

# Airports as Development Generators: A reconnaissance of employment trends in the Sydney airport region 1996-2011

Robert Freestone and Andrew Tice  
Faculty of the Built Environment  
University of New South Wales

**Abstract:** Airports are seen as powerful drivers of local economic development, attracting aviation-linked and wider businesses to their environs. This significance is heightened by their elevation as key nodes within global economic networks. These ideas lie behind the promotion of the 'aerotropolis' economic region associated most closely with John Kasarda. Drawing on census data for the period 1996-2011, and working at three main spatial scales (airport, surrounding region, and global economic corridor), this paper explores employment trends in Sydney where the aerotropolis theory posits there would be evidence of significant airport-related development. The paper examines the type of employment being generated to convey an appreciation of trends over. The analysis provides insights into Sydney Airport itself as a growth node, its stimulus of economic development within the contiguous area, its contribution to broader metropolitan development, and evidence for the aerotropolis model.

## Introduction

Airports are widely regarded as critical generators of employment opportunities and thus economic growth (Anon 2004) and urban regeneration (Robertson, 1995). Passenger activity is a powerful predictor of urban population and employment growth (Brueckner, 2003; Green, 2007). The impacts of direct (on airport) job creation are multiplied by related expenditures: indirect (participants in the supply chain), induced (broader expenditures by employees) and catalytic (triggered by the wider role of the airport) (ACI Europe, 2004). Case studies of individual airports have explored regional growth impacts including Chicago (Al Chalabi, 1998) and Amsterdam (Hakfoort et al, 2001; Van den Berg et al, 1996). Richard Florida (et al 2012) has turned his attention to the role airports play in regional economic development and links their impact to various factors including the size and scale of their activities in particular markets. In Australia, numerous airport-commissioned economic impact studies testify to positive economic outputs although the often upbeat assumptions and measurement of parameters make analytical comparisons difficult (BITRE, 2013). An overall estimate of Australian airports' total economic contribution in 2011 suggests around 1.2% of Gross Domestic Product, with airport 'precinct' activities alone contributing over \$14b in value added (Deloitte Access Economics, 2012).

Sydney Airport's economic footprint is massive (Deloitte Access Economics, 2013). It is a crucial piece of infrastructure for Sydney as a global city with implications for the functional structure of the entire metropolitan area (Searle 1996). This paper considers its economic contribution in spatial terms by examining the scale and composition of recent employment trends on and around the airport. The broader economic impact of the airport seems incontrovertible. However, has that translated into real employment growth in the immediate vicinity? What trends are evident? This preliminary analysis draws primarily on analysis of ABS data, accessible policy documentation, extant academic research and discussions with key planning and development stakeholders. A recent report by the Bureau of Infrastructure, Transport and Regional Economics highlights the employment contributions of Australia's major airports (BITRE 2013). This paper delves more deeply into the Sydney case and situates that within a broader spatial planning framework. It provides a longitudinal perspective from the 1990s. Because of data incomparability and focus on current challenges, the major emphasis is given to trends since 2001 and particularly over the last intercensal period 2006-2011.

There are seven short substantive sections to the paper. The first situates interest in the spatial distribution of airport-related employment change within the context of the aerotropolis as a model of metropolitan form and structure. The next two sections provide respectively a brief introduction to Sydney Airport and the broader spatial and planning context in which it functions. Next is provided an empirical-based description of characteristics, historical changes and recent trends in employment

numbers and structure. The subsequent three sections unpack these results at three spatial scales: on the airport itself, in the immediately surrounding region, and as part of a larger metropolitan growth corridor. The findings confirm Sydney Airport as undoubtedly a major economic driver but actual employment growth at and near the airport has been modest. Near the airport, conflicting pressures to both boost residential population and conserve employment lands though not necessarily through airport-centric development are evident. Farther afield in locations highly accessible to the airport come development outcomes which might give some credence to the aerotropolis model.

## **The aerotropolis**

Modern airports have evolved from specialist transportation facilities managed by government authorities into a multi-product business enterprises run on corporate lines (Jarach, 2001). Several different spatial models have sought to capture this transformation (Freestone and Baker, 2011) with John Kasarda's notion of the aerotropolis being the best known (Kasarda and Lindsay, 2012). It is premised on a close relationship between airports and growth as well as an understanding that the 'need for speed' structures land uses in a distance-decay relationship away from airports. Kasarda equates the aviation-airport revolution to previous rounds of technological innovation in transportation infrastructure: 18<sup>th</sup> century canals, 19<sup>th</sup> century railways and 20<sup>th</sup> century highways. His model not only captures the diversification in functions of airports but seeks to place them at the heart of metropolitan structure and economic development in a globalised world.

In the aerotropolis model, airports are powerful engines of local economic development that attract diverse aviation-oriented businesses to locate at the airport, adjacent to them and along connecting transportation corridors. This depicts a new metropolitan form, comprising an 'airport city' with significant non-aeronautical functions such as offices and retail complexes at the centre of road (*aerolanes*) and rail (*aerotrains*) corridors which fan out to clusters of aviation-linked businesses stretching up to 25 kilometres away. There is evidence for these arrangements in many big cities, but the archetypes are the large entrepreneurial world airports planned in the modern era, e.g. Singapore, Hong Kong, and Dallas-Fort Worth. The strategic challenge presented is to ensure airport area planning frameworks bring together business planning, airport planning, and metropolitan in an integrated and sustainable manner.

The type of business positioning for airport access is wide-ranging. Airports are regarded as supporting employment 'across more industrial sectors than almost any other single economic activity, covering construction, air freight, hotels, transport and maintenance, as well, as attracted industries such as electronics, pharmaceuticals, information technology and finance' (Robertson 1995, 83). In both Kasarda's formulation and Weisbrod's (et al 1993) typology of business activity, ranked by degree of attraction to the vicinity of airports, hi-tech industry including manufacturers of optical instruments, communication and electronic equipment, pharmaceutical products, and data processing, rates highly. Knowledge precincts are thus seen as increasingly important elements of airport regions (Yigitcanlar et al, 2008).

