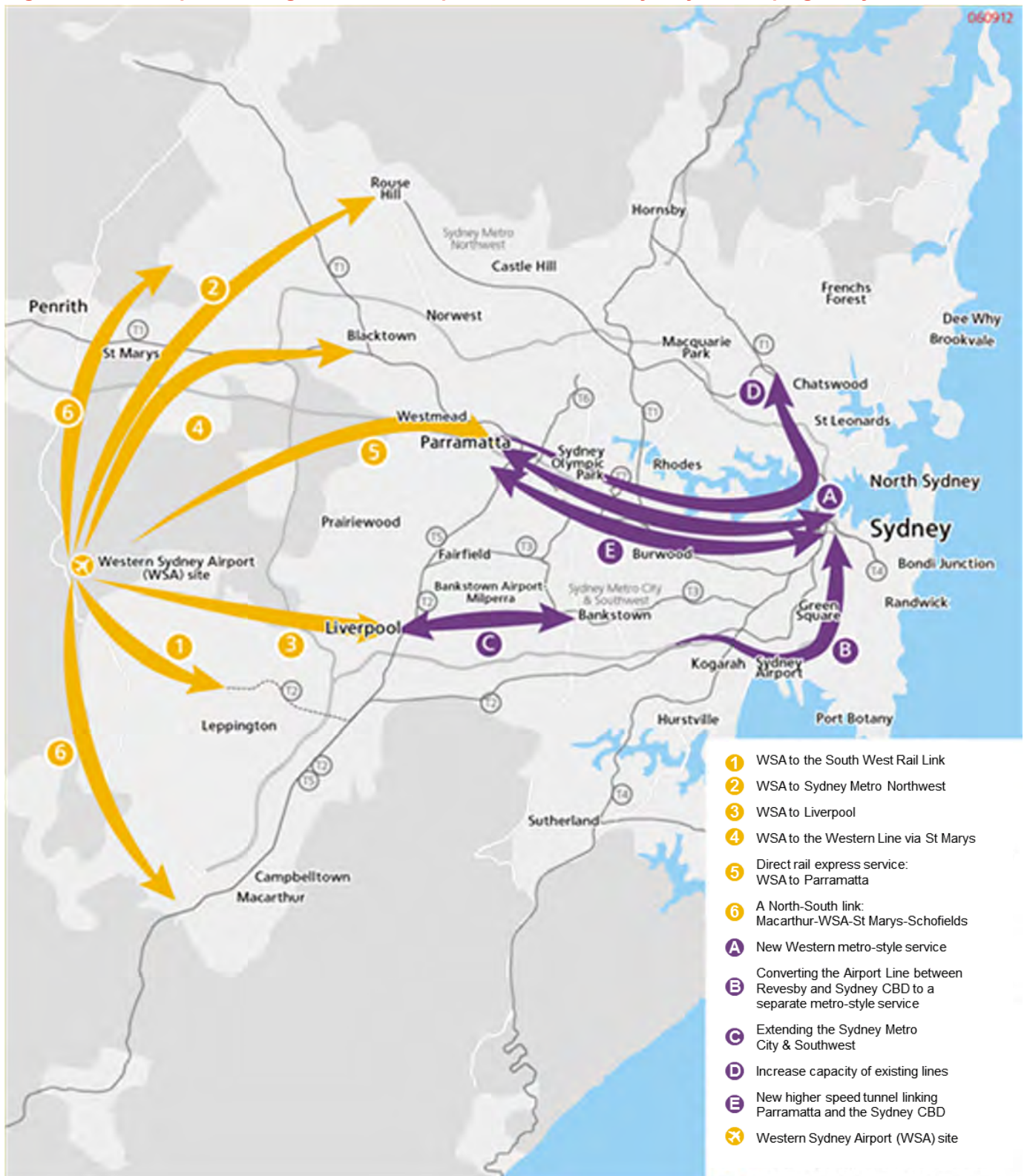
Six rail route options that would link WSA to different parts of Western Sydney are being investigated through an Australian and NSW Government Joint Scoping Study on the Rail Needs for Western Sydney (see Figure 13). The need to

investigate these six options has been reaffirmed in the NSW Government's transport strategy - *Future Transport 2056* - released in October 2017.³⁴ The strategy recognises that one or more of the rail links will be required, subject to

business case development, to support rail service needs arising within the next 10 years (i.e. in line with the opening of WSA).

³⁴ See NSW Government 2017, *Draft Greater Sydney Services and Infrastructure Plan – October 2017*

Figure 13: Route options being considered as part of the Western Sydney rail scoping study



