



**Sydney
Airport**

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Sydney Airport Master Plan





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Sydney Airport Master Plan 2033

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CHIEF EXECUTIVE OFFICER'S FOREWORD



I am delighted to present the Master Plan 2033, which details our plan to improve the experience of all passengers and ensure Sydney Airport remains Australia's premier airport and major international gateway. These plans will enable the forecast growth in air travel for tourism and trade well beyond the 2033 planning period.

Since our previous Master Plan was approved in 2009, we've been listening to our passengers, airline partners, other members of the aviation industry, the NSW, federal and local governments, the Joint Study on Aviation Capacity for the Sydney Region, the tourism industry, the business sector, and the local community. The comments we received have been carefully considered and have informed the preparation of this Master Plan. Stakeholders have recognised that the consultation process undertaken to prepare this Master Plan has been more extensive than any previously undertaken by Sydney Airport.

Importantly, the initiatives we propose under this Master Plan will meet the needs of our customers: it will deliver



a better passenger experience, improve the efficiency of the airport, enhance safety for our users and maximise the capacity of the airport. The plans include innovative ground transport solutions developed with the NSW Government that will significantly improve access to the airport and road traffic flow around it. Significant upgrades to the public transport facilities are also proposed.

The development plans are designed to be adaptable and flexible to ongoing industry and technological change. Over \$2 billion of investments and other initiatives during the past decade have led to increased service levels, enhanced safety and security, delivered environmental improvements and increased capacity to meet demand. Continued investment will ensure that Sydney remains a global city, with Sydney Airport connecting Sydney to other global cities and many other parts of Australia.

Sydney Airport is one of Australia's most important pieces of infrastructure and is a critical economic engine for Sydney, NSW and Australia. Directly and indirectly

it generates and/or facilitates the equivalent of 6% of NSW's economic activity and almost 300,000 jobs. This is forecast to increase to over 400,000 jobs by 2033, with each additional daily A380 service from China contributing an estimated \$388 million of GDP and 5,000 jobs. The airport is located just 8km from the CBD, and less than 10km from the iconic Sydney Harbour and southern beaches. This location gives our city and our state a unique advantage when attracting the international business and tourism markets to Australia.

Accordingly, a number of stakeholders have recommended a modernisation of the operational regulations that govern Sydney Airport, to recognise the advances in airline and airspace technology over the past several decades since the regulations were introduced and increase the productivity of infrastructure. Sydney Airport supports these recommendations.

Nevertheless, consistent with existing legislation, the Master Plan assumes no change to the curfew, aircraft movement cap, noise sharing arrangements, access arrangements for regional airlines or flight paths and assumes no new runways.

We continue to invest in capacity, operational efficiency and environmental initiatives.

In our Airport Environment Strategy we outline more than 100 ongoing and new actions and initiatives that together will minimise our impact on the environment and support our objective of sustainable growth. In addition, we are investigating the development of energy efficient trigeneration for the airport, are planning to incorporate energy and water efficiencies into the terminal developments, and have commenced work to improve bicycle access as part of the ground access improvements.

With aircraft becoming environmentally cleaner, quieter and more fuel-efficient, it is pleasing to see evidence that the noise impacts of aircraft flying to Sydney have reduced significantly over the past decades.

The Master Plan clearly demonstrates the benefits of the new development plan, and has received strong support from stakeholders during the public exhibition period. Importantly, this plan cost-effectively delivers the greatest benefit to passengers, airlines and other airport stakeholders under a wide variety of demand scenarios, significantly improving upon previous master plans. The Master Plan demonstrates Sydney Airport's capacity to meet demand over at least the next 20 years under a wide variety of forecast traffic scenarios.

Kerrie Mather

Chief Executive Officer

EXECUTIVE SUMMARY



This Master Plan outlines Sydney Airport's plan for the operation and development of Australia's premier airport for the period to 2033.

The Master Plan is superior and more robust than previous master plans. It contains a development plan which is the best infrastructure plan for the airport as it can accommodate a wide range of future air traffic scenarios, increases the productivity, flexibility and capacity of the airport, and will benefit all passengers through a more balanced use of the airport's airfield, terminals and roads.

Through the development plan, airfield safety and efficiency will be enhanced and on-time performance of aircraft will improve. It also delivers significantly improved ground transport access to the airport precinct and improved traffic flows for non-airport traffic in the area.

Sydney Airport's guiding principle is to maximise benefits for passengers and the aviation community as a whole, taking into account stakeholder needs through ongoing consultation. The Master Plan reflects extensive consultation over more than two years with stakeholders to understand their priorities and is

designed to ensure that Sydney Airport can facilitate the growth of tourism and trade well beyond the 2033 planning horizon, within the existing regulatory framework.

The development plan, through its flexibility and adaptability to air traffic demand scenarios, is able to offer:

- The balancing of activity more evenly throughout the airfield, terminals and roads which will reduce congestion and improve terminal infrastructure utilisation. The peak hour balance is expected to improve aircraft movements from an 80:20 split between Terminals 2/3 (T2/T3) and Terminal 1 (T1) at present to a 66:34 split between T2/T3 and T1 by 2033
- The development of new major international terminal infrastructure, with the capability for up to 16 additional A380 type international contact gates – almost double¹ the capability of previous master plans
- Better use of existing infrastructure through the introduction of up to 30 swing gates. Swing gates are a flexible aircraft stand that can serve international and domestic/regional flights, with aerobridges and ramps able to serve three levels of the terminal
- Taxiway enhancements, prepared in consultation with Airservices Australia, that improve airfield efficiency and therefore on-time performance

¹ The 2009 Master Plan included the capability for 18 A380 international contact gates



- A 65% reduction in the total number of inter-precinct transfer passengers by 2033, providing a single terminal experience for 97% of passengers. A high quality inter-precinct airside transfer corridor will be provided for the 3% of passengers requiring transfers in 2033 – equating to less than 6800 passengers per day
- Significant improvement to ground transport access to and around the T1 and T2/T3 precincts
- Preservation of T1 international freight facilities on the airport, providing long term certainty that will encourage investment that in turn will increase productivity and improve capacity over time

The development plan can be implemented in a staged approach to minimise operational impacts. The development plan is more flexible than proposals contained in previous master plans – in particular, through the integration of terminals and the addition of international and domestic/regional swing gates able to cater to changes in the relative traffic growth. It can also be delivered at similar or lower cost than previous master plans over the full life of the plan, due to the increased productivity of the plan.

The primary features of the development plan are:

- Both the T1 and T2/T3 terminal precincts will be expanded, with the largest expansion to the north of T3 and east of T2
- Both the T1 and T2/T3 terminal precincts will become integrated terminals for international, domestic and regional airlines

- The T2 and T3 terminals will be integrated by linking the two terminals
- Both precincts will include swing gates which can be used for either international or domestic/regional operations at different times of the day
- The retention of the existing fuel facility locations for the period of the Master Plan
- The retention of the existing T1 freight precinct for the period of the Master Plan
- The development of additional apron parking and engineering facilities in the South East and North East Sectors of the airport
- Taxiway extensions and significant airfield developments, including the extension of Taxiway B to the east of the main runway.

The ground transport solutions will improve the performance of the roads and intersections, and encourage increased access by public transport, bicycle and pedestrians

Sydney Airport is committed to enabling reliable, sustainable and cost effective transport options for travellers, visitors and staff, and to improving environmental outcomes of travel to and from the airport.

The many operational synergies and efficiencies achieved under the development plan will also have the positive effect of reducing congestion outside and within the airport at all passenger interfaces including

buses, rail stations, public and airport roads, car parks, kerbside drop-off and check-in facilities.

The development plan includes a number of projects to significantly improve road traffic capacity in and around the airport over the short and long term. In particular, proposed works to the junctions around the T2/T3 precinct, proposed road works within the T1 precinct and the creation of public transport facilities in both precincts will result in improved traffic flows in and around the airport.

Sydney Airport is working closely with Transport for NSW and NSW Roads and Maritime Services to ensure that the NSW Government's proposed road projects and their impacts have been incorporated into the planning process.

Sydney Airport is committed to increasing public transport mode share. Currently, public transport journeys account for 17% of total trips to Sydney Airport. This has been increasing by one percentage point per annum over the past five years and is anticipated to continue to increase at that rate to 2018. The NSW Government has committed to additional train capacity on the airport line in peak periods to facilitate that transition further.

The Infrastructure NSW "First Things First" recommendations announced in October 2012 include a range of investments to address the commuter, freight and airport-related traffic in the vicinity of the airport, including:

- Constructing WestConnex, which expands and links the M4 and M5 and will provide commuters with alternative routes that avoid the airport precinct
- Fixing road pinch points in the Port Botany and Sydney Airport precinct

- Reducing rail fares to the airport stations
- Adding new bus routes to Sydney Airport
- Enhancing the capacity of the freight rail lines, which will divert some freight traffic from road to rail

Finally, additional car parking facilities will be provided across the airport to service growing demand over the planning period.

Traffic forecasts

Forecasts of peak period passengers, aircraft movements and air freight volumes provide the fundamental basis for the planning of airport facilities. The forecasts were independently prepared by Tourism Futures International in an iterative manner with the airlines, and independently peer reviewed by CAPA Centre for Aviation.

A comparison between 2012 and the aviation activity forecast for 2033 is shown in the table below. Passengers are forecast to approximately double over the period. It also shows that as a consequence of the global financial crisis (GFC) the projected level of passengers in 2029 is around 15% below the 2009 Master Plan forecast. The major economic forecasters are not predicting a period of above-average economic growth that would typically give rise to a period of above-average traffic growth. Accordingly, while traffic growth rates are expected to normalise the traffic volumes are not expected to recover to the pre-GFC trends.

Forecast traffic at the end of the 2033 planning period remains about 5% below the traffic forecasts for 2029 in the 2009 Master Plan.



	2012	2029 ¹ forecast	2033 forecast	CAGR ³
International, domestic and regional passengers (millions)	36.9	78.9	74.3	3.4%
Fixed wing aircraft movements (thousands)	321.7	427.4	409.5	1.2%
Air freight (tonnes, thousands)	615	1,007	1,011	2.4%
Percentage of slots used²	60%	86%	82%	1.5%

Source: Sydney Airport and TFI

1: 2029 forecast in the 2009 Master Plan

2: Includes freight but not general aviation (GA)

3: Compound annual growth rate

Traffic developments in 2013 suggest the 2033 traffic forecasts (prepared in mid-2012) are more likely to be too high than too low. Both international and domestic traffic levels are lower than forecast, and the domestic airlines' stated short term growth expectations are lower than previously expected. To the extent that traffic growth is faster or slower than forecast, the infrastructure developments included in the Master Plan can be brought forward and deferred, in line with demand.

New generation, quieter, cleaner aircraft reduce long term environmental and noise impacts

Sydney Airport acknowledges aircraft noise impacts and is committed to working with the community, governments and the aviation industry to manage and mitigate these impacts, especially in areas close to the airport or under flight paths.

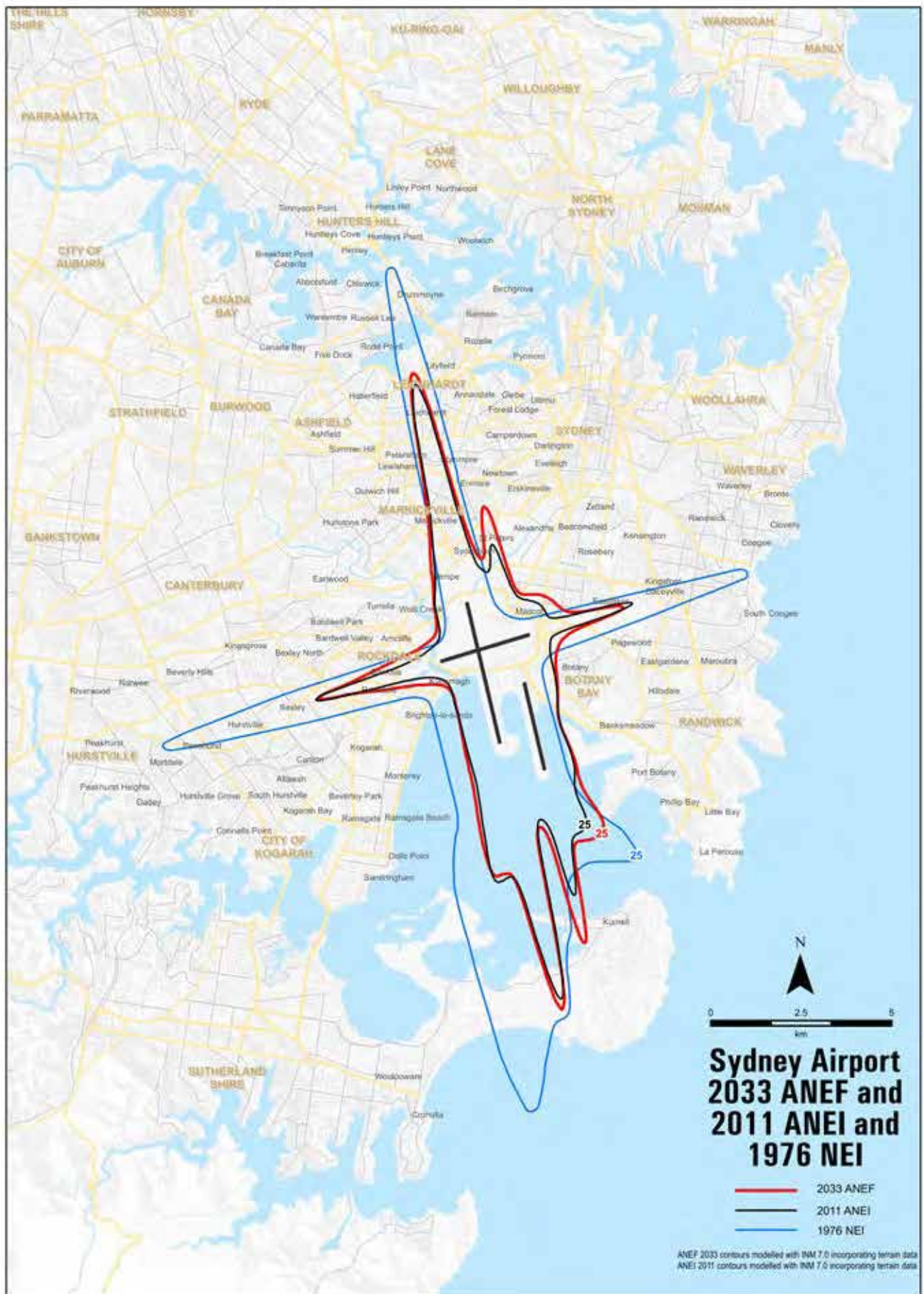
The International Civil Aviation Organisation said in 2012 that aircraft coming off the production line today are approximately 75% quieter than they were 40 years ago. The aviation industry is working to reduce this even further.