The aerotropolis model has been criticised as a pro-business and environmentally unsustainable concept. The critique by Charles (et al 2007) highlights aviation's dependency on a non-renewable resource, the security risks of overconcentration of critical infrastructure and the forced hegemony of air over all other inter-regional and international transport modes. Self (2011) offers an excoriating review of a model fuelled by over consumption and blind to unbalanced development, an ideology 'slumbering on the redevye flight to apocalypse'. Its reliance on a generalised metaphor with positive economic benefits almost willed into reality is highlighted by Prosperi (2008). These criticisms are well taken. Here we adopt the aerotropolis as a positive rather than normative benchmark to see how well it captures the realities of the Sydney case.

## **Sydney Airport**

Sydney Airport is Australia's major international and domestic airport. It has two major terminal precincts: T1 (international) and T2/T3 (domestic) with Virgin, low cost carriers and regional airlines based at common user terminal T2 and Qantas at T3. The airport services 46 airlines operating nearly 100 international, interstate, and regional routes. In 2012 the airport handled 36.9m passengers, 292,852 aircraft movements, and 615,378 tonnes of freight. By 2033, the airport is projected to handle approximately 74.3m passengers, 388,000 passenger aircraft movements, and 1 million tonnes of

freight (Sydney Airport, 2013). The most recent economic impact study quantifies a direct and indirect economic contribution of \$27.6 billion, equivalent to 6% of the NSW economy and 2% of the Australian economy. Direct and indirect employment of 283,700 jobs is equivalent to 8% of NSW employment (Deloitte Access Economics 2013).

For decades Sydney Airport was the responsibility of the Commonwealth Department of Civil Aviation. From 1987-1998 it was owned and operated by the Federal Airports Corporation (FAC), a government trading enterprise established to inject greater commercial efficiencies and sensibilities into airport management nationwide. In 1998 ownership was transferred to another quasi-government entity Sydney Airport Corporation Limited (SACL). By that time the Government's airport privatisation program commenced in 1995 was substantially complete. This program of asset sales, like others undertaken by the Commonwealth and state governments from the 1980s, was intended to lift the burden of major infrastructure upgrades and management from the public purse, provide more competitive incentives for strong economic performance when freed from day-to-day bureaucratic control, and deliver one-off revenue dividends for deployment into other national priorities (Freestone et al, 2006; Freestone, 2011). Selling off the majority of the 22 airports still in Commonwealth ownership through long term leases was completed in two phases between 1996 and 1998 raising over \$4b (Hooper et al, 2000). The Commonwealth subsequently reorganised its holding of airports in Sydney and in May 1998 SACL was incorporated as an unlisted public company, a process which netted a further \$1.4b windfall.

The subsequent full privatisation of Sydney Airport – considered the jewel in the Commonwealth's portfolio – was delayed by various factors including the staging of the 2000 Olympic Games and the September 2001 terrorist attacks in New York. The process was finally completed in June 2002 following a competitive tender process with three shortlisted bidders. The successful bidder Southern Cross Airports Corporation Pty Limited acquired all the shares in SACL at a cost of \$4.2b for a leasehold period of 99 years. This was the largest airport trade sale worldwide and the most valuable single 'trade sale' ever to that time by the Commonwealth (Australian National Audit Office 2003). Southern Cross was linked to the Macquarie Merchant Bank Group but was spun-off in 2009 to form MAp Airports and in December 2011 was renamed Sydney Airport Holdings. The present ownership structure comprises an Australian Securities Exchange-listed entity with major institutions, superannuation funds, over 30,000 private investors (85%), German-owned global airport investor and management company Hochtief AirPort GmbH (12%), and other Australia superfunds (3%). In August 2013 Sydney Airport announced a proposed \$1.2b buy out of its minority shareholders to simplify its ownership

### **Spatial and planning context**

Sydney Airport is located 8km south of the CBD and lies adjacent to the Port of Botany, a major east coast container and freight operation. Sydney's southern (M1) and east-west (M5) motorway corridors provide direct connections to the central city, southwestern suburbs, and the Sydney Orbital Network. A rail connection also links to the CBD and the southwestern suburbs. The site is bounded by water on three sides; Botany Bay to the south, Cooks River to the west, and Alexandria Canal to the north. Apart from those boundaries, the airport also faces numerous other environmental constraints having been surrounded by decades of urban growth (Grant, 2010). The corridor south from the city to Botany Bay has been an industrial zone since the 19<sup>th</sup> century.

Sydney Airport is the most land (and water-) locked of Australia's capital city airports, and the smallest at 907 ha. The site was one of the first acquired by the Commonwealth as part of a fledgling national aviation network from the early 1920s. Successive improvements and expansions have been carried out since, including a new passenger terminal (1940), second runway (1946), runway extensions into Botany Bay (1968, 1972 and 1994), international terminal (1970), and major terminal revamps and ground transport improvements (2000).

Since privatisation in 2002 there have been two comprehensive master plans looking ahead 20 years as required under the Commonwealth's *Airports Act* (in 2004 and 2009). A preliminary draft third master plan was released in June 2013. This latest plan is predicated on no changes to flight paths, runways or the night-time curfew in place since 1963 but proposes to radically restructure services to build capacity into three integrated terminals for international, domestic and regional passenger

operations, with the reorganisation of the T2/T3 zone linked to major new road traffic access arrangements.

Three local government areas partition the airport: Rockdale, Marrickville and Botany Bay. While the *Airports Act* takes direct planning and development controls out of the hands of these three councils, the airport maintains working relationships with all of them. The most substantial cluster of airport-related businesses is in the suburb of Mascot immediately adjacent to the airport in the City of Botany Bay. Local planning policies are guided by key objectives including maintaining the airport as a global gateway and these are shaped in turn by state government priorities expressed through metropolitan planning documents, given force to date by specific directions under S. 117 of the Environmental Planning and Assessment Act (legislative arrangements are currently under review in NSW).