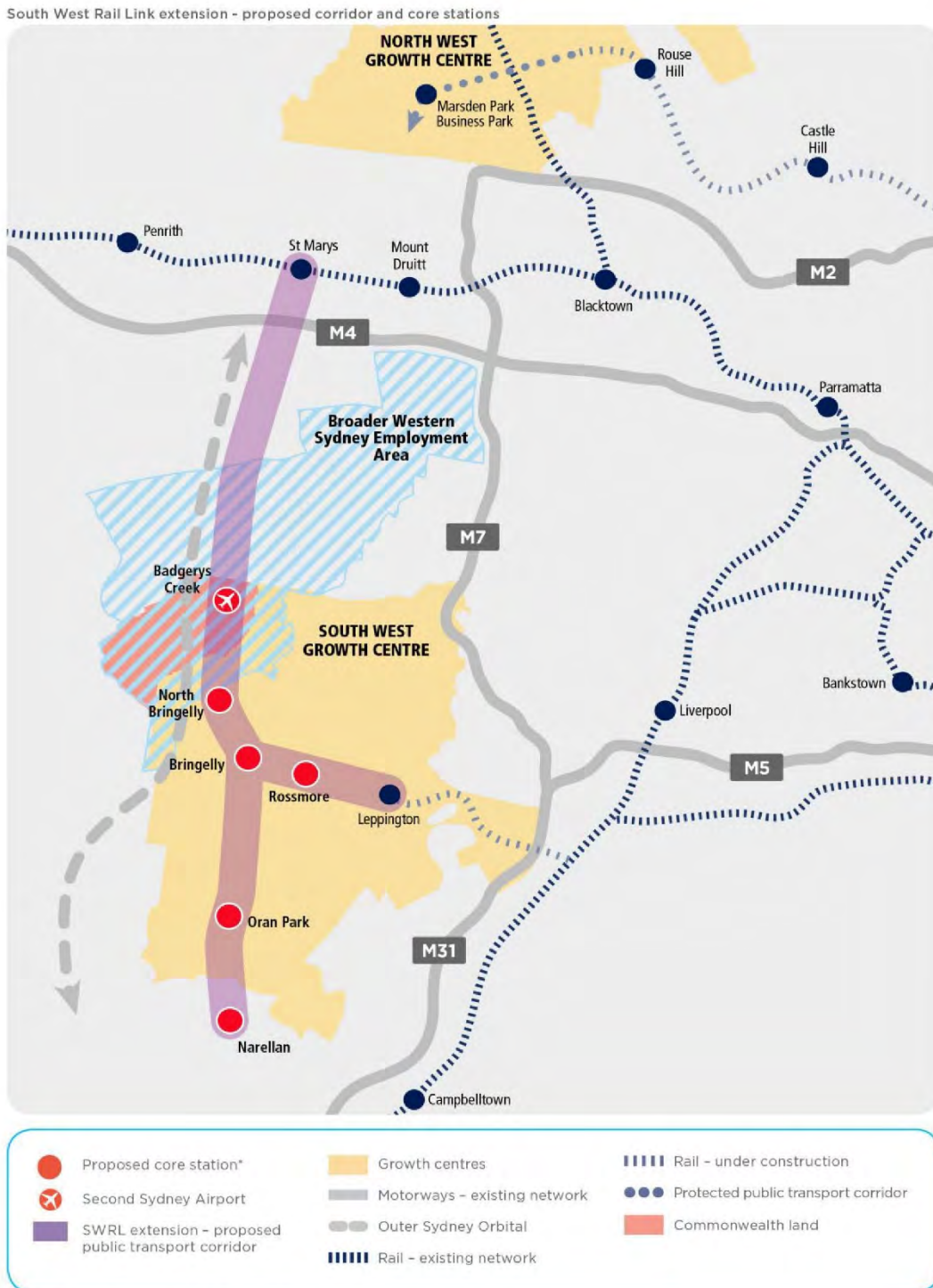
Source: Department of Infrastructure and Regional Development 2017, Western Sydney Rail Needs Study: Route Options

The options that would best support development of the aerotropolis, and that of Liverpool, are 'Option 1' and 'Option 3'.

Option 1 is a 10km link to Leppington, which also forms part of a separate proposal being considered to extend the South West Rail Link (see Figure 14). The South West Rail Link would connect the airport to

North of the T1 Western Line and South to the T2 South Line. Additional stations would be added at Rossmore, Bringelly, North Bringelly, Oran Park and Narellan.

Figure 14: Proposed corridor and core stations for the South West Rail Link Extension Corridor



Source: Transport for NSW 2017, South West Rail Link Extension Corridor. NB: The superseded South West Growth Centre and Western Sydney Employment Area boundaries are shown in the image.

The combination of the roads package and extension of the South West Rail Link, if approved, would provide good airport accessibility to major population centres in Penrith to the North and Campbelltown and Camden to the South. The combination also provides a good

multi-modal solution to help ease congestion of traffic flowing to the airport.

Connecting the airport to Leppington, via Bringelly, offers a number of advantages to the Liverpool LGA, to Western Sydney

and to Sydney as a whole — it provides:

- a simple rail connection from the airport through the South West Growth Centre, where a large proportion of the airport's

workforce and users are expected to live

- an easy link from the airport to Liverpool, which currently offers the closest business hub, as well as being on its way to developing the premier health and education precinct in Western Sydney. Linking the airport to Liverpool also offers the best potential for a more direct connection from the airport to the Sydney CBD and KSA
- good scope for a more immediate connection between Liverpool and KSA. In this respect, it may be an appropriate initial response, with a direct connection (Option 3) a complementary subsequent response.

Even the construction of the Leppington connection can be phased to ensure that development along the rail corridor is undertaken in an orderly manner. For example, while station sites can be identified and the core station infrastructure built, it may be appropriate to open the intermediate stations (e.g. North Bringelly, Bringelly and Rossmore — see) as the land around the stations are developed. This approach also has the benefit of reducing the upfront costs of construction.

In the medium term, a direct link from the airport to Liverpool City (see Option 3 in Figure 13) would further enhance the attractiveness of the city to businesses looking to locate near the airport. It would offer a faster link between the airport and Liverpool and therefore, the airport and the Sydney CBD.

Liverpool City Council should advocate for these short-and medium-term options on the basis that they are relatively simple options which ensure connectivity for WSA to the aerotropolis and the major edge city (i.e. Liverpool), but in a phased manner that allows expansion (e.g. building out the intermediate stations on the Leppington extension and then later constructing a direct Liverpool-WSA link).

The formal business case process to assess the six route options will

consider which ones will service the greatest users, relative to the cost of construction. On the one hand, the populations of Leppington and Narellan, and the Liverpool LGA more broadly, are expected to grow significantly as a result of WSA. On the other hand, it is conceivable that the Government ultimately favours links from WSA to areas with the greatest existing population density (i.e. Parramatta).

If this is the case, Liverpool City Council will need to allow for this scenario by considering the alternative modes of transport for workers and residents in the short-term such as shuttle bus services to and from the airport and the Liverpool CBD. *Transport Future 2056* notes that infrastructure to support rapid bus connections between the aerotropolis and Penrith, Liverpool, Blacktown and Campbelltown-Macarthur will also be considered investigated.

4.1.2 Connectivity to the rest of the city

In the medium to long-term connectivity to the Sydney CBD will become increasingly important to WSA's ability to capture demand unmet by Sydney airport and to attract a growing number of businesses and workers to Liverpool. Businesses considering locating to Liverpool will need efficient access to suppliers and customers beyond the region, and need confidence that the area will be desirable for the workers they will need to attract.

The average rail journey between Liverpool and the CBD is 60 minutes. These long commute times limit opportunities for Liverpool's residents and if they persist will constrain its potential as the major edge city of the aerotropolis.