Domestic and international aircraft in Australian skies are some of the most modern in the world. With new generation, quieter, cleaner and more fuel efficient aircraft continuing to replace older aircraft, noise impacts around Sydney Airport will continue to improve during the planning period, helping to offset the forecast increase in aircraft movements.

The increasing use of quieter new generation aircraft means the Australian Noise Exposure Forecast (ANEF) noise contours for 2033 cover an area similar to that in 2011 and significantly less than the area in 1976, despite the increase in air traffic over that period. The area of land within the 25 ANEF contour in 2033 has decreased by 1,150 hectares or 36% since 1976. This comparison is indicated in the diagram on page 14.

This Master Plan references a number of the plans, actions and strategies that Sydney Airport and other organisations use to mitigate the impacts of aircraft noise. Sydney Airport's commitment to noise sharing and its past, present and future investment in on-airport infrastructure to accommodate larger, quieter aircraft will ensure residents living close to the airport or under flight paths continue to benefit from their use.





Noise from ground-based activities at Sydney Airport is managed separately to noise from in-flight aircraft operations. Engine ground running, which is an essential part of aircraft operations and maintenance, is regulated by a policy that includes a comprehensive set of operational rules designed to maintain safety, comply with relevant standards and practices, and minimise noise.

Sustainability

Sydney Airport is targeting carbon neutral growth from 2020 to further reduce its environmental impact. This commitment has been made, along with other aviation industry leaders, through the signing of an international agreement – the Global Aviation Industry Commitment to Action on Climate Change.

Recent investments demonstrate the commitment of Sydney Airport to growing sustainably and minimising the impact on the environment and local community, such as the recycled water project in the T1 precinct and the roll-out of fixed electrical ground power at all T1 and T2 gates, and preconditioned air at all T1 gates.

Sydney Airport is planning to expand the recycled water treatment plant in the T1 precinct and build a water treatment recycling plant in the T2/T3 precinct as part of the extension of the terminal precinct, saving millions of litres of drinking water each year. Sydney Airport is also investigating the use of cleaner energy supplies through the development of a trigeneration plant for the airport.

The development of a Sydney Airport experience centre is also being planned. Through this facility the community, school children, aviation enthusiasts and others will be able to explore the heritage and history, operational challenges, environmental initiatives and plans for Australia's most significant airport.

Sydney Airport will continue to take action to minimise environmental impacts associated with airport operations and will broaden its environmental management framework by formally developing a sustainability policy and plan that encompasses economic and social matters, and that would incorporate the existing environment policy.

Community engagement and consultation

In December 2011, an extensive community consultation and engagement process for Sydney Airport's new development plan commenced.

Since then:

- Discussions and briefings have been held with around 150 community and government stakeholders
- Community updates have been placed in local newspapers circulating across the Sydney metropolitan and surrounding area, including community language publications
- 10 community open days were held in areas around the airport
- 150,000 households in the vicinity of the airport have received a community information brochure
- A community hotline and email service was set up to enable members of the public to make direct contact with and seek information from Sydney Airport representatives

The comments we received while preparing the last Master Plan, in the preparation of the Preliminary Draft Master Plan (PDMP) and following the public exhibition of the PDMP have been carefully considered and have informed the preparation of this Master Plan. Stakeholders have recognised that the consultation process for the PDMP and this Master Plan have been more extensive than any previously undertaken by Sydney Airport.

The tourism and economic benefits to Sydney and Australia will be maximised by optimising the use of Sydney Airport.

The benefits of aviation to Sydney, New South Wales and Australia are well established, and are recognised by all levels of government. Direct and indirect activity at Sydney Airport contributes approximately 6% of NSW economic activity and generates almost 300,000 jobs. This is forecast to increase to over 400,000 jobs by 2033, with each additional daily A380 service from China contributing an estimated \$388 million of GDP and 5,000 jobs.

Sydney Airport is ideally located to maximise the benefits to the community. The airport is 8km from Sydney CBD, and less than 10km from the iconic Sydney Harbour and the southern beaches. Surrounding the airport are a large number of light-industrial and tourism-related businesses that rely on or support the airport.

Sydney Airport does not just serve passengers travelling to or from Sydney – it is also Australia's largest transport and logistics hub. 34 international, six domestic and six regional airlines operate from Sydney Airport to 97 destinations, including 11 international and eight regional destinations not served by any other Australian airport. Many passengers and large volumes of freight transfer between these flights.

Sydney Airport handles approximately 48% of all Australian international air freight – 76% more than any other Australian airport. It is estimated that around 80% of this freight is carried in passenger aircraft, and is important to the economics of the passenger services.

Sydney Airport supports the three core elements of the Joint Study on Aviation Capacity in the Sydney Region, Australian and NSW Governments, 2012 (joint study):

- Optimise the use of Sydney Airport as the primary airport for Sydney and NSW for international, domestic and regional passengers and freight, by ensuring that it operates efficiently and can grow to its maximum practical operational capacity
- Protect and optimise the use of other existing airports serving the Sydney region
- Select a site for a supplementary airport, and ensure operations commence at the appropriate time in the future

While the development plan can meet the forecast growth of air travel with no changes to the operating regulations, the joint study and several other stakeholders have advocated that Sydney Airport could operate more efficiently with:

- Modernisation of the operational regulations to take advantage of the advances in airline and airspace technology over the past several decades since the regulations were introduced. Reviewing and modernising a number of the regulations in consultation with the community to reflect the significant environmental benefits of existing and future new generation quieter aircraft that could further improve airport efficiency and productivity while maintaining or improving the airport's overall noise impact. Any future reform must be accompanied by a comprehensive stakeholder engagement process to ensure the views of industry and the community are incorporated
- Increased focus at Sydney Airport on core activities of international and domestic/regional passenger and related freight operations, with development of supplementary general aviation, helicopter and specialised freight capacity at RAAF Base Richmond operating on an integrated basis with Sydney Airport
- Enhanced land transport options for passengers, staff and other users

Conclusion

Sydney Airport is able to accommodate forecast traffic demand beyond the 2033 planning period. Importantly the development plan outlined in this Master Plan can meet the future needs of the constantly evolving aviation industry because it has in-built flexibility and adaptability.

Sydney Airport remains deeply committed to maintaining a safe and secure airport environment as well as remaining a sustainable business, a valued member of the community, and a key economic driver for Sydney, NSW and Australia. The airport continues to operate in an environmentally sustainable and responsible manner.





HELP



**Sydney
Airport**

The right future.
Starting now.

Sydney Airport is a strong supporter of the local community, working with a range of local schools, community groups, local councils and charity organisations. Sydney's beaches are a key attraction for the millions of tourists that visit Australia each year and 2013 marks our 14th year of sponsoring the Surf Life Saving Sydney Branch's Nippers program, run at 15 clubs from North Bondi to Burning Palms in the Royal National Park.

1.0

COMMUNITY CONSULTATION & ENGAGEMENT



1.0 COMMUNITY CONSULTATION AND ENGAGEMENT



Key points

- Sydney Airport actively consults and engages with all its stakeholders on an ongoing and regular basis:
 - Our stakeholders include the community, government, business, the tourism industry and the aviation industry
 - We consult about the operation of, proposed development at, and future planning for the airport
- The community and stakeholder consultation and engagement undertaken to prepare this Master Plan and Airport Environment Strategy have been more extensive than that undertaken for any of Sydney Airport's previous master plans
- Sydney Airport is actively involved in local communities around the airport with its established grants program for local schools now in its 12th year, as well as its support of other local community and sporting groups such as the Cook Classic, Sutherland Shire Netball Association, Randwick Petersham Cricket Club, St. George Cricket Club, Marrickville Cricket Club, Marrickville Football Club, Newtown Junior Jets, Surf Life Saving Sydney Branch, local Rotary Clubs of Marrickville, Rockdale and Botany Bay and a range of local community festivals
- Sydney Airport also raises funds through a range of other initiatives and programs such as the annual lost property auction, the Sydney Airport Community Christmas Giving Tree and a number of other corporate initiatives
- Sydney Airport supports the Sydney and NSW tourism industry through initiatives such as sponsorship of the Sydney Fringe Festival, Sydney Festival, and the City of Sydney Chinese New Year Festival. Our partnership program supports major events that attract tourism to NSW, showcase Sydney and highlight the great diversity of our gateway city
- Sydney Airport works closely with business and tourism groups such as the Tourism and Transport Forum, the Sydney Business Chamber, Business Events Sydney, the Committee for Sydney, the Business Council of Australia, the Australian Tourism Export Council and the Botany Bay Business Enterprise Centre
- During the development of this Master Plan, Sydney Airport consulted and engaged with a wide range of key stakeholders, including the local community (in the vicinity of Sydney Airport and across Sydney and NSW), agencies of the Australian and NSW Governments, the aviation and freight industries, local government, members of Parliament and business and tourism groups
- Consultation enabled and encouraged stakeholders to provide input to Sydney Airport's proposals for future land use, planning and development
- The extensive community and stakeholder consultation and engagement revealed strong support for the development plan and, in particular, the proposal to create integrated terminals for international, domestic and regional airline passenger operations

The community and stakeholder consultation and engagement undertaken to prepare this Master Plan have been more extensive than that undertaken for any of Sydney Airport's previous master plans. It revealed strong support for the development plan and, in particular, the proposal to create integrated terminals for international, domestic and regional airline passenger operations. Sydney Airport is committed to developing and maintaining strong links with the community, not just in the vicinity of the airport but across Sydney and NSW.

In 2010, Sydney Airport adopted a new community and stakeholder engagement program, which extended and improved existing consultation and engagement activities and implemented a number of initiatives recommended by the Australian Government in its National Aviation Policy White Paper. The new program further developed the constructive and proactive relationships between Sydney Airport and the community, governments, the aviation industry and other stakeholders.

The program included the establishment of the Sydney Airport Planning Coordination Forum (PCF), with membership drawn from the City of Sydney, City of Botany Bay, Marrickville, Rockdale City and Sutherland Shire Councils, key transport and planning agencies of the NSW Government and the Sydney Business Chamber. The PCF meets at least twice a year.

The program's purpose is to ensure that Sydney Airport:

- Consults and engages with the community, government, aviation industry, business, tourism and other stakeholders about the operation of, proposed development at, and future planning for, Sydney Airport

- Works cooperatively with Australian and NSW Government agencies, local governments and other organisations that have roles and responsibilities involving or affecting Sydney Airport
- Communicates and makes available relevant and accurate information about Sydney Airport to the community and other stakeholders in a timely manner, in a form that is easy to understand and in a way that reaches all stakeholders
- Listens to and considers feedback from the community and other stakeholders and, where practicable, resolves issues of concern

Many people who live in the vicinity of Sydney Airport are also employed at the airport. Recognising that they can also be most affected by its operation, Sydney Airport works hard to minimise impacts in these areas, whether they be ground transport or noise-related.

Chapter 7 (Ground Transport Development Plan) outlines how Sydney Airport intends to work with the NSW Roads and Maritime Services (RMS) and Transport for NSW (TfNSW) on ground transport access during the planning period, with a particular focus on the next five years.

Chapter 13 (Sustainability, Climate Change and Environmental Management) and the Airport Environment Strategy outline the many environmental initiatives Sydney Airport plans to undertake over the next five years to ensure the airport's economic and social benefits are delivered in an environmentally responsible and sustainable manner.

As outlined in Chapter 14 (Noise Management), Sydney Airport is committed to working with other organisations to effectively manage and mitigate the impacts of aircraft noise, especially in the vicinity of the airport and under flight paths, where these impacts can be greater than in other parts of Sydney. In particular, Sydney Airport's past, present and future investment in on-airport infrastructure will ensure residents living close to the airport will continue to benefit from the introduction of quieter, new generation aircraft.

1.1 Supporting the Sydney community

Sydney Airport actively engages with our local communities and organisations through initiatives including the School Grants Program, support for the Surf Life Saving Nippers, sponsorship of Marrickville Cricket Club, Sutherland Shire Netball Association, Newtown Junior Jets, Marrickville Football Club, Randwick Petersham Cricket Club, St. George Cricket Club, Surf Life Saving Sydney Branch, the Cook Classic and a variety of partnerships with local community groups.

2013 marked our 12th year of the school grants program in which 22 local schools were awarded grants of up to \$5,000 each for environmental initiatives and school

upgrades, including teaching children sustainable living through school plant nurseries and to reduce waste through recycling schemes, upgrades of sports and playground equipment, and the purchase of computer equipment. Sydney Airport has donated hundreds of thousands of dollars to school and community projects through its School Grants Program since 2001.

Sydney Airport is a proud sponsor of the Sydney Fringe Festival, the Sydney Festival, the City of Sydney Chinese New Year Festival and the Australia Day Council through supporting initiatives and events that showcase our city and state. Maintaining a strong working relationship with Destination NSW, Sydney Airport provides a platform for entertainment, colour and intrigue for our incoming passengers and airport-related employees about the activities and varied visitor experiences available in NSW. Sydney Airport also supports local community festivals in Kurnell, Newtown and Marrickville.

As the gateway to Australia and NSW, Sydney Airport looks forward to supporting more major events that drive tourism growth, showcase Sydney as a global city and highlight the great diversity of our state.

Sydney Airport also supports a number of charity initiatives. In 2012, this included the inaugural Sydney Airport Community Christmas Giving Tree Appeal, which raised more than \$116,000 for the Starlight Children's Foundation Australia. The initiative has been launched again for 2013, with funds raised this year to support Variety – The Children's Charity. Sydney Airport also actively participates in the Sydney to the Gong Bike Ride – raising \$26,000 in 2013 in support of the Multiple Sclerosis Society – and supports Legacy Week and Daffodil Day. 2013 also marked Sydney Airport's 15th year of sponsoring the Nippers program run by the Surf Life Saving Sydney Branch, supporting 15 clubs from North Bondi to Burning Palms in the Royal National Park.

Through its annual lost property auction, Sydney Airport donates proceeds raised to a number of local, state and national charities. The recipients in 2013 were the Salvation Army, Youth Off the Streets and local charity, Kookaburra Kids.

1.2 Initial stakeholder consultation and briefings

Sydney Airport's approach to consultation when preparing this Master Plan exceeded the statutory requirements of the Airports Act 1996 (the Act) and was consistent with the Australian Government's suggested approach for effective consultation, as outlined in the Airport Development Consultation Guidelines (2007). These guidelines are viewed as setting the minimum standard for consultation. Sydney Airport also had regard to the Australian Government's National Aviation Policy White Paper (2009), in which the need for airports to more effectively engage with local communities is emphasised.