The status of the airport within metropolitan planning documents has transitioned, through time, from a narrow focus on its transportation function towards a more broadly-based but still specialised activity/employment node and including contiguous lands. In three metropolitan planning strategies released since 2005, the airport sub-region has been seen as a vital 'economic gateway' for global Sydney and a key employment centre in its own right. *City of Cities* (2005) set a 2031 job target of 55,000 (an additional 18,000 jobs). This ambition was explicated in more detail in the *East Subregion, Draft Subregional Strategy* (2007). *Metropolitan Plan for Sydney 2036* (2010) basically reiterated this aspiration which would make the airport the 3<sup>rd</sup> largest employment centre after the CBD and Parramatta. In the *Draft Metropolitan Strategy for Sydney to 2031* (released in March 2013), Sydney Airport and Environs is a 'specialised precinct' within the Central Sub-region. The 2031 target of 47,000 jobs places it behind Central Sydney (480,000), North Sydney (60,000), Parramatta (70,000) and Macquarie Park (61,000). Three major objectives are set: to protect and enhance industrial areas related to the economic function of the airport, manage the impact of surrounding development and passenger and freight growth on airport operations and transport systems, and provide capacity for 8000 additional jobs by 2031 (p. 84). The major concern flagged is the future capacity of both the airport and the road and rail networks serving it. Ground transport connections have been the subject of several studies (e.g. Booz & Company 2010) which have underpinned funding submissions to Infrastructure Australia (NSW Government 2011).

The bigger context is the airport's anchoring of one end of the so-called *Global Economic Corridor* (GEC) extending to Macquarie Park, and prospectively to Norwest Business Park and Parramatta. A 'spatial metaphor' attributed to Sydney planner Bob Meyer in the late 1990s (Searle 2012), the GEC in the latest plan is elevated to one of nine 'city shapers' critical to Sydney's growth. Around 50 per cent of NSW Gross State Product (GSP) is concentrated within the (GEC). The overall aim is to enhance capacity for jobs growth and improve connectivity to boost productivity particularly through professional services, healthcare and advanced manufacturing.

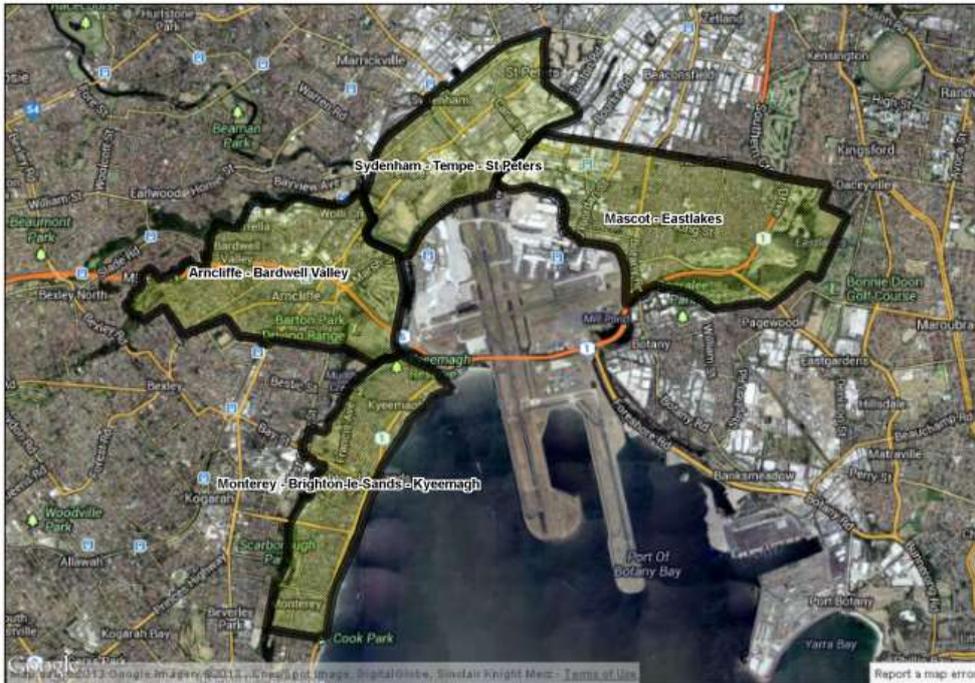
### **Employment structure and trends of airport and vicinity**

This section considers the current and changing employment profile of Sydney Airport relative to the immediate surrounding area (Fig. 1), the global economic corridor and metropolitan Sydney. Data have been sourced from the Place of Employment Profile tables in each of the Census years. The Collector Districts for the 1996, 2001 and 2006 Censuses have been aligned to the 2011 Statistical Area 2 (SA2) geography developed by the ABS; the figures reported for 2011 are derived directly from the SA2 geography.<sup>1</sup> As with any profiling exercise of this nature, values generated may vary slightly from other analyses. Variances stem from two sources, the first being the geographical definitions utilised and the second to adjustments between first and second releases of the Census (and subsequent revisions). The typical under-enumeration of employment numbers is also acknowledged (BITRE, 2013) along with the fact that such data of themselves cannot capture the full economic linkages and impacts of the airport (Deloitte Access Economics, 2013). Our analysis is thus indicative only of broader trends at various scales within Sydney's space-economy.

Table 1 summarises aggregate employment totals from 1996 to the most recent census in 2011 for each of five geographic areas. These data establish the significance of the airport region as a metropolitan employment node, but reveal only minimal net job growth directly within this precinct over the last 15 years. Job growth in the main airport-related zone has been neither consistently positive nor, apart from one spike at the airport 2001-2006, particularly impressive. The airport and

surrounding area have had phases of expansion and contraction, and not necessarily in concert with each other.