Route options that link Western Sydney to the Sydney CBD are also being considered by the Western Sydney rail scoping study. Liverpool Council should advocate for 'Option C' to link Liverpool City to Bankstown, which would build on the connectivity provided by an airport to Leppington and/or airport to Liverpool link.

The combination of these options would provide the following advantages:

- fast journey times between Liverpool and the CBD
- connections between the airport and the Sydney CBD in a simple manner that leverages the existing network
- the easiest link between WSA and Sydney Airport, which would be further enhanced by pursuing 'Option B' to create a metro-style service linking the South West to KSA and onto the CBD.

In the medium- to longer-term, the following additional options would further secure Liverpool's position as the key gateway city between the airport and the rest of Sydney:

- providing more direct links from Liverpool to Parramatta and other regional cities to better improve connectivity between Western Sydney's major centres and broaden the airport's immediate catchment area
- creating a high-speed rail service connecting Liverpool to the CBD via the East Hills line, which could reduce the journey time to around 30 minutes.

It may also be appropriate in the longer term to consider a fast rail link between WSA and the Sydney CBD as WSA migrates from a predominantly low cost operator airport to full service carriers with a focus on business passengers.

4.2 Coordinated planning

The success of the WSA aerotropolis requires coordinated planning:

- around the airport, in order to enable large-scale industrial precincts to develop around the airport
- beyond the airport, in order to:
 - pursue good urban design to attract other businesses and workers to Liverpool
 - realise tourism opportunities by enhancing Liverpool's

existing assets and developing new attractions.

These coordinated planning needs are discussed in turn.

4.2.1 Around the airport

Careful zoning, planning and investment coordination is required to encourage industrial agglomeration around the airport. Situating these activities around the airport is not only compatible with a 24-hour airport but maximises

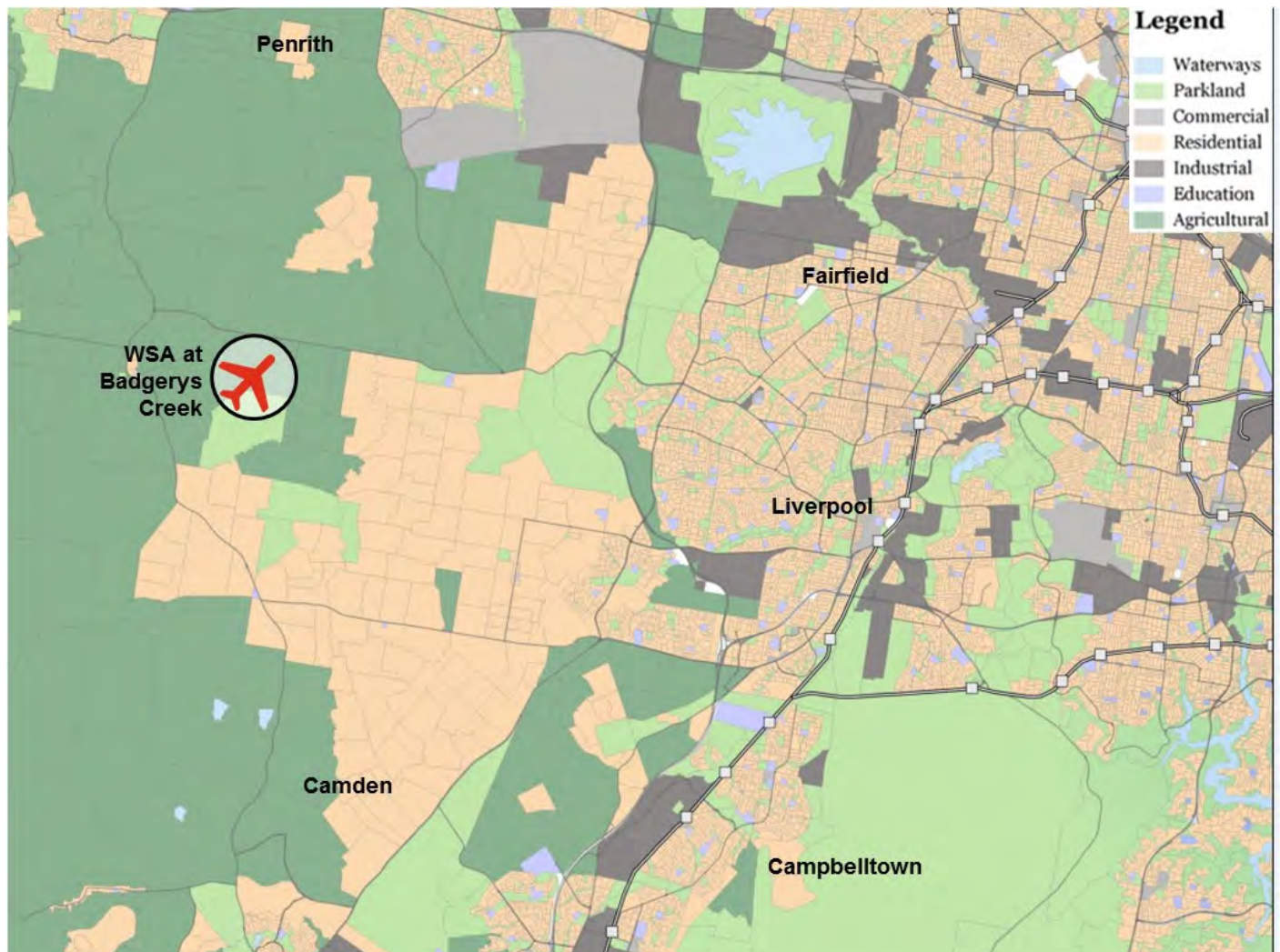
indirect employment generated by the airport.

This requires prioritising the right mix of industrial and commercial development around the airport that not only attracts high value industries, but those whose longer-term viability is significantly enhanced by proximity to the airport, to ensure ‘stickier’ tenancy.

A large supply of land suitable for development exists around the

airport. The majority of this land is currently used for agricultural, recreational and low-density residential uses (see Figure 15). Planning for the surrounding land uses is ongoing but a number of Federal and State Government policies have begun to formalise the vision for land use in the areas around the airport, setting the stage for future development in infrastructure, industrial and commercial activity and homes.