The communications and consultation strategy for the Master Plan process involved the following:

- Initial consultation and briefings in the lead-up to the public release of the Preliminary Draft Master Plan (PDMP), building on the extensive consultation that had already been undertaken
- Targeted initial stakeholder briefings and consultations concerning the preparation of the Airport Environment Strategy (AES), as outlined in Section 5.2 of the AES
- Formal public notification that the PDMP had been placed on public exhibition, including an invitation to submit written comments
- Wide dissemination of the PDMP, background and supporting information (including details of how to get further information and how to comment) to the community and other stakeholders during the public comment period
- Direct engagement with people in their own local communities, including at community markets, shopping centres, in key interest group meetings, and through the internet
- Direct engagement with third parties with an interest in particular issues
- A dedicated page on the Sydney Airport website provided an important source of information, interaction and submissions, and there was wide promotion through social media
- Offers of briefings and opportunities to obtain further information to the community and stakeholders during the public comment period
- Careful consideration of all comments received
- Following the public exhibition period, the PDMP was, where appropriate, amended to produce a Draft Master Plan (DMP). The DMP was submitted to the Minister for Infrastructure and Regional Development (the Minister) on 2 December 2013. The Minister approved the DMP on 17 February 2014, at which point it became the final Master Plan 2033.

On 5 December 2011, Sydney Airport announced a New Vision for the airport. The announced plan outlined a phased development of Sydney Airport, which would transform it into two integrated terminal precincts, combining international, domestic and regional services in each of the two precincts. Sydney Airport also announced that it would commence an extensive consultation process, in advance of preparing and publicly releasing a PDMP for further stakeholder consultation.

The feedback received during the extensive initial consultations undertaken during 2012 and the first half of 2013 informed the preparation of the PDMP that was released for public comment.

As part of the initial consultation stage involving the

development plan and subsequently during the preparation of the PDMP, Sydney Airport met with, briefed and consulted a wide range of community and government stakeholders, often on multiple occasions.

To inform, engage and seek feedback from the broader community about the development plan – including residents living in the vicinity of Sydney Airport or under flight paths, across Sydney and in rural and regional NSW – the following activities were also undertaken:

- Community updates were placed in local community newspapers circulating in the Sydney metropolitan area, including community language publications (Arabic, Greek, Italian, Mandarin, Cantonese, Spanish and Vietnamese languages). Updates were also placed in *The Land*, which circulates in country NSW
- Community open days were held in the Marrickville, Leichhardt, City of Sydney, Canada Bay, Rockdale, Botany Bay, Randwick, Waverley, Sutherland Shire and Willoughby local government areas
- A community information brochure was distributed to 150,000 households in the vicinity of the airport and under flight paths
- A community hotline and email service was set up to enable members of the public to make direct contact with and seek information from Sydney Airport representatives

Sydney Airport also conducted extensive consultations with Sydney Airport Community Forum (SACF), NSW Government agencies, local councils and other key stakeholders while preparing and finalising other parts of the PDMP, including the Airport Environment Strategy and ANEF 2033.

A summary of the issues raised during these initial consultations undertaken during 2012 and 2013 is shown in **Appendix G – section G1**. As required by Section 80(2) of the Act, a summary of the views expressed by the persons consulted during this initial consultation stage has been prepared and submitted to the minister.

As required by Section 79(1A) of the Act, Sydney Airport also formally advised in writing on 31 May 2013: the NSW Minister for Planning and Infrastructure; the NSW Department of Planning and Infrastructure; and the City of Botany Bay, Marrickville, City of Sydney, Rockdale City and Sutherland Shire Councils of its intention to submit the Master Plan to the Minister for Infrastructure and Regional Development.

The Airports Regulations 1997 also requires a specific consultation process to be undertaken when preparing the Airport Environment Strategy, which forms part of the Master Plan. More detail is provided in the Airport Environment Strategy.

1.3 Public exhibition of Preliminary Draft Master Plan

As required by the Act, the PDMP was formally exhibited for public comment for 60 business days from 5 June 2013 to 30 August 2013.

During this time, copies of the PDMP were made widely available to the public and other stakeholders, either via download free of charge from the Sydney Airport website, in hard copy for viewing in public locations across Sydney or in Sydney Airport Corporation Limited's corporate office. As required by Section 79(1) of the Act, a notice specifying this information appeared in newspapers circulating in NSW (*Sydney Morning Herald* and *Daily Telegraph*). A copy of this has been reproduced in **Appendix G – section G2**.

Throughout the public exhibition period, Sydney Airport's aim was to ensure that all key stakeholders were able to:

- Easily access a written or electronic copy of the PDMP, supporting documents and background information in a location convenient to them
- Make contact with and speak directly to Sydney Airport representatives to ask questions and seek further information about the PDMP
- Provide stakeholders with various means of making a submission and commenting on the PDMP

Sydney Airport was also mindful of the need to ensure that the consultation process for the PDMP had regard to the diversity in the local community in relation to such factors as age, education, language, cultural background and access capability. A variety of consultation and communications mechanisms were therefore used that were suitable for a wide range of people and groups. This ensured that all members of the community had an opportunity to view the PDMP and make comments.

Sydney Airport therefore:

- Published regular community updates in English speaking and community language newspapers circulating in Sydney and other parts of NSW
- Held 10 community information sessions in areas in the vicinity of Sydney Airport and under flight paths at which Sydney Airport representatives were on hand to explain details and answer questions. Two sessions were also held in Terminal 1 (T1) and Terminal 2 (T2) at Sydney Airport. The date, time and location of these information sessions were advertised in advance in local newspapers and on the Sydney Airport website
- Distributed more than 200,000 community information brochures to households in the vicinity of the airport and under flights paths
- Posted a link to the PDMP webpage on both Facebook and Twitter

- Set up an 1800 community information line and dedicated Master Plan email service to facilitate information exchange
- Expanded the two-way flow of information with regional NSW communities in recognition of Sydney Airport's vital role in accommodating the air transport needs of country NSW
- Distributed the PDMP and supporting documents to all local councils in NSW as well as all members of the NSW and Australian Parliaments representing electorates in NSW

1.3.1 Notification of the public and key stakeholders that the PDMP had been released for public comment

To inform the broader public that the PDMP had been released for comment, and as required by Section 79(1) of the Act, a notice was published in the *Sydney Morning Herald* and *Daily Telegraph* on 4 June 2013 stating that:

- Sydney Airport had prepared a PDMP
- Copies of the PDMP were available for inspection and purchase by members of the public throughout the public exhibition period at specified places

- Copies of the PDMP were available free of charge to members of the public on the Sydney Airport website
- Written comments about the PDMP were invited from members of the public during the public comment period
- Members of the public and other stakeholders could seek further information, with telephone and email contact details at Sydney Airport provided

Sydney Airport issued a media release advising of the release of the PDMP to various metropolitan and local media outlets. These generated prominent media coverage by the *Sydney Morning Herald*, *Daily Telegraph* and other local, metropolitan and national media, including television and radio.

As well as making the PDMP itself widely available, Sydney Airport prepared other documents to assist with the consultation and communications process, including:

- A PDMP summary booklet
- Fact sheets covering 11 issues of community interest, including
 - Overview and how to comment
 - A decade of investment and innovation
 - A major employer and economic driver



- Planning for the future
- Planning for growth and improving the passenger experience
- Managing noise – the benefits of new generation quieter aircraft
- Aviation and climate change
- Airport Environment Strategy
- Getting to and from Sydney Airport
- Sustainable water management
- Sydney Airport wetlands
- Frequently asked questions and answers
- PDMP information brochure, distributed to more than 200,000 households in the vicinity of Sydney Airport and under flight paths

These documents are reproduced in **Appendix G – Section G3**.

These documents were available in written form and could be downloaded free of charge from Sydney Airport's website.

At the commencement of the public exhibition period, an information pack containing the PDMP, PDMP summary booklet, all facts sheets, frequently asked questions and answers, an offer by Sydney Airport to provide a more detailed briefing and an invitation to

make a submission on the PDMP were sent to nearly 1,000 key stakeholders.

These included:

- Sydney Airport Community Forum
- Sydney Airport Planning Coordination Forum
- Australian Government agencies, including Department of Infrastructure and Transport (as it then was), Airservices Australia, Civil Aviation Safety Authority, Australian Customs and Border Protection Service, Department of Sustainability, Environment, Water, Population and Communities (as it then was), Office of Transport Security, and Department of Agriculture, Fisheries and Forestry (as it then was)
- NSW Government agencies, including Department of Premier and Cabinet, Transport for NSW (TfNSW), Roads and Maritime Services (RMS), Infrastructure NSW, Destination NSW, Office of Environment and Heritage, and the Environment Protection Authority. Given the importance of ground transport-related issues, a special Sydney Airport/TfNSW/RMS working group was established
- Local councils and regional organisations of councils
- Members of the Australian and NSW Parliaments



- Relevant Ministers in the Australian and NSW Governments (and their shadow Ministers)
- Business, tourism and industry groups, and local hotel operators
- Airlines using Sydney Airport or their representatives, including Virgin Australia, Qantas, Board of Airline Representatives of Australia (BARA) and other individual regional, domestic and international airlines
- Other aviation industry and related stakeholders

1.3.2 Public display of the PDMP

Sydney Airport made written copies of the PDMP available for public inspection in 19 locations at and around Sydney Airport. Locations included public libraries in the following local government areas: Ashfield, City of Botany Bay, Burwood, Canterbury City, City of Canada Bay, City of Sydney, Hurstville City, Kogarah, Lane Cove, Leichhardt, Marrickville, North Sydney, Randwick City, Rockdale City, Sutherland Shire, Waverley, Willoughby and Woollahra. At each council display location, the PDMP was accompanied by a poster advertising the public comment period, copies of the PDMP summary and copies of a pro-forma submission form. These are shown in **Appendix G – Section G4**.

1.3.3 Website information

Sydney Airport set up a special Master Plan webpage on its website on which the PDMP and other supporting documents were made available throughout the public comment period for downloading free of charge. During the public exhibition period, the webpage was viewed more than 20,000 times. The entire PDMP, individual chapters of it or the supporting documents were downloaded around 12,000 times.

The website also listed the various locations across Sydney where a printed copy of the PDMP could be inspected and included details of upcoming community information sessions (see Section 1.3.6) and details of how to comment. A pro-forma submission form was also able to be downloaded to assist those wishing to make a submission.

1.3.4 Social media

On the day the PDMP was released for public comment, Sydney Airport posted a link to the PDMP webpage on both Facebook and Twitter. Over the next day or two there were around 140 PDMP webpage visits attributable to these links.

1.3.5 Community updates

English language newspapers

To provide information about the PDMP, details of where to inspect a written copy of the PDMP, details of how to obtain further information and how to make a submission, Sydney Airport published up to three half page community updates in the following English language local newspapers: *Blacktown Advocate*, *Canterbury-Bankstown Express*, *Central Courier*, *Fairfield Advance*, *Hills Shire Times*, *Hornsby Advocate*, *Inner West Courier*, *Liverpool Leader*, *Macarthur Chronicle*, *Manly Daily*, *Mosman Daily*, *Mt Druitt – St Marys Standard*, *North Shore Times*, *Northern District Times*, *Parramatta Advertiser*, *Penrith Press*, *Rouse Hill Times*, *St George and Sutherland Shire Leader*, *Southern Courier*, *The Hawkesbury Gazette*, and *Wentworth Courier*.

Collectively, these newspapers have a circulation of around 1.25 million copies and readership of more than 1.65 million people.

To ensure information on the PDMP was available to people living in rural and regional communities across NSW, community updates were also prominently placed twice during the public exhibition period in *The Land*, a major regional newspaper. *The Land* has a circulation of 44,500.

A copy of each of the three community updates is reproduced in **Appendix G – Section G5**.

Community language newspapers

During the public comment period, Sydney Airport was conscious of the need to ensure that the consultation process for the PDMP addressed the diversity in the local community in relation to such factors as language and community background. This is especially important because there are significant non-English speaking communities in many areas close to Sydney Airport. Census data revealed that a relatively high proportion of people who speak a language other than English at home lived in all local government areas close to the airport.

Based on this census analysis, two community updates were published in the following community language newspapers: *La Fiamma* (Italian), *The Spanish Herald* (Spanish), *The Greek Herald* (Greek), *Viet Luan* (Vietnamese), *Sydney Korean Herald* (Korean), *Al-Furat* (Arabic), *Chinese Herald* (Mandarin and Cantonese), and *Indomedia* (Indonesian).

A copy of each of the three community updates is reproduced in **Appendix G – Section G6**.

1.3.6 Community information sessions

To facilitate the public dissemination and exchange of information concerning the PDMP, community information sessions were held in local shopping centres, public libraries and popular community locations such as community markets, as well as in the T1 and T2 passenger terminals at Sydney Airport.

As well as copies of the PDMP, supporting documents and information displays being made available, Sydney Airport representatives were on hand to discuss issues raised by members of the public and to answer questions. The locations, dates and times of the community information sessions were advertised in advance in local newspapers circulating in the relevant area(s). Copies of these advertisements are reproduced in **Appendix G – Section G7**.

Twelve community information sessions were held in the following areas:



Community information session held at Eveleigh Markets, Redfern

Location	Local government area	Date (2013)	Time
Broadway Shopping Centre	City of Sydney	Wednesday 26 June	10am – 7pm
Chatswood Library	Willoughby	Wednesday 3 July	9.30am – 5.30pm
Cronulla Mall	Sutherland Shire	Saturday 6 July	9am – 4.30pm
Eastgate (Bondi Junction) Shopping Centre	Waverley	Saturday 27 July	9am – 5.30pm
Eveleigh Markets	City of Sydney	Saturday 29 June	8am – 1pm
Hurstville Library	Hurstville City	Saturday 13 July	9am – 4.30pm
Kogarah Town Centre	Kogarah	Wednesday 10 July	9am – 6pm
Marrickville Metro Shopping Centre	Marrickville	Wednesday 19 June	9am – 5.30pm
Orange Grove Markets	Leichhardt	Saturday 22 June	9am – 1pm
Pacific Square (Maroubra) Shopping Centre	Randwick City	Wednesday 24 July	9am – 5.30pm
T1, Sydney Airport	Rockdale City	Saturday 20 July	9am – 5pm
T2, Sydney Airport	Rockdale City	Monday 15 July	9am – 5pm

These sessions provided a convenient opportunity for local residents living in all areas around Sydney Airport to attend an information display and seek further information about the PDMP. Typical issues raised included support for Sydney Airport's proposal to create integrated terminals for international, domestic and regional airline passenger operations, support for plans to improve ground transport access, questions about aircraft flight paths, concern about aircraft noise and support for Sydney Airport's climate change proposals.