**Figure 1: Airport and surrounding SA2 geography**



**Table 1: Total Employment Patterns 1996-2011**

Region	1996	2001	2006	2011
Sydney Airport [1]	9,774	9,678	11,902	12,216
Surrounding Airport [2]	31,683	36,183	27,674	29,916
Airport and Surrounds [1+2]	41,457	45,861	39,576	42,132
Global Economic Corridor	478,156	542,594	535,086	598,820
Greater Sydney	1,771,745	1,936,284	1,981,985	2,135,698

Figure 2 depicts the percentage changes in total employment for the different geographic classifications between 1996 and 2011. The drop in jobs 1996-2001 continued a trend evident since the early 1990s (Weimann, 2010). In 1990 a reported 14,000 people worked at the airport (FAC, 1990). The reversal in 2001-2006 saw a percentage change of 4.6% well above the other regions, but this growth was not sustained after 2006 with only minimal employment growth despite growth in passenger numbers. While the airport jobs surged in 2001-2006 there were substantial losses in the immediate surrounding area. There was some recovery after 2006 but since 1996 employment growth in the surrounding region has actually declined by -0.1% per annum; there are actually less jobs around the airport in 2011 than there were in 1996. A broader decline in a corridor leading north from the airport to the inner city has been noted elsewhere (Grant, 2010).

Table 2 disaggregates total employment by industrial sector for 2011. The specialised employment profile of the airport region is evident. On-site employment at major Australian airports is principally in the Transport, Postal and Warehousing area (48 per cent) as well as Public Administration and Safety (16 per cent (BITRE, 2012). Sydney Airport conforms to this structure but with a more pronounced domination of jobs in the former category (59%). Other important industries at the airport include

Accommodation and Food (food preparation, terminal food and hotels), and Retail Trade (terminal retailing).

**Figure 2: Percentage change in total employment between censuses 1996-2011**

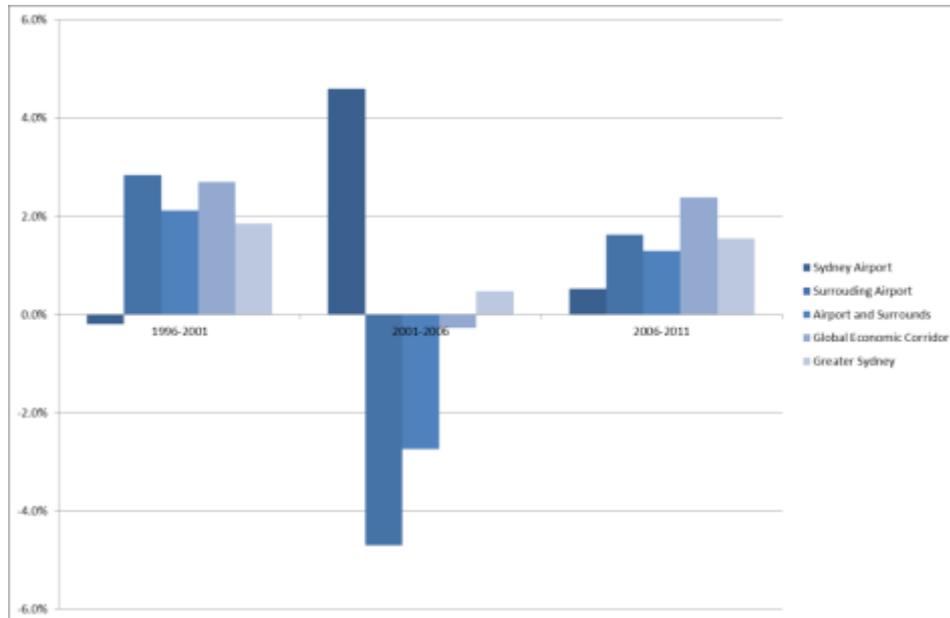


Figure 3 presents the percentage distribution of employment across the 5 regions. It has been ranked (left to right) by the total number of jobs across Greater Sydney. Health Care and Social Assistance followed by jobs in the Retail Trade form Greater Sydney's largest industries of employment. In the GEC there are concentrations of Professional, Scientific and Technical Services, Financial and Insurance Services and Information, Media and Telecommunications industries. The skew toward Transport, Postal and Warehousing in the airport region is evident.

Table 3 captures shifts within and between industrial sectors for each of the five geographic areas over the last intercensal period. Four observations can be made. First, we see the continued decline of manufacturing jobs, with the percentage changes for both components of the airport region being significantly above the metropolitan average. Second, on airport, the modest job growth was dominated by Accommodation and Food Services. Third, while the most significant employment category in the airport area is Transport, Postal and Warehousing, the numbers haven't moved much. Fourth, employment change in Professional, Scientific and Technical Services has been more a feature of the GEC and Sydney as a whole than the airport region. The aerotropolis model predicts a significant representation of high technology and knowledge industries near the airport but this is not the case for Sydney (Weimann, 2010). Overall, the impression is of airport employment stabilising in 2006-2011 with incremental growth in service industries. The remainder of the paper examines in more detail employment changes over time for the three main regions of interest: the airport, the surrounding area (concentrating on Mascot) and the GEC.