Figure 15: Current land use around the airport site



Source: PwC, based on data from the Australian Bureau of Statistics.

The key policy initiative is that of the Western Sydney Airport Priority Growth Area (WSA-PGA), enveloping the entire North, East and Southern sides of the airport site. The WSPGA was established in April 2014 in light of the final

decision to proceed with locating the airport at the Badgerys Creek site. The stated objective of the WSA-PGA is to ‘provide local people with better access to jobs within and around the airport, as well as infrastructure and services for local residents’.³⁵ It is

expected that the WSPGA will embrace the commercial opportunities from the airport and, if successfully implemented, will shift the rural residential character of the area towards a more urban form compatible with employment-

³⁵ NSW Department of Planning & Environment 2017, *Western Sydney Priority Growth Area*

generating land use. However, no zoning or planning details are available as yet. The NSW Department of Planning and Environment is working with local councils to develop the *Land Use and Infrastructure Strategy*. As a large share of the WSPGA falls within the Liverpool LGA, the Council will be able to work with State Government on ensuring an optimal strategy is developed. It must also set out a sufficient physical buffer between the airport and the surrounding residential areas (i.e. at least 5km from the airport) to safeguard WSA's curfew-free status – see Figure 16. Beyond getting

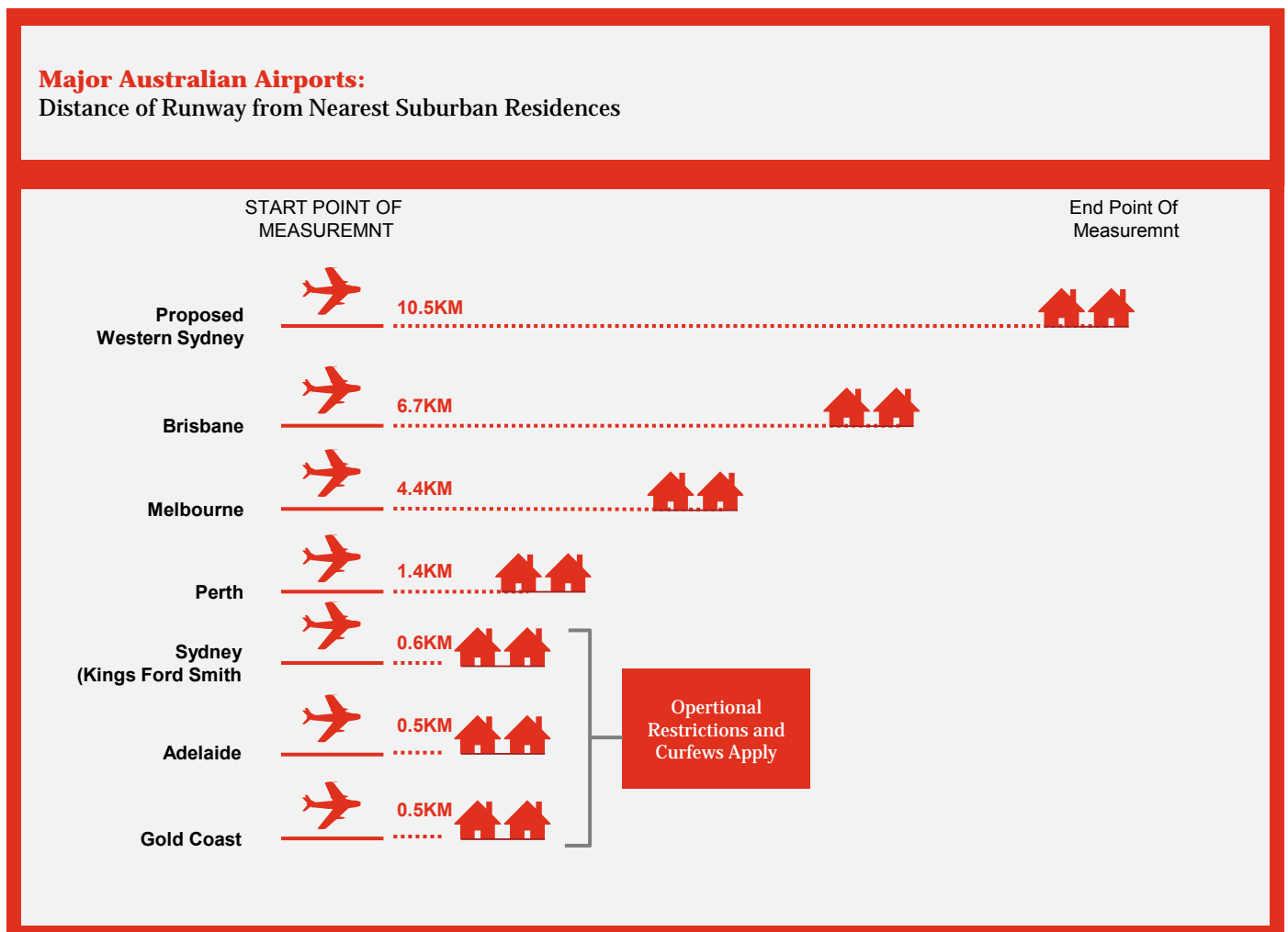
zoning right, the NSW Government and the Liverpool City Council will also need to work with institutional developers who have the capacity to develop land into specialised sector-specific precincts and bring the right tenants to them.

The strategy must also set out a sufficient physical buffer between the airport and the surrounding residential areas (at least 5km from the airport) to safeguard WSA's curfew-free status. Where further supply of housing is needed, higher density options need to be considered to avoid the sprawling form of urban development that is

currently seen in parts of Western Sydney and only serves to create further distance from transportation and other social infrastructure.

Furthermore, as economic activity increases, there will be increased demand from businesses who will want to locate there, creating further employment opportunities. The Council needs to ensure that this isn't stymied by inconsistent planning and that the strategy for the WSA-PGA provides sufficient land for commercial and mixed-use development.