1.3.7 Informing communities living in the vicinity of Sydney Airport or under flight paths

Sydney Airport recognises that people living close to Sydney Airport and under flight paths can be more affected by airport operations than many others living in other parts of Sydney. For this reason, Sydney Airport sought to ensure that people living in these areas were informed about the PDMP, advised that it had been released for public comment and invited to make a submission. As well as publishing community updates in relevant local newspapers (see Section 1.3.5) and holding community information sessions in their local area (see Section 1.3.6), a PDMP information brochure was distributed early in the public comment period to more than 200,000 households around the airport. The brochure outlined the plans for Sydney Airport as well as how to access the PDMP and make a submission.

A copy of the brochure is reproduced in **Appendix G – Section G3**.

1.3.8 PDMP community information line and email

A dedicated 1800 community information line and email enabled members of the public to make direct enquiries to Sydney Airport representatives. The 1800 number and email address were published in all PDMP-related documents and community updates. A total of 36 calls were made to the information line with callers discussing a wide range of issues and questions. More than 40 emails were also received. All queries made were responded to either immediately or soon after being received.

1.3.9 Briefings and presentations during public comment period

In the PDMP information pack sent to the nearly 1,000 community, government and aviation industry stakeholders on 5 June 2013, Sydney Airport offered, on request, to provide a more detailed briefing and/or attend relevant meetings to provide more information and be available to answer questions about the PDMP.

As a result, several dozen meetings were held during the public comment period with representatives of a wide range of aviation industry, community, government and other stakeholders. These were in addition to the more than 200 meetings and briefings held during the initial consultation stage while the PDMP was being prepared.



1.4 Submissions received and issues raised in submissions

The community and stakeholder consultation and engagement undertaken to prepare this Master Plan have been more extensive than that undertaken for any of Sydney Airport's previous master plans.

Between 5 June 2013 and 30 August 2013, 139 submissions were received by Sydney Airport. A further nine late submissions were received, making a total of 148 PDMP submissions.

All submitters received a written acknowledgement (by letter or email) from Sydney Airport.

The submissions revealed strong recognition for key aspects of the PDMP, including:

- The extent and quality of Sydney Airport's consultation and engagement process
- Support for optimising the use of and operations at the existing Sydney Airport site
- Support for the proposed ground transport solutions and, in particular, proposed changes to improve the road network in and around the T1 and T2/T3 terminal precincts (from a wide range of stakeholders)
- Recognition of the benefits of transforming Sydney Airport into two integrated terminal precincts for international, domestic and regional passenger operations (from a wide range of stakeholders)
- Additional international contact gate capacity through the creation of new terminal facilities in the current Qantas Jetbase
- Support for Sydney Airport's various sustainability and environmental projects, including climate change initiatives
- Recognition of the significant economic and employment contribution made by Sydney Airport
- Support for the retention of freight facilities adjacent to all terminal precincts and the jet fuel storage facility in its current location
- The importance of regional airline services continuing to operate to and from Sydney Airport (from a large number of regional stakeholders)

Other key issues raised by those who made submissions included:

- Support from a number of key stakeholders to modernise Sydney Airport's operating restrictions so they recognise the fact that aircraft are 75% quieter than they were 40 years ago and are continuing to get quieter. There was also opposition from other stakeholders (mainly individuals, councils and SACF) to any change being made to those restrictions

- Concern about the aircraft noise impacts associated with forecast increased aviation activity at Sydney Airport, including concern that this will result in reduced opportunities for noise sharing. There were also requests for additional information on noise to be included in the Master Plan.
- Concern about the location of flight paths
- Support for the development of a second Sydney airport
- Querying various aspects associated with the aviation activity forecasts
- Strong support for improving public transport and 'active transport' (cycling and pedestrian) access to and from Sydney Airport
- A need to ensure that aviation-related uses remained dominant in the Land Use Plan and that non-aviation-related development at Sydney Airport be minimised

As required by the Act, Sydney Airport gave due regard to all comments in the 148 submissions when preparing the DMP. As required by section 79(2) of the Act, copies of all comments were submitted (with the DMP) to the Minister for Infrastructure and Regional Development on 2 December 2013.

The Minister approved the DMP on 17 February 2014, at which point it became the final Master Plan 2033.



**Sydney
Airport**

The right future.
Starting now.



One in every \$10 generated in NSW comes from the Sydney Airport-Port Botany precinct. Sydney Airport itself contributes \$27.6 billion to the economy each year and supports 283,700 full-time jobs in industries including aviation, transport and tourism.



20

**ECONOMIC
AND REGIONAL
SIGNIFICANCE OF
SYDNEY AIRPORT**

2.0 ECONOMIC AND REGIONAL SIGNIFICANCE OF SYDNEY AIRPORT



Key points

- Sydney Airport is one of Australia's most important pieces of infrastructure. Directly and indirectly, it generates and facilitates:
 - Economic activity equivalent to 6% of the NSW economy
 - Almost 300,000 jobs
- The continued growth of Sydney Airport is vital to achieving local and state based employment, tourism and development objectives
- Sydney Airport's location offers strategic and commercial advantages to Sydney and NSW:
 - 2km to Port Botany
 - 8km to the CBD
 - Under 10km to the harbour and several major tourist beaches
- Sydney Airport provides Sydney, NSW and Australia with an unmatched network of intrastate, interstate and international routes:
 - 47 international, 24 domestic and 26 regional routes
 - 34 international, 6 domestic and 6 regional airlines
 - All business or mixed purpose regional routes have scheduled flight times in the morning peak
 - Sydney Airport is committed to maintaining the strongest network of international, domestic and regional routes
- Sydney Airport publicly supports the three core elements of the *Joint Study on Aviation Capacity for the Sydney Region* (the joint study) to:
 - Optimise the use of Sydney Airport as the primary airport for Sydney and NSW for international, domestic and regional passengers by ensuring that it operates efficiently and can grow to its maximum practical operational capacity
 - Optimise the use of other existing airports serving the Sydney region
 - Select a site for a supplementary airport, and ensure operations commence at the appropriate time in the future, when demand requires
- Sydney Airport is committed to meeting the needs of its customers and delivering a passenger experience that the community is proud of:
 - Sydney Airport has invested more than \$2 billion on facilities, capacity, safety and security since July 2002 following extensive and ongoing consultation with airlines
 - 2011/12 passenger service level survey results were the highest recorded
 - Since 2002, 25 new routes and 12 new airlines have been attracted to Sydney Airport, expanding the route network for passengers and opening up tourism and trade for Australia
 - Sydney Airport is seeking to work even more closely with its partners to better understand and respond to their priorities and to help them by sharing information and expertise



The benefits of aviation to Sydney, NSW and Australia are well established, and are recognised by all levels of government. Direct and indirect activity at Sydney Airport contributes the equivalent of 6% of the NSW economy and generates almost 300,000 jobs. A large number of jobs are undertaken by residents of the communities surrounding the airport, with particularly large numbers in Sutherland Shire and Rockdale. There are also significant numbers of airport-related employees living in Kogarah, Hurstville, Canterbury, Randwick and Botany Bay.

Sydney Airport is ideally located to maximise the benefits to the community, in particular, for local businesses around the Port Botany/Sydney Airport precinct. The airport is 2km from Port Botany, 8km from the Sydney CBD, and less than 10km from the iconic Sydney Harbour and the southern beaches. Surrounding the airport is a network of light-industrial and tourism-related businesses that rely on or support the airport, such as freight/logistics, catering, engineering, vehicle rental businesses and accommodation businesses.

Sydney Airport does not just serve passengers travelling to or from Sydney, it is also Australia's largest transport and logistics hub. Some 34 international, six domestic and six regional airlines operate from Sydney Airport to 97 destinations, including 11 international and eight regional destinations not served by any other Australian airport. Many passengers and large volumes of freight transfer between these flights.

Sydney Airport's location, the substantial investments by the airlines and other businesses in the region, and the established route networks provide invaluable strategic economic and commercial advantages to Sydney and NSW. The benefits to Sydney and Australia will be maximised by optimising the use of Sydney Airport – as was recognised by the *Joint Study on Aviation Capacity for the Sydney Region* (the joint study). International experience makes it clear that Sydney will be a more attractive destination for international airlines and visitors if they are able to be accommodated efficiently at Sydney Airport.

Sustainable growth of the airport is critical to the achievement of the NSW Government's targets for tourism and the employment targets of the local government areas. For example, each daily A380 service from Dubai is estimated to generate more than 4,000 direct and indirect jobs and contributes an average of \$340 million per annum to the economy.

Airports need to plan and invest for the long term in the context of changing airline strategies and business needs, new operational and security requirements, and evolving technology.

Sydney Airport's vision is to deliver a world-class airport experience and foster the growth of Sydney Airport for the benefit of Sydney, NSW and Australia.

Over \$2 billion of investments and other initiatives during the past decade have helped to increase service levels, enhance safety and security, deliver environmental improvements and increase capacity to meet demand. Major on-airport investment programmes are negotiated and agreed with the airlines, and are implemented to meet airline capacity demands and product developments.

The development plan within this Master Plan ensures that Sydney Airport will have the ability to be responsive and flexible in the development and use of its facilities to accommodate an ever-changing landscape of airlines and associated passenger services.

Sydney Airport's development plan has been designed to ensure that the airport can meet forecast growth of air travel for tourism and trade well beyond the 2033 horizon of the Master Plan. However, as outlined in the joint study, Sydney Airport could operate more efficiently with:

- Modernisation and reform of the operating restrictions at Sydney Airport
- Increased focus on core activities of international and domestic/regional passenger and related freight operations, with the development of supplementary

specialised general aviation and freight capacity at RAAF Base Richmond operating on an integrated basis with Sydney Airport

- Enhanced land transport options for passengers, airport related employees and other users

Accordingly, Sydney Airport publicly supports the three core elements of the joint study:

- Optimise the use of Sydney Airport as the primary airport for Sydney and NSW for international, domestic and regional passengers by ensuring that it operates efficiently and can grow to its maximum practical operational capacity
- Optimise the use of other existing airports serving the Sydney region
- Select a site for a future supplementary airport in the long term, and ensure operations commence at the appropriate time when demand requires

2.1 Located at the heart of tourism and trade

International trade and international air routes are vital to Australia's continued national prosperity. Airports are an essential part of the transport networks that all successful modern economies rely on.

Sydney Airport provides a uniquely extensive breadth of transport interconnectivity within the Sydney region. In addition to providing NSW residents with the opportunity to travel, whether for business or leisure, the airport also:

- Delivers convenience for business visitors to Sydney, with the location of Sydney Airport just 8km from the CBD
- Delivers convenience for tourists to Sydney, with the location of Sydney Airport within 10km of the major tourist destinations, including Sydney Harbour, Sydney Opera House, the Sydney Harbour Bridge and Bondi Beach

Table 2.1 Airport-related businesses

Business Sector	Key Indicators
Airlines	34 international, six domestic and six regional airlines operating at Sydney Airport
Freight	At least 146 organisations involved in freight activities including transport companies, handlers and forwarders
Other aircraft operators	346 general aviation operators
Retailers	At least 73 on-airport retailers (some of which operate multiple outlets)
Hotels	Nine hotels in close proximity of Sydney Airport
Government	Seven Australian and NSW Government departments and agencies
Car rental and parking	As many as 10 operators servicing the airport
Ground transport	At least 1542 ground transport providers servicing the airport
Fuel supply	Fuel supply infrastructure owned jointly by several fuel businesses

Source: Sydney Airport (as at December 2012)

- Serves as a hub for travel between regional NSW, other Australian cities and the world
- Provides an interchange between air, sea and land freight, enabling high value and/or time critical exports and imports
- Serves as an air freight hub for NSW

The success of business and tourism for Sydney, NSW, Australia and Sydney Airport are interdependent. Sydney Airport's location and extensive route network is a significant strategic advantage for Sydney, NSW and Australia when competing with other Australian and overseas cities.

Sydney Airport has a substantial route network, including:

- 47 international destinations, 11 of which are not served by any other Australian airport
- 24 domestic destinations
- 26 regional destinations, eight of which are served only by Sydney Airport

Sydney's status as Australia's pre-eminent global city, in turn, supports the route network at Sydney Airport and the development of Sydney Airport and related businesses. The availability of direct flights to a wide network of destinations also significantly strengthens the competitiveness of the Sydney tourism industry. The partnership between Sydney Airport and Destination NSW is actively working to boost tourism, attract new airlines and increase airline services to Sydney, in support of the NSW Government's target to double overnight visitor expenditure by 2020. Sydney Airport and Tourism Australia are also working together to promote tourism to Australia.

Airport-related businesses, highlighted in **Table 2.1**, have also made significant investments in the areas surrounding Sydney Airport, including investments relating to:

- Transport links
- Hotels
- Fuel supply
- Aviation support services such as catering and cleaning
- Utilities

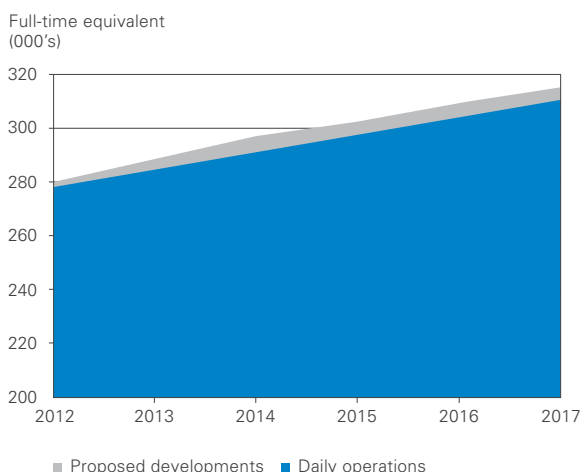
2.2 A key source of jobs and income

A January 2013 study by Deloitte Access Economics into the economic impact of Sydney Airport quantified the benefits of these activities. Key findings of the study include that Sydney Airport generates or facilitates:

- **Jobs.** Direct and indirect employment of 283,700 jobs (equivalent to 8% of NSW employment), including 160,000 direct jobs, 28,000 of which are on-airport
- **Economic activity.** Direct and indirect economic contribution of \$27.6 billion, equivalent to 6% of the NSW economy and 2% of the Australian economy
- **Household income.** Direct and indirect contribution of \$13.2 billion. Additionally, at \$82,000 per annum, the average full time equivalent wage of an employee working on the Sydney Airport precinct is 13% higher than the NSW average for all employees.
- **Taxes.** Direct and indirect taxes, including:
 - Substantial income tax and GST revenues to the Australian Government
 - Substantial payroll taxes to the NSW Government
 - Annual contributions, in lieu of rates, to Botany Bay, Rockdale and Marrickville Councils

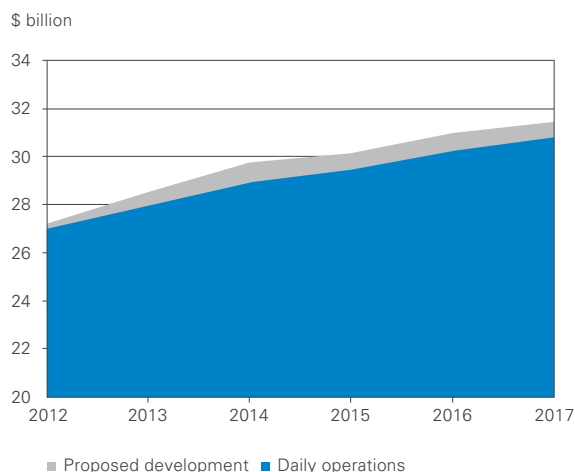
Figure 2.1 Forecast growth of employment and economic contribution

Employment



Source: Deloitte Access Economics, January 2013

GDP



Using forward-looking modelling, the study also indicated that Sydney Airport's economic contribution will increase as the airport develops (refer to **Figure 2.1**). It is forecast that the economic activity generated or facilitated by Sydney Airport will increase from \$27.6 billion in 2012 to over \$42 billion in 2033 and total employment will increase from 283,700 jobs in 2012 to over 400,000 by 2033.