**Table 2: Employment Structure of Airport and Related Regions, 2011**

<b>Sector</b>	<b>Sydney Airport</b>	<b>Surrounding Airport</b>	<b>Airport and Surrounds</b>	<b>GEC</b>	<b>Greater Sydney</b>
Agriculture, Forestry and Fishing	0	15	15	344	9,197
Mining	0	17	17	1,395	9,462
Manufacturing	124	2,655	2,779	24,743	195,126
Electricity, Gas, Water and Waste Services	11	106	117	3,988	21,617
Construction	86	1,626	1,712	19,535	116,639
Wholesale Trade	46	2,144	2,190	29,734	111,321
Retail Trade	787	1,981	2,768	34,938	225,472
Accommodation and Food Services	962	1,987	2,949	34,332	140,759
Transport, Postal and Warehousing	7,198	11,410	18,608	35,847	107,978
Information Media and Telecommunications	18	327	345	41,476	61,542
Financial and Insurance Services	84	242	326	89,678	140,535
Rental, Hiring and Real Estate Services	218	732	950	12,032	40,053
Professional, Scientific and Technical Services	91	1,366	1,457	111,594	206,437
Administrative and Support Services	445	1,118	1,563	25,309	67,265
Public Administration and Safety	1,983	949	2,932	38,733	132,445
Education and Training	3	803	806	31,630	178,639
Health Care and Social Assistance	57	1,153	1,210	35,804	256,180
Arts and Recreation Services	0	278	278	11,815	33,497
Other Services	103	1,007	1,110	15,893	81,534

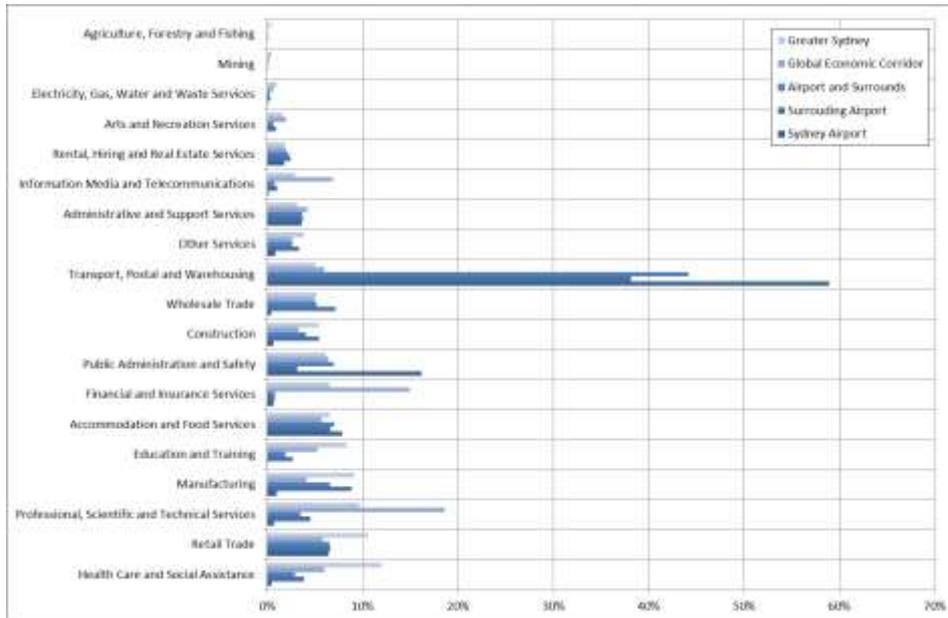
<b>Totals</b>	<b>12,216</b>	<b>29,916</b>	<b>42,132</b>	<b>598,820</b>	<b>2,135,698</b>
---------------	---------------	---------------	---------------	----------------	------------------

**Table 3: Total Change in Industry 2006-2011**

<b>Sector</b>	<b>Sydney Airport</b>	<b>Surrounding Airport</b>	<b>Airport and Surrounds</b>	<b>GEC</b>	<b>Greater Sydney</b>
Agriculture, Forestry and Fishing	-4	1	-3	-188	-1,273
Mining	0	5	5	448	2,357
Manufacturing	-58	-387	-445	-206	-12,266
Electricity, Gas, Water and Waste Services	8	16	24	-837	3,570
Construction	-9	415	406	3,352	8,030
Wholesale Trade	10	624	634	2,118	2,648
Retail Trade	7	178	185	661	-1,747
Accommodation and Food Services	245	-53	192	2,890	13,249
Transport, Postal and Warehousing	-8	490	482	438	5,483
Information Media and Telecommunications	12	65	77	6,142	4,366
Financial and Insurance Services	10	-46	-36	9,304	12,369
Rental, Hiring and Real Estate Services	6	147	153	1,789	837
Professional, Scientific and Technical Services	34	413	447	19,704	29,683
Administrative and Support Services	69	-13	56	1,546	5,739
Public Administration and Safety	-12	198	186	2,045	10,681
Education and Training	-3	90	87	6,268	21,433
Health Care and Social Assistance	0	371	371	5,122	39,675
Arts and Recreation Services	-3	-53	-56	1,983	5,082
Other Services	10	-219	-209	1,155	3,797

Totals	314	2,242	25,56	63,734	153,713
--------	-----	-------	-------	--------	---------

Figure 3: Percentage Distribution of Employment of Airport and Related Regions, 2011



### The airport

Unpacking employment change at Sydney Airport from 1990s reveals overall modest employment expansion (less than 2500 jobs between 1996 and 2011) but tracking across three distinct phases from small decline to growth spurt to more incremental expansion. Recent performance has been below the rates for metropolitan Sydney generally, the rest of the GEC and the surrounding region. Expansion between 2001 and 2006 can be attributed to the privatisation of the airport in 2002 although paradoxically the growth sector during this period was public administration. This can be linked to the post-9/11 increase in immigration and security deployments, with the airport developing new office accommodation for the Australian Customs and Border Protection Service and the Australian Federal Police. The growth sector from 2006 has been accommodation and food services. This is explained mainly by the expansion of offerings in the terminals, particularly at T2 with low cost carriers who either charge or don't provide food and beverage on board.