Figure 16 Distance of runways from nearest suburban residences



Source: Department for Infrastructure and Regional Development 2016, *An airport for Western Sydney: Building Western Sydney's future*, p.4

4.2.2 Beyond the airport – Liverpool’s place potential

The Liverpool city centre has a unique opportunity to position itself as the CBD of the aerotropolis. It is located in a strategic position, at the most easterly point of what we have generally outlined as the aerotropolis boundary in Chapter 2, at roughly the mid-point between the airport site and the Sydney CBD. This is a great advantage considering businesses who may want to establish offices close to the airport but still be located within a major commercial and retail centre. This was recently demonstrated by WSA Co’s decision to establish their operations in Liverpool.

A key component of Liverpool’s current strategy to attract businesses and people is to improve the city’s amenity and liveability. The Australia Government’s *Smart Cities Plan* recognises the centrality of these factors to a city’s success, noting that:

“ To succeed in the 21st Century economy our cities need to be productive and accessible, but they also need to be liveable with a clear focus on serving their citizens. Great cities attract, retain and develop increasingly mobile talent and organisations, encouraging them to innovate, create jobs and support growth.”³⁶

The Council is working on revitalising its city centre, which includes a proposal to alter zoning in the city centre to permit increased mixed-use development. Beyond the areas immediately surrounding the airport, mixed use retail, office and residential development should be prioritised. Mixed uses are known to activate more vibrant communities with different lifestyle options.

Liverpool Council is also seeking to leverage the amenity provided by its proximity to the Georges River and has exhibited a draft Master Plan, which proposes a long-term vision for the potential urban renewal of the precinct. The plan envisages a connected and walkable precinct which provides generous public access to the river front, a vibrant mix of uses, and improved connections across the Georges River.

Liverpool needs to continue to progress its revitalisation strategy for the city centre to ensure that it is seen as the natural commercial hub adjoining the WSA.

While tourism is a potential beneficiary from the development of WSA, many of the existing and proposed Western Sydney tourist facilities sit outside Liverpool (e.g. World of Wonders, the Blacktown zoo etc.). Nevertheless, Liverpool can benefit by becoming the leading edge city and the natural Western Sydney locus if it can truly be seen to be an attractive and engaged environment with the appropriate facilities. To do this, a range of issues need to be addressed, including:

- activation of the Liverpool CBD as a vibrant, green, engaged and walkable precinct³⁷ (see Box 6)

- the development of a medium-term strategy to attract additional hotels and conference facilities to Liverpool (see Section 3.1.5)
- the implementation of the George’s River Master Plan with visitors in mind (i.e. not just residents)
- capitalising on the co-location of the Warwick Farm race course and the new Inglis Riverside Stables to develop further enterprises related to the equine industry
- the establishment of Sydney’s third A-League team in a new multi-purpose sporting facility (see Box 3). Proximity to WSA should, over time, provide direct and relatively convenient connections for the Liverpool team and its competitors in Australia and Asia.











³⁶ Department of Prime Minister and Cabinet 2016, *Smart Cities Plan*

³⁷ See PwC 2017, *Reimagining ... the Liverpool Health, Education, Research and Innovation Precinct*

Box 6: Future Liverpool urban principles

PwC’s recent report prepared for The Liverpool Health, Education, Research and Innovation Precinct Committee, assessed Liverpool’s place-making needs based on nine key urban planning principles. The table below outlines key recommendations to guide proactive decisions on new development.

| | <i>Urban Principle</i> | <i>Liverpool Now</i> |
|--|------------------------|---|
| <p><i>Create distinct focus zones that are easy to identify</i></p> <p><i>Develop the in-between spaces into social catalysers</i></p> <p><i>Mandate cross connections that increase intersections</i></p> <p><i>Encourage connections across bounding elements</i></p> <p><i>Focus on CBD soft transport options and reducing cars</i></p> <p><i>Support mixed use and shared use developments</i></p> <p><i>Develop consistent materiality for identity in each zone</i></p> <p><i>Provide housing that meets needs across the spectrum</i></p> <p><i>Activate day and night, repurpose and multi-use spaces</i></p> | Focal Zones |  <p>Align the zones within the precinct with their primary use eg health and research/civic and food/retail and education/green zone to create identity and attachment.</p> |
| | Catalysers |  <p>Build on the small-scale personal interaction opportunities that already exist in Liverpool and provide more to heighten the sense of community connection.</p> |
| | Permeability |  <p>Retain Liverpool’s original grid block sizes and increase arcades or interconnecting walkways to provide a greater number of intersections and options for paths of travel.</p> |
| | Reach and Limits |  <p>Consolidate development in the core CBD to retain the close reach of the city limits and increase connections across the river, rail and highways to surrounding areas.</p> |
| | Transport Options |  <p>Consider encouraging cars to stay out of the CBD core by increasing hyper local services, walkability, bike share & bike lanes. Push for increased metro and airport connection.</p> |
| | Mix of Uses |  <p>Encourage the blending of activities in new mixed use developments and focus on shared facilities for collaboration.</p> |
| | Urban fabric |  <p>Expand on the design identity being developed around the mall and Macquarie street and develop urban fabric language that distinguishes each focal zone.</p> |
| | Housing Diversity |  <p>Foster design excellence and create a reputation for supporting quality in design of new developments. Promote housing affordability across sectors and types.</p> |
| | Activation | <p>Activate interfaces along primary walking routes, have multiple modes of function to ensure facilities are in use day and night, promote mixed use & adaptive reuse.</p> |

Source: PwC 2017, Reimagining ... the Liverpool Health, Education, Research and Innovation Precinct

4.3 Attracting investment

Whilst there is good potential for new sectors and businesses to thrive in the Badgerys Creek aerotropolis, a challenge will be kick-starting investment and getting enough businesses to take a leap of faith early on in the life of the aerotropolis. Greater business engagement is required to build the understanding of the area’s future investment potential. Targeted incentives may also be needed to attract specific sectors which present the greatest opportunities for the

area (e.g. those identified in Chapter 3).

4.3.1 Kick-starting investment

Incentive mechanisms to attract businesses to the aerotropolis need to do the job of luring existing enterprises to relocate to the area, as well as stimulating investment in new and advanced sectors.