This study highlights that a relatively small development at Sydney Airport can have a potentially large economic impact on both the NSW and Australian economies. As an example, an additional daily A380 service from Dubai would, on an annual basis, contribute an estimated:

- \$342 million to Australian GDP
- \$206 million to Australia's household income
- 4,400 jobs (2,800 of which would be in NSW).

Similarly, an additional daily A380 from China would, on an annual basis, contribute an estimated:

- \$388 million to Australian GDP
- \$233 million to Australia's household income
- 5,000 jobs (4,000 of which would be in NSW).

In addition, the study highlights the significance of Sydney Airport within the local community. It is estimated that there are over 800 businesses operating on and around Sydney Airport with these businesses having a profound impact on local employment figures.

For the first five years of the planning period, the Airports Act requires the Master Plan to specify the likely effect of the proposed developments in the Master Plan on employment levels at the airport and

the local and regional economy.

In relation to the period to 2019, the employment levels forecast as a result of proposed developments at Sydney Airport is shown in **Table 2.2** below.

The employment levels forecast as a result of daily operations at the airport are also shown for each year.

In relation to the period to 2019, the economic activity forecast as a result of proposed developments at Sydney Airport – which includes effects in the local and regional economy – is shown in **Table 2.3** below. The economic activity forecasts as a result of daily operations at the airport are also shown for each year.

2.3 Integral to the plans of all governments

Many of the direct and indirect jobs generated or facilitated by Sydney Airport are in the local government areas of Rockdale, Marrickville and Botany Bay. The continued development of Sydney Airport is integral to achieving the employment objectives of the NSW Government and the local councils that surround the airport.

The airport and the surrounding region is identified as strategic employment lands within:

- The Metropolitan Plan for Sydney 2036 (NSW Government, 2010)
- The draft subregional strategy for the East Subregion (which includes the City of Botany Bay)
- The draft subregional strategy for the South Subregion (which includes Marrickville and Rockdale City)

Table 2.2 Employment levels at Sydney Airport (Full Time Equivalent)

	2013	2014	2015	2016	2017	2018	2019
Daily operations	284,997	291,415	297,832	304,250	310,667	317,085	323,502
Proposed developments	4,128	3,804	3,214	2,848	2,508	2,198	1,943
Total	289,125	295,219	301,046	307,098	313,175	319,283	325,445

Table 2.3 Effect of Sydney Airport on the local and regional economy (\$billion)

	2013	2014	2015	2016	2017	2018	2019
Daily operations	28.00	28.93	29.47	30.23	30.80	31.30	31.69
Proposed developments	0.61	0.56	0.47	0.41	0.36	0.31	0.27
Total	28.61	29.49	29.94	30.64	31.16	31.61	31.96

1 Adjusted for inflation, Sydney Airport's regional charges have declined by 31% over the past decade

- The draft subregional strategy for the Sydney City Subregion (which includes the City of Sydney).

In March 2013, the NSW Government released the Draft Metropolitan Strategy for Sydney to 2031.

The Draft Metropolitan Strategy:

- Identifies Sydney Airport as a 'specialised centre'
- Acknowledges that Sydney Airport and Port Botany are two of Australia's main economic gateways and need better transport connections for passengers and freight
- Indicates that the NSW Government will continue to work with the Australian Government to deliver and improve national and international infrastructure, Port Botany and Sydney Airport

A plan of the Sydney Basin showing the key economic activities in the Draft Metropolitan Strategy for Sydney to 2031 is in **Figure 2.2**. Sydney Airport is shown as a key component of the city's 'global economic corridor'.

This Master Plan is consistent with the objectives of the Draft Metropolitan Strategy and the draft subregional strategies. Further information on the Draft Metropolitan Strategy for Sydney to 2031, the subregional strategies and other developments in the local area is included in Appendix E.

The significant government investments required to duplicate the road, rail and utility infrastructure necessary to connect a supplementary airport are not included in the priorities identified by Infrastructure Australia or Infrastructure NSW.

2.4 Connecting NSW to Sydney and the world

Sydney Airport recognises the importance of its existing network of regional services to regional communities. This regional network also helps support the development of the international network at Sydney Airport.

Over the past 20 years, regional traffic has grown at Sydney Airport, with a 221 % increase in passenger numbers.

Sydney Airport is proud of the service it provides to regional communities, including an extensive route network during the peak hours, facilitating connectivity with international and domestic routes, and lower airport charges than almost all other airports in the Sydney-regional route network¹. In summary:

- With the exception of two leisure routes that have flights scheduled for a leisurely start to passengers' holidays – Lord Howe Island and Cooma – all regional services are well served in the morning and afternoon peak periods.
- Sydney Airport's 26 regional routes have an average of six movements each during the peak hours.

Continued access for regional services in these peak periods is legislated by government policy and supported by slot allocation rules.

Sydney Airport has seen growth in regional demand matched by airlines up-gauging to larger aircraft. Over the long term, seven to nine seat aircraft have been replaced with 17-19 seat aircraft, which in turn have been progressively replaced by 30-36 seat, 50 seat, 64-72 seat, 100 seat and 170-180 seat aircraft. Regional aircraft have increased in size more quickly than any other market segment, and the increase in aircraft size has both responded to and promoted passenger growth.

With continued increases in regional aircraft size, Sydney Airport will continue to be able to accommodate passenger demand for regional air travel. The joint study recognised the importance of the growth of regional aircraft size and recommended that new regional services be required to have a minimum of 50 seats beyond 2015.

2.5 A decade of investment and innovation

Over the past decade, Sydney Airport has invested over \$2 billion, a sizeable portion of its total revenues of \$8 billion over the same period. Approximately 70% of this investment has been on aeronautical facilities. Some of the significant investments are outlined below.

Investment in airport infrastructure to provide additional capacity, higher service quality and a safe environment for airport users has been, and will continue to be, a priority for Sydney Airport.

The most significant project undertaken over this period was the upgrade and expansion of Terminal 1 (T1), completed in 2010. The project was developed following feedback from airlines, passengers and all other relevant stakeholders. Key features of the development included:

- Redevelopment of 30,000 square metres of the existing departures level
- The addition of 7,300 square metres to the departures level to provide a new centralised passenger processing area, new retail, food and beverage outlets, additional moving walkways and passenger waiting areas
- Development to facilitate a new outbound baggage handling system and early checked baggage storage system
- Upgrading the arrivals baggage system with an additional baggage reclaim carousel to meet the peak passenger flows associated with the introduction of new aircraft such as the A380

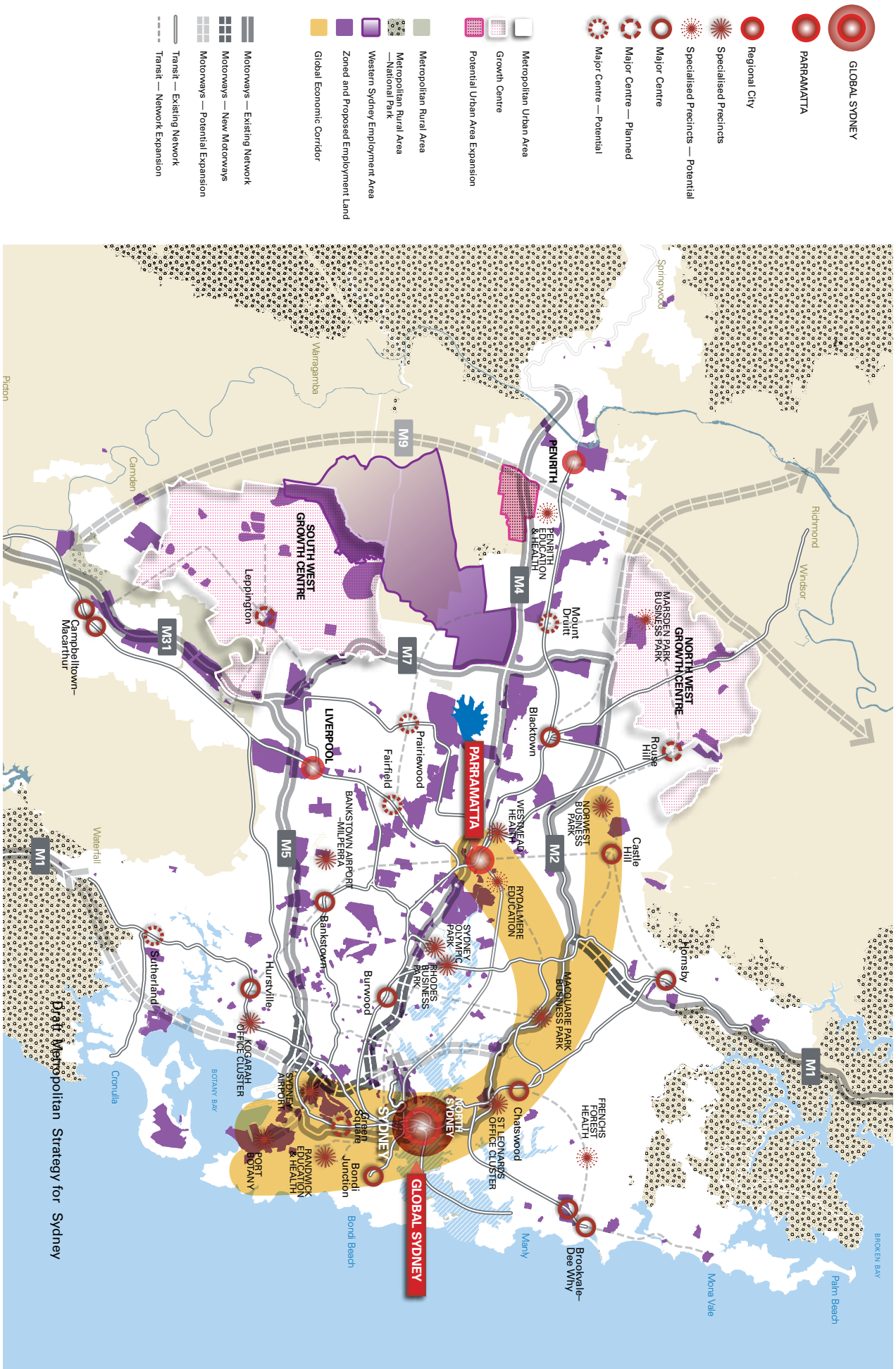
2.5.1 Capacity-focused investments

T1 upgrades and expansions

- **Transfer/transit** facilities for passengers were

Figure 2.2
Draft Metropolitan Strategy for Sydney to 2031
– Key Economic Activities

This drawing has been prepared to illustrate the Sydney Airport Master Plan and is not intended to serve any other purpose. The drawing must be read in conjunction with the Master Plan.



enhanced with additional screening points and the introduction of new technology

- **Bay 8** expansion for A380 style aircraft with apron drive aerobridges
- **Check-in** facilities have been enhanced with the expansion of Islands J and K, additional service desks in Island A, new self-service check-in kiosks in Island H and proposed self-service check-in kiosks in Islands A, B and C
- **Taxi** pickup bays were increased by 67% and the undercover passenger holding area expanded
- **Limousine** bays were increased by 72%
- **Car park** capacity for passengers and staff was increased with approximately 5,658 parking spaces provided in two multi-storey car parks
- Expansion of **SmartGate** facilities In Pier B and C to include more kiosks and improved wayfinding, significantly increasing capacity through the primary line

T2/T3 upgrades and expansions

- The **T2 conversion** to common-use included new aerobridges, IT facilities, passenger waiting areas, retail and food & beverage facilities
- **T2 Pier A** has been expanded to provide an additional 5 contact gates, an additional 4 bus gates, and new lounges. The new facilities are able to facilitate wide-body aircraft such as the A330.
- **Taxi** pickup bays were increased outside T2 by 50%
- **Pre-booked taxi** bays were increased outside T2 by 233%
- **Car** park capacity was increased by 1,387 spaces in the Blu Emu Car Park and additional capacity is being built during 2013 in the T2/T3 precinct

Airfield and utilities

- **A380** enhancements were made to runways, taxiways, gates and aerobridges, facilitating the entry and growth of more technologically advanced, larger and quieter aircraft. Sydney Airport is now the 6th largest A380 airport in the world, with 106 movements per week
- **Apron capacity** was increased with new remote aircraft parking positions in the South West and North East Sectors of the airport. Work is under way to deliver additional aircraft parking positions during 2013 and 2014.
- **New unit load device storage areas** have been completed in the North West Sector
- **New aircraft parking bay** (Bay 1A) currently under construction.
- **Electricity** capacity and reliability to T1 was enhanced through works on the high voltage cabling

- **T1 central services building** upgrades to the heating, ventilation and air conditioning (HVAC).
- Construction of **remote parking bays** In the South West Sector (Bays 70-77)