The major impression is of a very modest scale of employment growth relative to the status of the airport as Australia's busiest and the performance of other capital city airports (cf. Brueckner, 2003; Green, 2007). In comparison, other privatised airports have been some of the most important high growth employment precincts in Australian cities. For example, between 2006 and 2011 Brisbane Airport added around 4000 jobs, Melbourne Airport and its immediate surrounds 4 500, and Perth Airport about 6 000 jobs, all growth rates significantly above their metropolitan averages. The Sydney experience was the exact reverse of this. All these other airports have also benefitted from increases in passenger numbers over the past five years, so one critical difference between Sydney and the other airports relates to its lack of land stocks for broader commercial development (Freestone, 2011). The breakdown of total revenues at Sydney in 2012 shows a roughly 50:50 split between aeronautical and non-aeronautical sources whereas other airports with greater landbanks show a higher proportion of non-aeronautical income. Other indicators confirm the aviation focus: aviation land uses cover 91.6% of its total land and over the past decade 70% of the airport's \$2b investment has been on aeronautical facilities (Sydney Airport, 2013).

Commercial-mindedness was inherited from the FAC and SACL era, with a business plan committed to strong in-terminal retailing and the returns per square metre in the 1990s already reportedly some of the highest for any retail space in Australia. The Chairman of Sydney Airport extolled the virtues of the aerotropolis model (Moore-Wilton, 2007) and conspicuous non-aeronautical occupants began to appear, notably a Mercedes-Benz sales and service facility at the entrance to the domestic precinct in 2006. Around this time the airport proposed a \$250 million retail and commercial development

comprising discount retail outlets, bulky goods, supermarket, office space, and potentially cinemas but despite being scaled down following criticisms from state and local government was knocked back by the Minister for Transport on grounds of public safety, wind turbulence, and road congestion impacts (Yeung, 2007).

Sydney Airport has subsequently concentrated on core aviation activities: terminal development, apron parking, support facilities for catering, logistics, maintenance, freight and ground transportation services. The emphasis has been on supporting high value activities, often capital intensive and requiring close time-connect to airport operations. The airport has been pro-active in both nurturing these activities (e.g. food preparation) and moving off-airport more low value and space-consuming activities like import freight storage and warehousing. One outcome of this strategy has been a slowly shrinking commercial property portfolio. For example, the land earmarked for the retail centre in 2005 is now earmarked for expansion of aircraft maintenance, freight development and apron parking. At the same time as the airport has rationalised its operations so too have major airlines transitioned to employing fewer front counter staff with self check-in technology becoming more common.

### **Surrounding region**

The corollary of Sydney Airport's landlocked 'brownfield' situation as a physical constraint on employment growth has been the spill-over of aviation-related employment into surrounding localities. Much of this activity has been concentrated in Mascot to the north which contains more air and space transport industry jobs than the airport itself (BITRE, 2013). However, this has been constrained to the west and south-west because of the barriers posed by the Cooks River and Alexandra Canal. However there is a freight precinct in Tempe and in Rockdale hotels, car parking services, and other small-scale business, but airport access here has been more directly a driver of residential intensification. The south-east towards Botany contains business parks with airport-related uses, but Port Botany is the major presence.

Mascot has been a zone in transition since the late 1970s when the impacts of a declining manufacturing sector were first evident. Job losses reflected a more fundamental process of economic restructuring of all Sydney's inner city industrial lands. The growing internationalisation of the economy through this period saw a counterforce in growing accommodation of freight at and near the airport with attendant employment growth in the transport and distribution sector. However, this growth was 'far less' than the concomitant decline in manufacturing jobs (Murphy and Watson, 1990). From the mid-1980s the older warehouse and manufacturing landscape began to change as new local planning controls encouraged commercial office development. This was evident on O'Riordan Street, with new hotels and the development of a new headquarters for Qantas (Kinhill, 1990; Valarezo, 1991). Rising land values saw some businesses selling up and relocating, often to western Sydney with the M5 providing good access. Some freight services were displaced to the Port Botany area. Major new offices have arrived, some conspicuously airport-related such as TNT (freight/transport), Rex (regional aviation), and Corporate Express (office products). Other offices (e.g. Electrolux, Coates Hire) have seemingly valued general access intermediate between city centre and airport.

The area south of Gardeners Road and west of O'Riordan Street is now facing growth pressures from different directions: directly from airport freight and logistic uses, with land supply finite; from general commercial entities with the potential to generate new jobs but also potentially displace less intensive uses previously valuing near-airport locations, and from new residential development. These drivers are reflected in a mix of state and local planning policies aimed variously at maintaining employment lands, facilitating new office redevelopment, and encouraging new residential infill. Land use zoning is now oriented to mixed use and residential, with more flexible zonings permitting non-industrial uses. The City of Botany Bay's proposed standard LEP doesn't have the 'airport-related' industrial provisions of earlier iterations, although it does not decrease the amount of employment floor space. Designation of the area around Mascot station as one of several state government 'Urban Activation Precincts' is intended to further a metamorphosis into a high quality mixed-use town centre-type environment and inject civic coherence into aspirations for the airport and environs as a specialised centre of metropolitan significance. Increasingly this is a contested space, hence the need for greater planning coordination. Road congestion has been exacerbated on approach to the airport's northern entrance and conflicts between residential amenity and 24/7 industrial operations have become evident.

Overall, employment growth of the airport environs since the 1990s has fluctuated, but today nearly 2000 less people work there. There was significant contraction in 2001-2006 but with a recovery in 2006-2011 to match the metropolitan average growth rate. Nevertheless Mascot remains one of the highest employing destination zones in Sydney (BITRE, 2012). Hovering over this are the state government's intention for consolidating the area's prospects as an employment hub. The target of 8000 additional jobs by 2031 is nonetheless a significant reduction from the approximately 18,000 envisaged in the City of Cities Strategy (2005) and the 22,000 envisaged in the 2010 *Metropolitan Plan for Sydney 2036*. This seems more realistic in the light of both recent employment trends on and immediately-off airport. The differing stakeholders of state government, local council, property investors and developers, business tenants, present and future residents - and the airport - need to be reconciled.

The less constrained employment zone in waiting remains Cooks Cove on the southern side of the Cooks River. This proposed 22 hectare 'commerce and technology gateway' precinct with an employment target of 11,500 was announced by the state government in 2001 but has been stalled for several years because of major financial miscalculations by investors exacerbated by the GFC (Freestone and Crawshaw, 2010). This has been exacerbated by uncertainty as to the impacts of an extended M5 motorway. Cooks Cove is a textbook showpiece for the aeropolis vision and retains potential significance as an employment precinct to help realize the government's targets.