A traditional way to attract investment has been through the establishment of a free trade zones,

as has occurred at many international airports, including Incheon, Dubai and Changi.³⁸ Such zones are areas where goods may be landed, handled, manufactured, and re-exported with simplified or streamlined intervention of customs and other border authorities. Customs procedures are still required where goods are moved out of the zone and into ‘the domestic

³⁸ There are over 3500 FTZs in 135 different countries.

market' but are otherwise liberalised.³⁹

Rather than the traditional business park model of a free trade zone as previously employed, what could be considered is a 'virtual investment attraction mechanism'.

This could be structured to apply to companies:

- that wish to undertake demonstrably new investment in Australia
- in selected priority industries (see Box 7)
- with the incentives time-limited.

Such criteria would ensure that incentives would only be available for investment that would otherwise be unlikely to occur.

The key to achieving these benefits is to incentivise new businesses, leading to investment in facilities, technology, innovation and people. These incentives could include, for example:

- the reduction or elimination of customs duties and GST
- reduced taxation obligations
- better taxation incentives
- employee hiring incentives
- lighter touch compliance regimes
- the opportunity to work with the Liverpool City Council in public private partnerships (PPPs) to accelerate development.

Importantly, there would be no diminution of occupational health or employment standards.

What would separate this approach from most traditional trade zones is that eligible companies would need to operate on agreed secure sites, but would not have to operate with other firms in a single zone.

If eligible firms are strategically located around and next to WSA

then such an incentive mechanism could provide a significant economic benefit and, by helping to kick-start investment in the aerotropolis, would provide a needed boost to Australia's trade facilitation performance. In turn it would facilitate innovation, productivity growth, increased production, domestic employment and international competitiveness of domestically produced goods.

A key objective should be to encourage investment in sectors that governments are actively trying to promote, that are aviation-oriented and may benefit from proximity to WSA. The following objectives provide further guidance as to the kinds of sectors and activities to which any incentives could be directed:

- encourage robust and diversified industries – by attracting particular types of investment, governments have the opportunity to diversify industries and exports
- develop domestic markets – by offering greater flexibility in the transfer of intellectual property and intangible goods, governments have the opportunity to attract companies dedicated to research and development, and in turn foster successful intelligence hubs for educational, scientific and technological institutes
- stimulate manufacturing innovation and renewal – in an effort to drive Australian-based innovation and development, some taxes could be lowered on profits derived from wholly Australian-developed intellectual property. This could greatly contribute to growth in the research and development sector through leveraging existing Australian resources against increased financial incentives.

With these objectives in mind, we believe that the sectoral opportunities identified in Chapter 2

could be suitable candidates for incentives. However, like Incheon (see Box 7), incentives could be tiered, reflecting varying levels of desirability and ease of attraction. For example, logistics companies are more likely to locate close to WSA and domestic investment and FDI in Australian food and agri-business is growing strongly. Only moderate incentives should be offered to provide enough inducement for companies to actually move their operations to the Badgerys Creek aerotropolis. The defence industry on the other hand is one that the NSW is actively seeking to grow and which may require higher incentives to attract world-class investment of a sufficient scale.

Liverpool City Council should actively support the development of targeted and time-limited incentives for new investors in the Liverpool LGA to target new FDI in key growth sectors.



³⁹ The Australian Government previously attempted to introduce a FTZ in Darwin in 1985. It was unsuccessful for a number of reasons,

including lack of proximity to other major economic areas

Box 7: Incheon Free Economic Zone

The Incheon Airport Free Economic Zone provides various customised incentives for attracting airlines, logistics companies and manufacturing companies. The airport provides tax reductions and exemptions from National Tax (Corporate tax and income tax) and local taxes based on industry type and investment amount, with a focus on manufacturing companies, logistics investment and R&D.

| Taxation | Investment amount (USD) | Exemption |
|---|---|--|
| <i>National Tax</i> <i>(Corporate tax, Income tax)</i> | Manufacturing : \$30 million or more Logistics : \$10 million or more R&D : \$2 million or more | 100% for 5 years 50% for next 2 years |
| | Manufacturing: \$10 million or more Logistics: \$5 million or more R&D: \$1 million or more | 100% for 3 years 50% for next 2 years |
| <i>Local Tax</i> | Manufacturing: \$10 million or more Logistics: \$5 million or more R&D: \$1 million or more | Acquisition tax, Registration tax: 100% for 15 years Property tax: 100% for 10 years 50% for 3 years |

Source: Incheon Airport 2017, *Our Business: Incentives*, available at <http://www.airport.kr/co/en/3/2/7/index.jsp>

4.3.2 Building broader business confidence

The forthcoming City Deal, designation of the priority growth areas around the airport and the announcement of potential investment incentives will go some way to providing the right signals to business of governments’ intentions for the region.

However, a much clearer picture is needed of the development and investment potential, and an idea of what other businesses will be locating near the airport. A number of large organisations are already making plans that will determine the location of their business operations at around the time of WSA’s opening. If the airport and Western Sydney is to be part of their thinking, more certainty about the future profile of the area is required.

An aerotropolis investor summit will be held in 2018, however a more regular forum for business engagement is required to generate

ideas and possible collaboration. In this regard, we suggest that the Liverpool City Council should establish a regular business forum to provide a bond between Council and aerotropolis businesses, and to provide greater confidence for potential investors as to other organisations’ plans

4.3.3 Training and skills requirements

Around 60 per cent of Liverpool City resident workers travel outside of the area to work. There are different reasons for this such as misalignment of available opportunities and skills and transport limitations. A key driver of this people movement is that the number of jobs available in Liverpool is three-quarters the number of employed residents.