2.5.2 Investments to improve the experience of airport users

- **T1 Pier C** was refurbished to increase gate lounge areas, provide additional seating, improve wayfinding and enhanced secondary screening facilities
- **Check-in trials in T1** are under way of self-service technology to give passengers control over their check-in experience and reduce queues
- **Biosecurity** reconfiguration in T1 has enhanced the passenger experience, which was delivered through close collaboration between Sydney Airport and border control agencies
- **Retail upgrades in T1 and T2** provide an enhanced experience for passengers, including the provision of free wi-fi
- **Airline lounge** developments for the premium passengers of several airlines
- **Drop-off/pick-up** facilities for passengers were enhanced with the introduction of free 10/15 minute drop-off/pick-up, a new 'slip-lane' for customers using the 10 minute free zone in the T2/T3 precinct, and additional undercover walkways
- **Bus and limousine accessibility** was improved with a new flow system incorporating e-tag technology
- **Car parking** guidance systems were installed in all multi-storey car parks to improve the parking experience, new equipment installed to allow better flow through the car parks and faster exits, and improved bus facilities developed for the transfer from the Blu Emu Car Park to the terminals
- **Hotels** were developed in both the T1 and T2/ T3 precincts to meet demand from tourists and business travellers
- Construction of a new **Etihad Airways business lounge**, upgraded and expanded Singapore Airlines business lounge and upgraded and expanded Emirates business lounge in T1
- Expansion and upgrade of **Virgin Australia lounge in T2**, including kerbside lounge access with integrated check-in and security facilities
- **Offices for airlines and other airport users**, including administrative buildings for the Australian Customs and Border Protection Service and the Australian Federal Police

2.5.3. Safety, security and environment

- **Baggage screening** was enhanced with the introduction of 100% checked bag screening at T1 and T2
- Introduction of **new airport security measures** including full body scanners at T1 for passengers and staff
- **Runways** 16R/34L and 07/25 were resurfaced
- **Runway and taxiway lighting** was upgraded, including new runway guard lights, recabling of all runways and taxiways, and an upgraded lighting control system
- Enlarged **runway end safety areas** for all six runway ends were constructed in accordance with the aviation safety requirements laid down by the Civil Aviation Safety Authority (CASA)
- **Stop bars** were commissioned in 2012 to better facilitate low visibility operations and further reduce the risk of runway incursions
- **Ground power and preconditioned air** infrastructure was installed to increase the energy efficiency of aircraft on the ground
- A **water recycling plant** was built in 2009 to provide recycled water for toilet flushing and the cooling towers of the T1 air conditioning system, reducing both drinking water consumption and sewage waste

2.5.4 Service quality

Sydney Airport is committed to providing airlines, passengers and other customers with a high quality travel experience. Since 2002 the airport has implemented a comprehensive program to enhance the travel experience for passengers.

The program includes:

- Investing in upgraded facilities
- Provision of new services
- Extensive and ongoing passenger surveys to identify priorities and track performance
- An airport-wide service quality improvement program (SQIP)
- Participation in airline operators' committees
- Rolling quarterly airline surveys
- A customer charter providing commitments around quality, value and choice.

In addition to projects to expand capacity or meet new regulatory requirements, Sydney Airport has pioneered a wide variety of new services such as:

- Introduction of an SMS flight information service and a new public address system

- Flight information screens upgraded with LCD screens throughout both T1 and T2
- Foreign language signage throughout T1, and foreign language integration on the Sydney Airport website and mobile app in a variety of languages
- Free wi-fi installed in both T1 and T2 (the terminals operated by Sydney Airport)
- Introduction of a bag strapping service
- More airside food and beverage outlets, and a new landside food court
- Provision of additional undercover parking in both the international and Blu Emu car parks, and a covered and expanded waiting area for passengers waiting for taxis
- Free 15 minute parking at the international terminal, free 10 minute parking at the domestic terminal and new discounted parking products available by booking online
- Express-path security and immigration on arrivals and departures, introduced for the airlines' premium passengers
- New outbound hall for the Australian Customs and Border Protection Service
- New security screening area
- SmartGate introduced for Australian and New Zealand passport holders
- Introduction of a short fare taxi system
- Upgraded taxi facilities at both T1 and T2



**Sydney
Airport**

The right future.
Starting now.



A large Emirates aircraft is shown from a low angle, focusing on the tail and wing. The tail features the airline's signature orange and white stripes. Below the aircraft, several Emirates cargo containers are being loaded onto a blue ground support vehicle. The containers are white with red Emirates branding. The scene is set on an airport tarmac under a clear blue sky.

3.0

AIR TRAFFIC HISTORY AND FORECASTS

3.0 AIR TRAFFIC HISTORY AND FORECASTS



Key points

- Sydney Airport is able to accommodate forecast traffic demand beyond the 2033 planning period
- The aviation industry has changed rapidly, frequently and profoundly over the past two decades including:
 - New airline entrants including low cost carriers
 - Improved aircraft technology and capacity
 - Route expansion
- The traffic forecasts have been independently prepared by Tourism Futures International (TFI) and independently reviewed by CAPA:
 - The traffic forecasts were prepared in consultation with the major international, domestic and regional airlines and the airline associations
 - The passenger forecasts are broadly consistent with the recent forecasts prepared by the joint study and by the Bureau of Infrastructure, Transport and Regional Economics (BITRE)
 - The reset of the baseline to take into account the impact to date of the global financial crisis (GFC) accounts for most of the difference between this forecast and the forecast in the 2009 Master Plan. The major economic forecasters are not predicting a period of above-average economic growth that would typically give rise to a period of above-average traffic growth. Accordingly, traffic is not expected to recover to the pre-GFC trends
- The aircraft size forecasts are consistent with past trends and with comparable international airports
- Traffic developments in 2013 suggest the 2033 traffic forecasts (prepared in mid-2012) are more likely to be too high rather than too low. Both international and domestic traffic levels are lower than forecast, and the domestic airlines' stated short term growth expectations are lower than previously expected
- Given the operational regulations, which limit aircraft movements in the peak hour, peak period aircraft volumes in 2033 are likely to be relatively insensitive to changes in passenger demand. Instead, growth in peak passenger demand will be accommodated through larger capacity aircraft, increased seat density and further increases in load factors. As a result, the infrastructure requirements in 2033 are likely to be relatively insensitive to reasonable changes in passenger demand.
- In 2033, Sydney Airport is projected to handle approximately 74.3 million passengers and 388,000 passenger aircraft movements
 - As a consequence of the GFC the forecast traffic at the end of the 2033 planning period remains about 5% below the traffic forecasts for 2029 in the 2009 Master Plan
- There will continue to be on-going opportunities for noise sharing in 2033



Forecasts of peak period passengers, aircraft movements and air freight volumes provide the fundamental basis for the planning of airport facilities. The traffic forecasts were independently prepared in consultation with the major international, domestic and regional airlines and airline associations.

In 2033, Sydney Airport is projected to handle approximately:

- 74.3 million passengers
- 388,000 passenger aircraft movements
- 1.0 million tonnes of freight.

For international and domestic (including regional) passengers these forecasts represent annual average growth rates of 4.2% and 2.9% respectively. Overall, this is a forecast average annual growth rate of 3.4%.

Aircraft movement forecasts for scheduled passenger operations at Sydney Airport represent annual average growth rates of 2.3% and 1.0% for international and

domestic (including regional) services respectively. Overall, this represents an average annual growth of 1.4% for passenger aircraft movements.

As a consequence of the global financial crisis (GFC) the projected level of passengers in 2029 is around 15% below the 2009 Master Plan forecast. Forecast traffic at the end of the 2033 planning period remains about 5% below the traffic forecasts for 2029 in the 2009 Master Plan.

Sydney Airport anticipates that the aviation industry shift towards larger, cleaner, quieter, new generation aircraft will continue and passenger numbers will continue to grow at a faster rate than aircraft movements. This has positive outcomes for noise and environmental impacts.

Sydney Airport's existing runways¹ can continue to enable the forecast growth of air travel for tourism and trade beyond the 2033 horizon of the Preliminary Draft Master Plan (PDMP), within the existing regulatory environment.

The detailed forecast schedules, built up year-by-year by TFI and Airbiz, demonstrate that there will also continue to be ongoing opportunities for noise sharing.

3.1 The aviation industry is continually and rapidly changing

For this Master Plan covering the period from 2013 to 2033, it is relevant to consider the development of the industry and Sydney Airport over the 21 years from 1991 to 2012.

The importance of aviation and Sydney Airport to the community has increased substantially since 1991, with

¹ Chapters 4–9 demonstrate that Sydney Airport's taxiways, aprons, terminals, freight, aviation support and ground transport capacity will also be sufficient to enable the forecast growth of air travel beyond the 2033 horizon of the PDMP.

a 190% increase in total passengers, a 187% increase in international passengers.

The evolution of low cost carriers (LCCs) and technology advancement has led to significant reductions in real airfares, which has in turn stimulated traffic growth. Further, liberalisation of air rights has encouraged growth in air travel and improved tourism and trade ties between nations.

Many of the industry changes reflect gradual changes sustained over long periods of time – and are still ongoing. These broad trends were and are taken into account in preparing forecasts of passengers, aircraft movements and airport capacity requirements:

- Passenger demand has grown more quickly than the general economy
- New generation aircraft have steadily become larger, quieter, safer, more fuel efficient and more comfortable for passengers
- Airlines have increased the average number of passengers on a given size aircraft through increased seating density and improving technology so that a higher proportion of seats are filled
- Lower fares as a result of increased efficiencies and new technology are stimulating demand
- The gradual increase in the proportion of leisure passengers, which has enabled and been supported by the growth of low cost airlines
- Changing airline partnerships and alliances have resulted in new products and offerings for passengers

Other changes are more unpredictable and frequently produce changes in the short term. At the most extreme are the periodic disruptions arising from terrorism, war, natural events (including volcanic ash clouds, floods and earthquakes) and health scares (such as SARS and H5N1). In most cases, traffic levels quickly return to the previous trend once the circumstances causing the disruption have abated.

On the other hand, higher oil prices, concerns over climate change, and the GFC have combined to reduce aviation traffic growth over the past several years and it is widely expected that traffic will not recover to the preceding trends. In particular, the major economic forecasters are not predicting a period of above-average economic growth that would typically give rise to a period of above-average traffic growth. Accordingly, traffic is not expected to recover to the pre-GFC trends.

Internationally, airlines no longer serve national catchments but instead serve regional (e.g. Europe or Asia) or global catchments. All airports globally are competing for the new generation aircraft that are being delivered to predominantly Asian, Middle Eastern and LCC airlines. These developments have dramatically

increased the level of competition among airports for traffic in Australia, as elsewhere.

In addition, the importance of international inbound airlines to Sydney Airport has been steadily growing and Sydney Airport expects that this trend will continue.

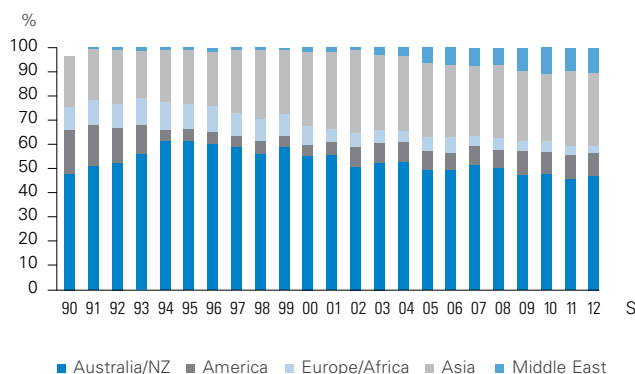
3.1.1 Past evolution of airline activities at Sydney Airport

Individual airline strategies can change very quickly and are very difficult to forecast. Over time, the accumulation of these changes to strategies and business models, airline alliances, and relative growth rates can completely transform the landscape for any given airport. Some of the changes that have occurred in the aviation industry serving Sydney Airport over the period from 1991 to 2012² include:

- More than half of the international airlines which operated to Sydney Airport during the past two decades have been replaced by other airlines
- In particular, Asian and Middle Eastern airlines have replaced all of the continental European airlines that have flown to Sydney Airport, reflected in the changes shown in **Figure 3.1**
- 88% of international capacity growth since 1991 is being offered by airlines that were not operating to Sydney Airport in 1991, as shown in **Figure 3.2**
- Since Ansett stopped flying in 2001, three low-cost airlines commenced flying, one of which has transformed itself into a full service airline
- Almost 30% of the international airlines operating to Sydney Airport in 1999 were no longer operating in 2004 and had been replaced by new airlines
- The Qantas Group created Jetstar, an airline which has very different service and infrastructure requirements to Qantas
- Airlines have introduced new aircraft types across the fleet, including the replacement of older generation B737-300 and B737-400 aircraft with B737-800s (with 25-50% more seats), the up-gauging of Dash8-200 aircraft to predominantly Dash8-Q400s (with double the number of seats), and the introduction of A380s. The newer aircraft are typically more comfortable for passengers, more fuel efficient for airlines and quieter for the community

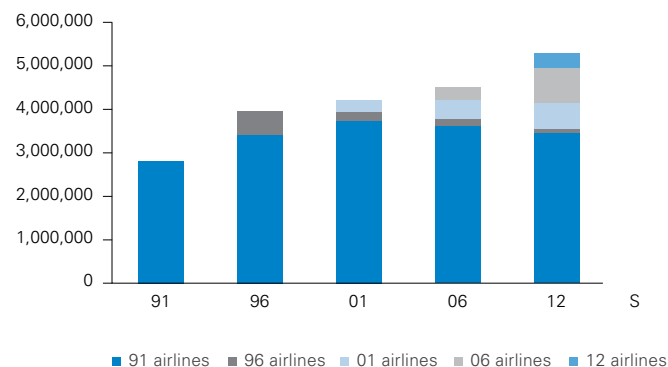
² Based on the northern summer seasons, which runs approximately from 1 April to 31 October.

Figure 3.1 International aircraft seats by region of airlines, from northern summer 1990 to northern summer 2012



Source: TFI

Figure 3.2 International aircraft seats by date of commencement at Sydney Airport (northern summers)



Source: TFI

3.1.2 Ongoing evolution of airline activities at Sydney Airport

Individual airline strategies have continued to change during the writing of this Master Plan. For example, over the past two years:

- Virgin Australia has significantly changed its business model since it commenced operations in 2000 as a domestic LCC with a single class offering on short-haul aircraft. Today, Virgin Australia offers a full service product including lounges, business class, a frequent flyer program and multiple aircraft types to serve its domestic, regional and international operations. More recently, it has increased its international presence by creating a virtual network by partnering with international airlines including Air New Zealand, Delta, Etihad Airways, Hawaiian Airlines and Singapore Airlines.
- Tiger Airways Australia commenced domestic operations in 2007 based in Melbourne and established Sydney-based operations in 2012. Through its LCC model, Tiger has generated a step-change in traffic growth on routes that it has served. Tiger's introduction has led to a competitive response from incumbent airlines, generating further traffic growth.
- Virgin Australia bought 60% of Tiger Australia and 100% of SkyWest. Subsequently (and since the PDMP), both domestic airline groups have publicly reduced their short term growth expectations to 1-2% pa, reflecting both the re-establishment of a domestic duopoly (with each airline group comprising a full service and low cost airline) and lower demand.