### The global economic corridor

The airport region is clearly an employment zone of metropolitan significance, but the dominant impression is that the airport and immediate vicinity are not yet sustainable employment growth hotspots despite the economic power of airport operations. This is underlined at the metropolitan scale. Between 1996 and 2011 Greater Sydney experienced a 16% growth in employment, from 1.8 million to 2.1 million. This growth is geographically uneven. Figure 4 compares the change in overall percentage share of employment with locations suffering a percentage drop classified as having decreased employment share and those with gains classified as having increasing employment share; all others are classified as static. There are four locations which have witnessed increased share in overall employment: in and around the CBD, new business park locations, tertiary-medical complexes, and suburban manufacturing, transport and warehousing precincts. But the major point here is that Sydney Airport, and its surrounds, has remained relatively static in terms of overall share of employment growth.

**Figure 4: Change in percentage share of overall GMR employment, 1996-2011**



Given the airport and immediate region as an acknowledged economic powerhouse where have the airport-connected jobs gone? Figure 4 also gives some clues. The myriad economic conduit of the airport - with over 800 businesses directly connected to its operation (Deloitte Access Economics, 2013) - diffuses the impact but there appear to have been two main beneficiaries. One is the freight industry clusters in western Sydney. While Sydney Airport remains a key freight hub, much of the handling has been decentralised to the suburbs where land is cheaper (there is more of it than pressured Mascot can supply) and accessibility via the M5 motorway is good. These linkages are further promoted and enhanced by the state government's WestConnex 10 year-proposal involving extra lane capacity on the M5 and a direct connection from a widened and extended M4 via a new road tunnel. The other beneficiary has been the GEC, and in particular its key existing office employment nodes – Sydney CBD, North Sydney, St Leonards and Macquarie Park. This is where the producer services and knowledge industries deficient in the immediate airport territory are based. The two fastest growing industrial sectors in the GEC in 2006-2011 were in Professional, Scientific and Technical Services, and Financial and Insurance Services, adding 29,000 jobs or 45% of total growth. Proximity of the airport via the M2 and M1 (Harbour Tunnel, Eastern Distributor, Southern Cross Drive) motorway link (and to a lesser extent the City Rail Link) from the city and northern suburbs enable airport access without physically being on or contiguous to the airport – akin to the accessibility advantages represented conceptually by Kasarda's 'aerolanes'.

## **Conclusion**

Returning to the aerotropolis framework, the findings presented here are a combination of predictability and paradox. The airport and region remains a strong and continuing locus of employment of major metropolitan significance with its real strength still in the transport sector. But the actual pace of recent job creation has lagged relative to other centres in Sydney, especially relative to the balance of the GEC. Opportunities for on-airport commercial development have been more constrained than other Australian airports; moreover surrounding localities which have been built up through a long history of development and are also physically constrained. Hence the airport city model said to be at the core of the aerotropolis concept has been impeded in Sydney. The airport's flirtation with that business model has cooled and its recent focus has been unabashedly on aviation services. Surrounding localities have been affected by spillover of some land uses but just as the primary land economics principle of 'highest and best use' has driven airport decisions so too is it in evidence in the surrounding precinct, particularly in Mascot. The recent role of the planning system has been to manage land use conflicts with the turn to more commercial land uses and residential as well as anticipate infrastructure demands.

The phenomenon of airport-centric development has thus to date not been at the scale that might be anticipated for an airport the size of Sydney. Much of this development has 'escaped'. Industrial uses (where they have not just disappeared) appear to have relocated perhaps initially off airport and then to less high value suburban locations. Offices have stayed put in the major corporate precincts to the north (CBD etc), and the knowledge precincts associated with the aerotropolis theory have intensified around their historic locations away from the airport itself. The relative high accessibility of the airport in metropolitan terms by motorway, conventional arterial roads and rail has enabled a spatial diffusion of airport-linked development, broadly defined. Major transport infrastructure planning underway clearly seeks to continue and enhance this wider web, especially through connections with western Sydney. The metropolitan-wide reach of the airport rather than the business parks and retail zones at or near its epicentre and evident at Australia's other privatised airports may point to the partial relevance of the aerotropolis concept in understanding the spatial structure of metropolitan Sydney. The development of a second metropolitan airport in western Sydney would however inject a significant new factor in the geography of jobs.

## **Acknowledgements**

Thanks to Cathy McMahon, Peter Wych, Erika Roka, Nicola Weimann, Ben Grant, Bruno Parolin and conference reviewers for their information and insights. The conclusions remain ours alone.

## **References**

ACI Europe (2004) *The Social and Economic Impacts of Airports in Europe*. Prepared by York Aviation.