The airport is expected to support almost 28,000 direct and indirect jobs by 2031, five years after the airport opens. The hope is that the airport generates not just more jobs

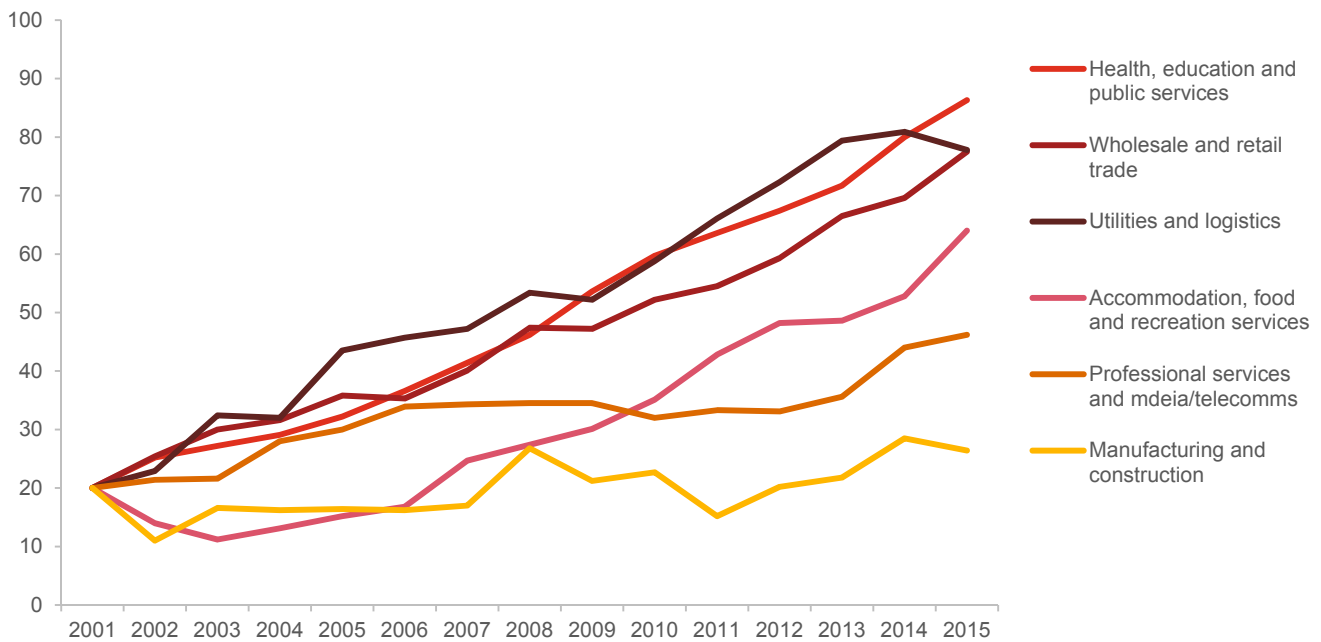
to address this divide but also generates a larger share of quality jobs for Western Sydney residents. As at 2011 (to update for 2016), jobs help by Liverpool’s residents fell into three main occupation groups:

- Clerical and Administrative Workers (approximately 18 per cent)
- Technicians and Trades Workers (approximately 16 per cent)
- Professionals (approximately 15 per cent).

WSA will be a major driver of employment opportunities in the region, but it is only part of the story. Reflecting national trends, and driven by a significant increase in Liverpool’s population, healthcare and social assistance, and education and training are expected to lead jobs growth within the City of Liverpool, as is reflected in the changing industrial composition trends (see Figure 17).

Figure 17: Liverpool LGA’s changing industrial composition, 2001-15, for select industries

Central Liverpool’s changing industrial composition*, 2001-15, for select industry groupings



Source: PwC, based on data from the Australian Bureau of Statistics.

Liverpool’s educational institutions may need to augment their education and training offerings to align to the skills requirements of Western Sydney’s future economy, factoring in both the likely continuation of current industry trends, as well potential shifts that may be brought about by WSA. As explored earlier in Chapter 3, the key sectors that need to be fostered to maximise the economic potential of the airport include:

- freight, logistics and distribution
- advanced food-manufacturing and export
- health and research (biotech, robotics, medical devices and pharma)
- defence and aerospace.

These sectors create both low and high-skilled jobs across engineering,

agri-business, medical science, digital technology, professional services, logistics and administration, and others.

Liverpool benefits from several high quality educational and training institutions including Liverpool Hospital, the Liverpool TAFE, Western Sydney University and University of Wollongong. There exists opportunities to foster collaboration between these organisations to respond to current and emerging trends in skills requirements through the:

- Liverpool Health and Education Precinct Committee⁴⁰
- Moorebank Intermodal Terminal Workforce Advisory Group (see Box 8).

Liverpool Council needs to leverage this potentially enhanced level of

collaboration to bring awareness to education providers and students on the future aerotropolis economy and its skill requirements. As the region’s population grows, and skills and development requirements increase, the market may grow to a sufficient size to accommodate an additional university in Liverpool.

The airport itself could be the location for a TAFE ‘skills exchange program’, which allows workers to be taught skills on the job. Such programs are already being rolled out across projects such as the Western Sydney Stadium construction, Parramatta Square and Northern Road upgrade. These programs are showcasing how new infrastructure programs can mobilise talent efficiently and provide good test cases for the roll-out of similar programs for WSA’s construction and ongoing operations.

⁴⁰ See PwC 2017, *Reimagining ... the Liverpool Health, Education, Research and Innovation Precinct*

Box 8: Moorebank Intermodal Terminal Workforce Advisory Group (MITWAG)

MIC has established the MITWAG. The main focus of the advisory group is to identify and address skill shortages and education and training needs that will enable local people to be job-ready for the significant job opportunities generated by the development and operation of Moorebank Logistics Park. Membership of the group includes representatives from:

- State government – NSW Department of Industry
- Local councils – Liverpool City Council and Campbelltown City Council
- Chamber of Commerce – Liverpool Chamber of Commerce and Industry
- Tertiary educational institutions – TAFE NSW, University of New South Wales, University of Wollongong and Western Sydney University
- SIMTA and MIC



Moorebank Intermodal construction progress at August 2017

Source: Moorebank Intermodal Company 2017, Construction progress, available at <http://www.micl.com.au/construction-progress/>



4.4 Liverpool City Council's role in maximising the value of the aerotropolis

Drawing on the opportunities identified in Chapter 2 and the needs identified earlier in this chapter, we suggest that the Liverpool City Council has clear tasks to undertake to maximise the value of the aerotropolis, with respect to:

- land use planning and urban design – the Council should:
 - continue to work with the State Government on the *Land Use and Infrastructure Strategy* for the WSA-PGA to ensure that the *Strategy* goes beyond just setting out zoning for the area to provide the beginning of a master plan that defines sites that could be developed for sector-specific purposes, such as logistics, food, aviation and defence.
 - resist the temptation to view residential development as the highest and best use for development. Care particularly needs to be taken to ensure that residential developments do not impinge on the long-term sustainability of the airport as a 24-hour facility.
 - continue to work with State Government on specific land release opportunities, liaising with institutional developers that have the capacity to develop high quality industrial and commercial sites.
 - continue to progress the revitalisation strategy for Liverpool's central business district (CBD) and the George's River to ensure that Liverpool is seen as the natural

commercial and entertainment hub adjoining the WSA.