- Scoot and AirAsia X have commenced operations to Sydney Airport, increasing the number of international LCCs from one to three.
- Qantas has restructured its business, including the separation of the Jetstar, Qantas Domestic, Qantas International and the Qantas Frequent Flyer businesses. In March 2013, Qantas commenced a strategic partnership with Emirates, allowing Qantas to efficiently serve the European market through codeshare agreements while operating the majority of its own aircraft in the Asia Pacific region.

As the airlines have changed to compete for market share and to meet passenger demand, Sydney Airport's development plans have adapted and evolved to meet the airlines' changing needs and priorities. The development plan in this Master Plan ensures that Sydney Airport will have the ability to be responsive and flexible in the development and use of its facilities to accommodate an ever-changing landscape of airlines and associated passenger services.

Over recent years, the importance of Sydney Airport for all aviation activities has been increased as a result of the closure of other aviation capacity in the Sydney region. Unusually for a major capital city airport, Sydney Airport is not just Australia's primary airport for passenger and core freight operations but is also Sydney's primary airport for specialised freight, executive aviation and helicopters.

While Sydney Airport can continue to accommodate other activities where they do not interfere with the core tourism and trade priorities, it could operate more efficiently with increased focus on core international, domestic and regional passenger operations (and related freight).

3.1.3 Off-peak growth

The changes to the aviation industry, together with the maturation of specific routes, is also supporting the spreading of the peaks. For example, from 2000 to 2011, average busiest hour movements³ decreased by 3% while total movements increased by 1%.

Peak spreading will continue to be driven by a number of factors, including:

- LCCs' focus on maximising aircraft utilisation throughout the day rather than business passengers and transfer connections for international and domestic operations
- Origin and destination (O&D) services to Asia have different scheduling windows to the traditional Europe-bound transfer services
- The Middle Eastern hubs have different scheduling windows to the traditional Asian hubs
- The creation of second and subsequent departure banks in Asia and within Australia as carriers grow. For example, Singapore Airline's eight movements are scheduled for eight different hours, with the majority well outside peak periods. Similarly, Brindabella Airlines increased weekly services to Moree from 20 to 36 from 30 March 2013, with 88% of the new services taking place outside the weekday busy periods.

3.2 Scope and preparation of the traffic forecasts

The forecasts for passengers and commercial aircraft movements⁴ prepared for this Master Plan cover the 20 year planning period to 2033 as required under the Airports Act.

3.2.1 Authors of the forecasts

The annual forecasts that appear in this Master Plan were prepared by Tourism Futures International (TFI). TFI is a research-oriented company specialising in the future of aviation, travel and tourism. TFI has been very active in the consulting area for over 20 years, undertaking projects for airports, airlines and tourism organisations in Australia, New Zealand and the Pacific as well as in Asia and the Middle East. TFI has produced forecasts for:

- All of the larger and many regional airports in Australia, including all of the capital city airports, including Sydney Airport's previous master plans
- Auckland, Wellington, Dunedin and a number of smaller airports in New Zealand
- Airports across Asia including Hong Kong and major airports in India

The forecasts were prepared in an iterative manner in consultation with key airlines and their representatives, to review assumptions and issues. TFI has stated that these consultations were the most extensive that TFI has been involved in, and provided TFI with detailed airline input to the development of the forecast. The airline consultation and inputs included:

- Detailed input airlines provided to Sydney Airport as part of the New Vision discussions
- Meetings during the preparation of the draft forecasts, and additional meetings following the preparation of the draft forecasts
- Discussion of methodology, assumptions and the draft forecasts. This included discussions of passenger demand, aircraft types, seating densities, load factors, frequencies, peak and off-peak operations, turnaround times, belly-hold freight and other factors
- Meetings with the Board of Airline Representative of Australia (BARA) and the Regional Airlines Association of Australia (RAAA) and the network development teams of Virgin Australia, Qantas Group airlines (Qantas, QantasLink and Jetstar), Regional Express Group (Rex) and Air New Zealand.

Following delivery of the draft forecasts they were peer-reviewed by CAPA Centre for Aviation. CAPA, established in 1990, is the leading provider of independent aviation market intelligence, analysis and data services, covering worldwide developments.

The representative day forecast schedules were prepared by Airbiz in consultation with TFI.

Schedules were prepared for selected years, including 2018 and 2033.

Airbiz is a specialist international aviation consultancy, providing expert advice to airport owners, operators, investors, airlines, government agencies and other aviation stakeholders. The Airbiz team consists of airport and terminal planners, business analysts, aviation marketing specialists, project facilitators, simulation experts and creative strategists. With over 30 years experience in the aviation industry, the Airbiz team has successfully completed over 2000 projects in 50 countries on 5 continents.

Airbiz specialises in various aspects of the aviation business including strategic planning, simulation and modelling, airport operations, terminal design, traffic projections, route development, and planning. Airbiz has offices throughout Australia, New Zealand and Canada.

³ This was calculated as the average of the 7am-8am movements on the busiest day of each month.

⁴ Relatively small numbers of military and emergency aircraft movements occur on an irregular basis at Sydney Airport. These operations are not included in the forecasts and are not subject to the aircraft movement cap under the Sydney Airport Demand Management Act 1997.

A world business partner with the Airports Council International, Airbiz is recognised globally as an aviation industry domain specialist and currently has active airport and aviation projects in Australia, New Zealand, Asia-Pacific, North America, Europe and Africa. In recent years Airbiz has done studies for all the first and second level airports in the region.

As an end user as well as a producer of air transport forecasts, Airbiz is often requested to take annual forecasts and extend these to busy hour runway, stand and terminal passenger demand forecasts. Airbiz prepares synthetic schedules where this level of detail is required.

Forecasts of air freight volumes were prepared by Airport Strategic Consulting (ASC). ASC experts have experience in traffic forecasting, freight and logistics in Australia, Europe and worldwide.

3.2.2 Forecast methodology and assumptions

TFI's approach to forecast development involved a number of steps:

- Top down econometric modelling. Economic factors include gross domestic product (GDP) for the countries contributing visitors to Sydney and Australia, Australian GDP, NSW gross state product (GSP), Australian trade weighted index and exchange rates. TFI utilises forecasts for these variables from the International Monetary Fund (IMF), Organisation for Economic Cooperation and Development (OECD), governments, central

banks and private forecasters such as Consensus Economics. Demographic factors that might impose constraints on demand in the long term include population forecasts for overseas visitor markets, Australia and Australian states and territories

- Development of segment-based forecast models for individual markets and/or routes. Trend assessments and segment models were developed at the route level for the domestic market, and at the country level for the international market
- Review of the fleet orders of airlines and the forecasts of aircraft type by the aircraft manufacturers
- Iterative consultation with the key airlines and their representatives, as described in Section 3.2.1, particularly in relation to aviation factors such as airline capacity, air fares, fuel costs and airline schedules
- Benchmarking of the outputs to forecasts for Sydney (BITRE and the joint study), Australia (BITRE and Tourism Forecasting Committee) and worldwide (aircraft manufacturers, US Federal Aviation Administration, Eurocontrol, UK Department of Transport).

Aircraft movements forecasts were prepared using the passenger forecasts and forecasts for the average numbers of passengers per movement, following consultation with the airlines. Passengers per movement depend on passenger load factors, seating density and aircraft types.

Table 3.1: Passenger forecasts (millions)

	2012	%	2033	%	CAGR
International	12.4	33.5%	29.6	39.8%	4.2%
Domestic	22.5	60.8%	41.5	55.8%	3.0%
Regional	2.1	5.7%	3.2	4.3%	2.1%
Total	36.9	100%	74.3	100%	3.4%

Table 3.2: Movements forecasts ('000)

	2012	%	2033	%	CAGR
International	63.1	19.6%	102.4	25.0%	2.3%
Domestic	165.7	51.5%	211.6	51.7%	1.2%
Regional	64.0	19.9%	74.5	18.2%	0.7%
Freight	7.4	2.3%	9.1	2.2%	1.0%
GA	21.4	6.7%	11.9	2.9%	-2.8%
Total	321.7	100%	409.5	100%	1.2%

Source: TFI

Aircraft movement forecasts are prepared using the passenger forecasts and forecasts for the average numbers of passengers per movement. Passengers per movement depend on passenger load factors, seating density and aircraft types⁵.

Broad assumptions underlying the forecasts used in this Master Plan include:

- Continued strong economic growth during the medium and longer term for China, India and for much of Asia
- Strong growth in the middle classes across Asia
- The delivery of new aircraft types to airlines in Australia that combine fuel efficiency, lower noise profiles and longer range. This factor, combined with the growth in the middle classes, should facilitate an increase in city pair connections across Asia and between Australia and Asia
- A slow economic recovery of the major long haul markets contributing tourists to Sydney and Australia including the UK, Europe and the USA
- An increase in the average number of seats per aircraft movement for Sydney Airport across all traffic segments, international and domestic
- The ongoing development of new passenger markets by LCCs.

3.3 Traffic forecasts

3.3.1 Passenger forecasts

The passenger forecasts for Sydney Airport indicate growth from 36.9 million passengers in 2012 to 74.3 million passengers in 2033. This represents annual average growth rates of 4.2% and 2.9% respectively for international and domestic (including regional) passengers. Annual regional passengers are forecast to grow from 2.1 million in 2012 to 3.2 million by 2033.

Overall, this is an average annual growth of 3.4%.

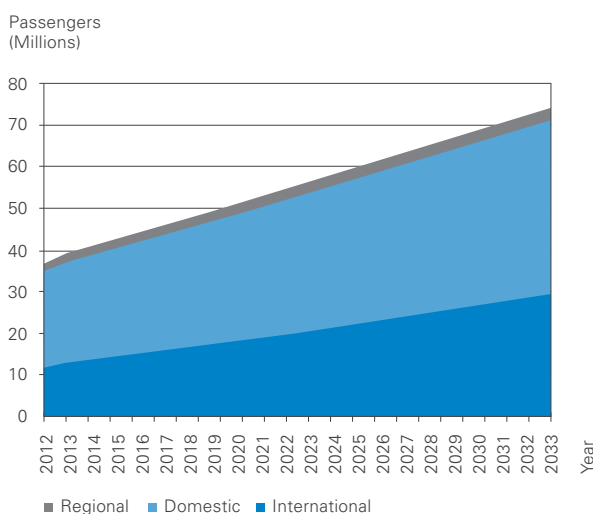
Figure 3.3 shows forecast passenger growth over the planning period to 2033 (also refer to **Table 3.1**).

3.3.2 Aircraft movement forecasts

Aircraft movement forecasts for scheduled passenger operations at Sydney Airport indicate growth from 292,852 movements in 2012 to 388,466 movements in 2033. This represents annual average growth rates of 2.3% and 1.0% for international and domestic (including regional) services respectively. Overall, this represents an average annual growth of 1.4% for passenger aircraft movements.

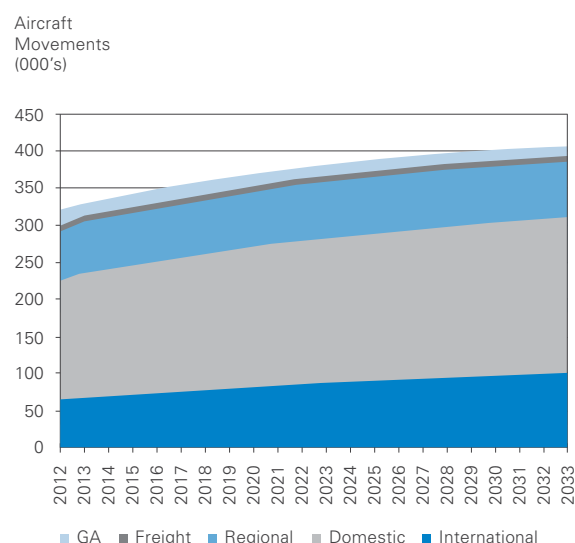
Figure 3.4 shows forecast aircraft movements growth over the planning period to 2033. Total fixed wing aircraft movement growth (including freight and general aviation movements) is forecast to increase to 409,464 movements in 2033 (also refer to **Table 3.2**).

Figure 3.3 Forecast passenger growth, 2012 to 2033



Source: TFI

Figure 3.4 Forecast movements growth, 2012 to 2033



Source: TFI

⁵ A 70% load factor is equivalent to 70 paying passengers on a 100 seat aircraft. Seating density refers to the number of seats on a given size aircraft, which is affected by the number of seats in each row and the distance between each row (eg business class seats have a lower density than economy class seats).

3.3.2.1 Average number of passengers per flight forecast

The lower rate of growth in aircraft movements relative to passengers results from the forecast increase in both passenger load factors and the average number of seats per aircraft movement (aircraft size and seat density) – albeit that passengers per aircraft are forecast to grow more slowly than they have historically. Over the long term, passengers per aircraft approximately doubled in the 20 years between 1966 and 1986, and then approximately doubled again by 2006. By contrast, passengers per aircraft are forecast to increase by approximately 50% over the next 20 years. **Figure 3.5** depicts the historical growth in the average number of passengers per movement over the past 10 years and the projected increase to 2033.

This increase in the average number of passengers per flight is expected to be achieved through increased use of:

- Larger capacity aircraft, such as the Airbus A380 (international), A330, B787 and A321 (domestic) and continued up-gauging of regional aircraft. In addition to the A380, for which 64 movements per day are projected in 2033 (around 6% of total aircraft movements and almost 25% of international passenger aircraft), the forecasts assume a progressive up-scaling in aircraft size across the fleet
- Increased seat density, particularly as a result of the growth of LCCs which frequently operate without premium cabins and provide less leg room for passengers

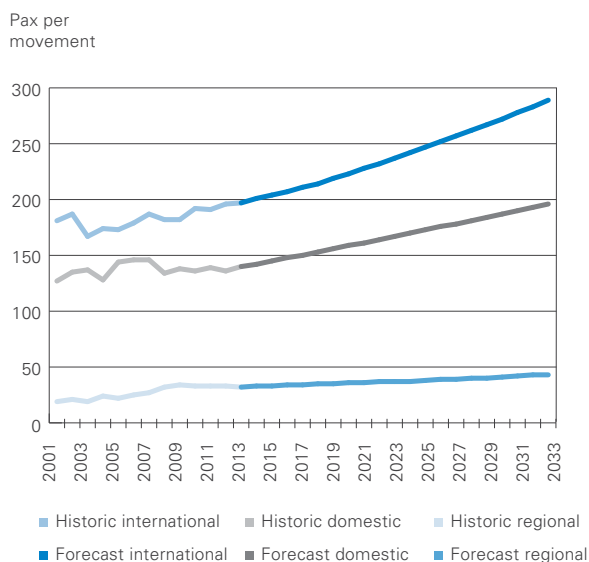
- Further increases in load factors, continuing the international and Australian trends of the past several decades, to levels consistent with today's best practice.