- Al Chalabi, M. (1998) The impact of a major commercial airport on urban development: A case in Chicago, *Ekistics*, No 65, pp. 388-390.
- Anon (2004) Beyond the Runway: Airports and Regional Prosperity, *Urbecon*, SGS Economics and Planning, March 2004, pp. 1-3.
- Australian National Audit Office (2003) The Sale of Sydney (Kingsford Smith) Airport, Canberra, The Auditor-General Audit Report No.43 (Canberra).
- BITRE (2012) *Population growth, jobs growth and commuting flows in Sydney*, Research Report 132 (Canberra, Bureau of Infrastructure, Transport and Regional Economics).
- BITRE (2013) *Employment Generation and Airports*, Information Sheet 46 (Canberra, Bureau of Infrastructure, Transport and Regional Economics).
- Booz and Company (2010) *Accessing our Airports: Integrating City Transport Planning with Growing Air Services Demand*, Report for Tourism and Transport Forum Australia.
- Brueckner, J. K. (2003) Airline Traffic and Urban Economic Development. *Urban Studies*, 40, pp. 1455-1469.
- Charles, M.B., Barnes, P., Ryan, N. & Clayton, J. (2007) Airport futures: Towards a critique of the aerotropolis model, *Futures*, 39, pp. 1009-1028.
- Deloitte Access Economics (2012) *Connecting Australia: The economic and social contribution of Australia's airports*, Prepared for Australian Airports Association.
- Deloitte Access Economics (2013) *The Economic Value of Sydney Airport*, Prepared for Sydney Airport Corporation Limited.
- FAC (1990) *Sydney Airport: Draft Planning Strategy*. (Sydney, Federal Airports Corporation).
- Florida, R., Mellander, C. & Holgersson (2012) *Up in The Air: The Role of Airports for Regional Economic Development*, CESIS Electronic Working Paper Series, Paper No 267.
- Freestone, R. (2011) Managing Neoliberal Urban Spaces: Commercial Property Development at Australian Airports, *Geographical Research*, 49(2), pp. 115-131.
- Freestone, R. & Baker, D. (2011) Spatial planning models of airport-driven urban development, *Journal of Planning Literature*, 26, pp. 263-279.
- Freestone, R. & Crawshaw, P. (2010) Your flight has been delayed: Airports, hi-tech Sydney and the Cooks Cove Development Corporation, Paper delivered to the NZPI-PIA Joint Congress, Christchurch, 20 - 23 April 2010.
- Freestone, R., Williams, P. & Bowden, A. (2006) Fly Buy Cities: Some Planning Aspects of Airport Privatisation in Australia, *Urban Policy and Research*, 24(4) pp. 491-508.
- Grant, B. (2010) Airports as economic activity centres: Employment and land use around Sydney Airport, BPlan thesis, University of NSW.
- Green, R.K. (2007) Airports and Economic Development, *Real Estate Economics*, 35, pp. 91-112.
- Hakfoort, J., Poot, T. & Rietveld, P. (2001) The Regional Economic Impact of an Airport: The Case of Amsterdam Schipol Airport, *Regional Studies*, 35, pp. 595-604.
- Hooper, P., Cain, R. & White, S. (2000) The privatisation of Australia's airports. *Transportation Research, Part E* 36, pp. 181-204.

- Jarach, D. (2001) The evolution of airport management practices: towards a multi-point, multi-service, marketing-driven firm. *Journal of Air Transport Management* 7, pp. 119-125.
- Kasarda, J. and Lindsay, G. (2012) *Aerotropolis: The Way We'll Live Next* (London, Allen Lane).
- Kinhill (1990) *Proposed Third Runway, Sydney (Kingsford Smith Airport) Draft EIS* (Sydney).
- Moore-Wilton, M. (2007) 'Aerotropoli: Airport Cities', Paper delivered to the Capitals Alliance Meeting, Canberra.
- Murphy, P.A. and Watson, S. (1990) Restructuring of Sydney's Central Industrial Area: Process and Local Impacts, *Australian Geographical Studies*, 28(2), pp. 187-203.
- NSW Government (2011) Port Botany and Sydney Airport Transport Improvement Program. Submission to Infrastructure Australia (Sydney).
- Proserpi, D.C. (2008) Airports as Centers of Economic Activity: Empirical Evidence from Three US Metropolitan Areas, *Proceedings, REAL CORP Conference*, Vienna, 20-23 May 2007, pp. 215-224.
- Robertson, J.A.W. (1995) Airports and Economic Regeneration, *Journal of Air Transport Management*, 2(2), pp. 81-88.
- Searle, G. (1996) *Sydney as a Global City*, Department of Urban Affairs and Planning, State and Regional Development (Sydney).
- Searle, G. (2012) Is Strategic Planning in Sydney Becoming 'Relational'? Paper delivered to the Planning Institute of Australia 2012 National Congress, 29 April-2 May 2012, Adelaide.
- Self, W. (2011) 'The Frowniest Spot on Earth', *London Review of Books*, 10-11.
- Sydney Airport (2013) *Sydney Airport Master Plan 2033. Preliminary draft*. (Sydney).
- Weimann, N. (2010) Employment and Journey to Work Trends for Sydney Airport and Surrounding Areas 1991-2006, BPlan thesis, University of NSW.
- Yigitcanlar, T., Martinez-Fernandez, C., Searle, G., Baker, D.C. and Velibeyoglu, K. (2008) Understanding the Conditions for the Emergence of Airport Knowledge Precincts: A Framework for Research. *In Proceedings of the REAL CORP Conference*, Vienna, 20-23 May 2007, pp. 465-475.
- Valarezo, L. (1991) Sydney (Kingsford-Smith) Airport Land Use Strategy Plan, BTP thesis, University of NSW.
- van den Berg, L., Van Klink, H.A. & Pol, P.M.J. (1996) Airports as centres of economic growth, *Transport Reviews*, 16(1), pp. 55-65,
- Weisbrod, G.E., Reed, J.S. & Neuwirth, R.M. (1993) Airport Area Economic Development Model, Paper delivered to the PTRC International Transport Conference, Manchester.
- Yeung, V. (2007) Airport or AirMall: The Rise and Impact of Non-aeronautical Development at Airports, BPlan thesis, University of NSW.

---

<sup>1</sup> Sydney Airport: SA2 bounded on the north and east by the Airport Drive, the west by the Cooks River and the South by Botany Bay. Airport and Surrounds: SA2 of Sydney Airport and the 4 with which it shares boundaries, excluding the SA2 of Botany that contains port functions. Global Economic Corridor: SA2s in the broad schematic in the 2010 Strategy. It runs from the Airport northward through the CBD and then northwest, terminating at Macquarie Park. Greater Sydney: derived from the NSW Bureau of Transport Statistics' GMR for 2006; Newcastle in the north through to Wollongong in the south incorporating the area from the coast to the edge of the Blue Mountains.