- transport infrastructure – the Council should:
 - continue to advocate for the rail options proposed in this report. The priority options, including linking WSA to Leppington and linking Liverpool to Bankstown, would provide simple connections that maximise Liverpool's role as the leading edge city in propelling the development of the aerotropolis.
- private sector and institutional engagement – the Council should:
 - establish a regular business forum to provide a bond between Council and actual and potential aerotropolis businesses. The aim should be to provide greater confidence for potential investors and to cement Liverpool as the premier edge city.
 - leverage enhanced collaboration through Liverpool's 'innovation precinct' to bring awareness to education providers and students on the future aerotropolis economy and its skill requirements.
 - work with the NSW Government and Western Sydney Business Chamber to understand what the Council can do to support the tourism strategy, noting that the future Georges River precinct could be a destination for high quality accommodation and entertainment.

- actively support the development of a 'virtual investment attraction mechanism' in the Liverpool area to target new foreign direct investment (FDI) in key growth sectors such as such as logistics, food, aviation and defence.

Furthermore, they should ensure that Liverpool is seen as:

- the Premier Edge City of the aerotropolis
- the CBD of the greater aerotropolis, where airport-related businesses set up their Western Sydney (or even Sydney) offices/headquarters. That WSA Co has already done this provides confidence for others to follow
- the place to stay for incoming tourists and business people. While there may be a number of transit hotels that set up near (or at WSA), Badgerys Creek is sufficiently remote that travellers will be more inclined to stay somewhere that's close to other amenities. Liverpool needs to be seen as the town adjoining the airport to which it just makes sense to go.

If implemented, these actions will increase the likelihood that WSA is itself a success (i.e. enduring good connectivity and the maintenance of WSA as a 24-hour airport) and that the broader potential benefits of an aerotropolis are also realised (i.e. new investment delivered and opportunities for employment maximised).





Appendices

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Appendix A Abbreviations

| | |
|----------------|--|
| CBD | central business district |
| DFW | Dallas Fort Worth International Airport |
| FFA | Football Federation of Australia |
| FDI | foreign direct investment |
| FTZ | free trade zone |
| GST | goods and services tax |
| KSA | Kingsford Smith Airport |
| LGA | Local Government Area |
| MITWAG | Moorebank Intermodal Terminal Workforce Advisory Group |
| MTP | Medical Technologies and Pharmaceuticals |
| NSW | New South Wales |
| PPP | public private partnership |
| R&D | research and development |
| VFR | visiting family or friends |
| WSA | Western Sydney Airport |
| WSA-PGA | Western Sydney Airport Priority Growth Area |





Appendix B Examples of successful overseas aerotropolises

The most commonly cited example of successful examples of the aerotropolis concept are:

- Incheon Airport – sitting on 6,000 hectares, the Incheon Airport site has developed into a metropolitan centre. At present activity is largely concentrated in the International Service Zone, at the southern end of the airport site, which is home to international hotels like the Grand Hyatt and Best Western and the offices of companies like Samsung and Daewoo Construction, as well as a golfing range and a medical centre (see Figure 18).⁴¹

The site is further evolving through its 'Airport City' development project. This 15-year master plan (see Figure 19) will see further commercial and residential development of the site including the construction of an additional international business centre, large scale shopping centres, convention centres, an entertainment resort and a water park. The final stage

will be the expansion of the aerotropolis by connecting the two neighbouring islands (man-made Songdo and Cheongra) to Yeongjong where the airport is located. The three islands will be included in the extended Incheon Free Enterprise Zone, with the objective of transforming the area into a central business city of Northeast Asia.⁴²

- Dallas-Fort Worth International Airport (DFW) – Opening in 1974, (DFW) airport was strategically located at the centre of the cities of Dallas, Fort Worth and Denton. It is the largest airport in Texas and the second largest in United States of America. The airport and surrounding area has successfully attracted dozens of aviation-enabled businesses. Beyond the immediate areas around an airport, benefits can flow further out to surrounding communities through the creation of greater employment opportunities, as well as improved social infrastructure, amenity and housing brought about by the

additional investment and development opportunities stimulated by the airport. Urban areas connected to an airport, but not in the airport's immediate geographical radius, are sometimes referred to as 'edge cities' or as making up the 'greater aerotropolis'.

Las Colinas, 12km east of the DFW Airport, is one such edge city in a broader aerotropolis. Las Colinas is a 5,000 'mega' real-estate development in the suburban city of Irving. It is connected to DFW airport by dedicated light rail and its growth is considered to be closely linked by the airport.⁴³ The area balances commercial, residential, community and recreational development with over two million square metres of office space, one million square metres of light industry, 121,000 metre square of retail space, over 14,000 single- and multi-family residences, dozens of luxury and business class hotels and restaurants and four championship golf courses.⁴⁴

⁴¹ Incheon Airport 2017, *Our Business: International Service Zone*, available at <http://www.airport.kr/co/en/3/3/index.jsp#>

⁴² Incheon Free Economic Zone, About us, available at

<https://www.ifez.go.kr/eng/en/m6/greeting/sc reen.do>

⁴³ John Kasarda 2015, *A Western Sydney Aerotropolis: Maximising the benefits of Badgerys Creek*

⁴⁴ John Kasarda 2015, *A Western Sydney Aerotropolis: Maximising the benefits of Badgerys Creek*

Figure 18: Layout of Incheon Airport's existing International Service Zone



Source: Incheon Airport 2017, International Service Zone, available at <http://www.airport.kr/co/en/3/3/index.jsp>

Figure 19: Artist impression of the new Songdo



Source: Gale International 2014, Songdo International Business District

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