For regional services, the average number of passengers per movement is forecast to grow from 33 in 2012 to around 43 in 2033. The forecast schedule anticipates that regional destinations will continue to be served predominately by turbo-prop aircraft, although by 2033 12% of the movements to regional destinations are expected to be operated by jet services to predominantly leisure destinations. Due to aircraft technology improvements, particularly for jet aircraft, these jet aircraft are no longer materially louder than the much smaller turboprop aircraft they replace.

The airlines that participated in the consultation generally accepted the forecast approach, assumptions and forecasts. During the consultation, the airlines commented that they:

- Expected to see continued increases to seating density across the industry. For example, Qantas has increased the seating density of its A380s, B747s and B717s by 8-19% between 2011 and 2013, and intends to replace B767s with the 20-25% larger A330s
- Expected to increase load factors as yield management systems continue to improve, and were comfortable with the forecast load factors. One airline noted that it hoped to exceed the forecast domestic load factor. The forecast domestic load factors are comparable to the latest Federal Aviation Administration forecasts for domestic load factors in the USA over the next 20 years, and to load factors being achieved by LCCs in Europe and the USA today by airlines such as Jetblue and easyJet
- Expected to continue to increase the size of both the narrow-body fleet (for example, by replacing A320s with A321s) and the wide-body fleet (for example, by replacing B767s with A330s)
- Understood the need to add larger aircraft for Sydney routes during the peak periods given the regulatory cap of 80 movements per hour at Sydney.
- Recognised the opportunity to deploy wide-body aircraft on the domestic trunk routes though they were concerned about use of these aircraft in off-peak periods. Some airlines noted that the ability to use swing gates in the terminal to operate an aircraft domestically during the peaks and internationally during the off-peaks would assist in the deployment of wide-body aircraft. The airlines also recognised that, for the larger leisure routes where frequency is not as important as on business routes (eg Melbourne off-peak and Cairns), the near-

Figure 3.5 Historic and forecast average passengers per movement, 2001 to 2033



Source: TFI

doubling of passenger volumes over the next 20 years would provide a greater opportunity to deploy wide-body aircraft in the future where demand today only supports a narrow-body aircraft.

As an example, the deployment of larger aircraft on the peak business routes could be facilitated in part by the development of the Cairns route with a combination of narrow-body and wide-body aircraft. This could include:

- A 44% increase in frequency from a departure every 2 hours on average to a departure every 80 minutes on average
- A 29% increase in seats per aircraft from 178 to 228, including 8 Code C departures (unchanged from 2012) and 5 Code E departures (an increase from 1 in 2012)
- An increase in passengers per aircraft (including the forecast increase in load factors) of 1.7% pa

While the major aircraft manufacturers have experienced delays in the production and delivery of new aircraft types (eg. the A380 and the B787) due to the challenges of such innovative aircraft designs, the delivery process is now under way. It is expected that, over the next 20 years, these aircraft and others such as the A350s will meet airline demand in a manner that does not constrain passenger growth or airline requirements for narrow and wide-body aircraft.

While the fleet plans of airlines are known in broad terms for a decade ahead, the airlines have significant flexibility and can advance or delay orders and retirements. Nonetheless both major Australian airlines plan to increase the number of wide-body aircraft in their fleets:

- Virgin Australia is expected to increase its fleet of A330-200 aircraft from six to eight over the period to June 2016.
- By 2025 Qantas is expected to have 20 A380s compared to the current 12, and around 30 A330s (including those transferred from Jetstar as it receives its B787-800s) compared to 20 currently. In October 2013 Qantas indicated that it had retained 50 B787-9 options and purchase rights, available for delivery from 2017 to 2025. During the period 2013 to 2016 Jetstar expects delivery of 11 B787-800 aircraft and a further three during 2017 to 2025.

3.3.3 Air freight forecast

The efficient handling of air freight is an important component of Sydney Airport's aviation business. It is estimated that 80% of freight is carried by passenger aircraft with the remainder transported in dedicated freight aircraft.

Total freight is forecast to grow from 615,378 tonnes in 2012 to 1,011,312 tonnes in 2033. This represents an

average annual growth of 2.4%. Forecasts of international and domestic freight tonnages are shown in **Figure 3.6**. Dedicated freight aircraft movements are forecast to grow to 9,086 in 2033 which represents an annual average growth rate of 1.1%.

3.3.4 General and business aviation

In the 10 years to 2011, annual general and business aviation (GA) movements at Sydney Airport averaged 20,881 and remained flat over the period to 21,401 in 2012. Annual helicopter movements averaged approximately 5,500 over the past five years, a reduction from the previous period, but have increased in 2011 and 2012.

The Master Plan forecasts that GA traffic demand will continue to decline at Sydney Airport over the planning period and that helicopter movements will remain around the average level of the past two years. Helicopter movements and the majority of GA movements could also operate from Bankstown Airport at any time during operational hours.

In the long term, there will be increased demand for specialised freight, executive aviation and helicopter activities at other airports and heliports. It is important for a helicopter strategy to be developed for the Sydney market. Sydney Airport's understanding is that the demand for helicopters is tightly centred on the CBD and the harbour, and that most helicopter operators have a strong desire to be able to operate from the CBD rather than from Sydney Airport. Sydney's competitiveness as a tourist and business destination would be enhanced if a suitable location could be found closer to the CBD.

RAAF Base Richmond should be developed for non-core civilian use, including specialised freight, general aviation, helicopters and other aviation activities. Sydney Airport should not be expected to be the primary airport in Sydney for all aviation users, but should focus on international, domestic and regional passenger operations (and related freight).

3.4 Benchmarking of the traffic forecasts

The annual traffic forecasts have been benchmarked against:

- Historic traffic development at Sydney Airport
- Projections from the 2009 Master Plan, the joint study, BITRE and IATA
- Existing large Asian routes at busy airports.

3.4.1 Comparison to historical performance

Sydney Airport is Australia's busiest airport for scheduled passenger services, currently handling approximately 42% of all international and approximately 45% of all domestic and regional passengers.

Table 3.3: Historical and forecast compound annual growth rates (CAGR)

	Passengers	Passenger aircraft movements	Passengers per movement
International			
1992 to 2012	5.1%	3.2%	1.8%
2012 to 2033	4.2%	2.3%	1.9%
Domestic			
1992 to 2012	4.1%	2.0%	2.1%
2012 to 2033	2.9%	1.0%	1.8%
Total			
1992 to 2012	4.4%	2.2%	2.2%
2012 to 2033	3.4%	1.4%	2.0%

Source: Historical data based on BITRE data for fiscal years ending 30 June. Forecast data is calendar year.

In the period from 2000 to 2012, total annual passengers through Sydney Airport increased from 25.2 million to 36.9 million. This represents an average annual growth rate of 3.4%.

Total fixed-wing aircraft movements increased from 291,238 to 321,666, an annual increase of just 0.9%. This marginal increase in aircraft movements reflects a trend to larger capacity aircraft with higher average load factors using the airport.

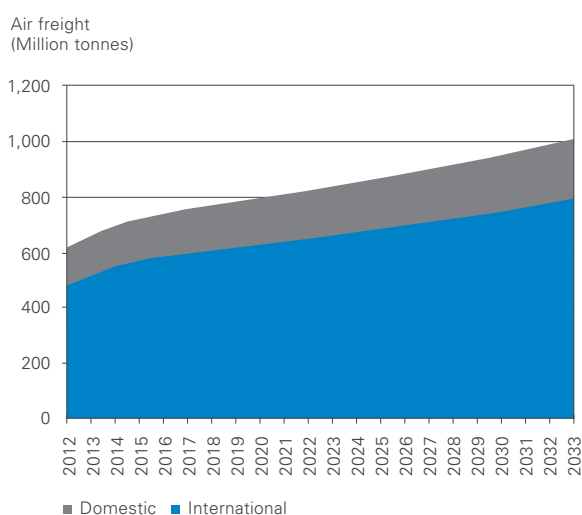
Figure 3.7 shows the growth of passenger and aircraft movements at Sydney Airport over the period from 2001 to 2012.

Table 3.3 compares the historic and forecast growth rates for international and domestic (including regional) passengers, aircraft movements and passengers per aircraft. Passengers, passengers per aircraft and aircraft movements are all forecast to grow less quickly than historical averages.

The passenger growth reflects:

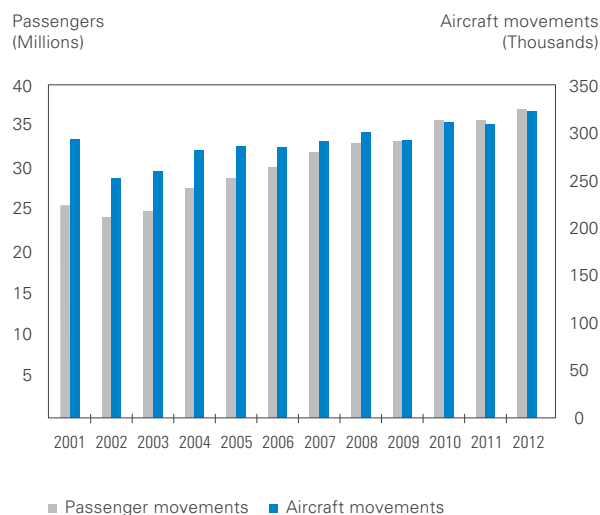
- Increasing competition from a growing number of Asian destinations
- The slowing economic growth in Australia given the declining proportion of the Australian population in the workforce

Figure 3.6 Forecast freight tonnage



Source: ASC

Figure 3.7 Passenger and aircraft movements, 2001 to 2012



Source: TFI

- Growing maturity of the Australian domestic passenger market
- Development of new markets and passenger segments by LCCs and airlines operating new generation aircraft

The main impact of the GFC was to lower the growth traffic over the 2009 to 2011 time period. Longer term GDP (and traffic) growth rates in the Master Plan are similar to the 2009 Master Plan.

The impact of the GFC has been long lasting with recovery still under way in the USA and in UK/Europe. Uncertainty remains about Europe's ability to deal with the debt issues resulting from the GFC. For these reasons there has not been the bounce-back in traffic growth often seen following economic recessions in the past.

- GDP in the USA averaged annual growth of 3.2% prior to the GFC. Forecasts to 2020 are now around 2.0% to 2.5% per annum on average
- GDP in the Eurozone averaged annual growth of 2.1% for the decade to 2007. Forecasts to 2020 average 1.5% per annum
- GDP in the UK averaged annual growth of 3.1% for the decade to 2007. Forecasts to 2020 average 2.0% per annum
- Unemployment remains at high levels in all these areas.

Despite the sluggish nature of the recovery in these major developed economies, oil prices have rebounded, impacting on airlines. In addition the Australian economy has now slowed with the transition from the investment phase of the mining boom moving to the production and export phase. This transition has been associated with lower commodity prices and there is an expectation of a lower Australian dollar into the future.

3.4.2 Comparison to the 2009 Master Plan

Annual traffic forecasts for this Master Plan are lower than those used in the 2009 Master Plan for the period up to 2029. As would be expected, the decrease in overall forecasts is largely a result of the global financial crisis – with 2012 passengers 13% below the forecast for that year in the 2009 Master Plan.

The 2009 Master Plan forecast a total of 78.9 million passengers and 402,000 passenger aircraft movements by 2029. The forecasts prepared for this Master Plan indicate that in 2029 it is expected the airport will be handling 67.0 million passengers (15% below the previous plan) and 379,600 passenger aircraft movements (6% below the previous plan). This also results in a different hourly profile for the busy day (see **Figures 3.10 to 3.12**), with fewer movements in the middle of the day when noise sharing is most likely.

3.4.3 Comparison to other passenger forecasts

Table 3.4 compares the traffic forecasts with other passenger forecasts for Sydney, Asia Pacific and the world. The Master Plan forecasts are broadly consistent with the other forecasts for Sydney Airport, and the Master Plan international growth rates are similar to the forecasts for total world growth.

The latest Airbus global market forecast indicates that low cost carriers will be the fastest growing airlines, increasing their share of world revenue per passenger kilometre (RPK) traffic from 15% in 2011 to 20% by 2031.

3.4.4 Comparison of Sydney-Melbourne in 2033 to large Asian routes today

In preparing the domestic-interstate aircraft movement forecasts it was assumed that the average number of seats per movement on Sydney-Melbourne would grow from 183 in 2012 to 251 in 2033. This was based on a review of interstate routes to/from Sydney.

The result was then compared with the top 15 Asian domestic routes worldwide. Comparing **Figures 3.8** and **3.9**, it is noticeable that:

- Sydney-Melbourne ranks 4th in terms of aircraft seats (and Sydney-Brisbane 8th)
- Sydney-Melbourne ranks only 12th in terms of aircraft size (and Sydney-Brisbane 15th)
- Growth to an average 251 seats per movement in 20 years for Sydney-Melbourne would still be outside the top 5 for today's Asian routes.

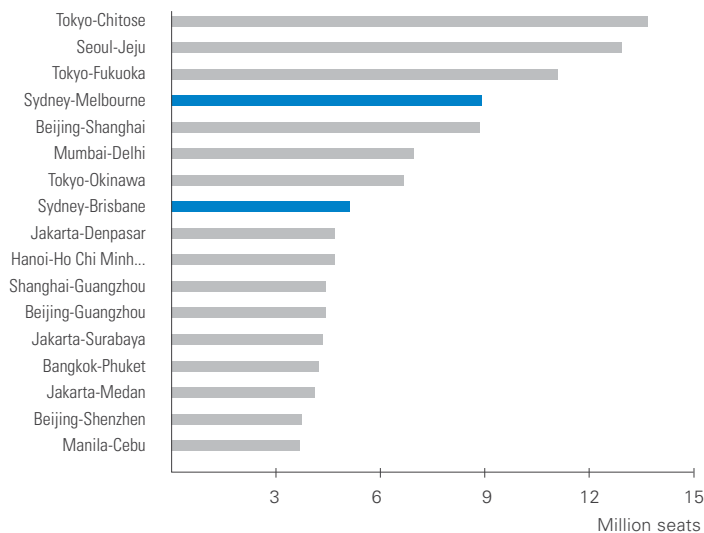
This indicates that there is significant scope for an increase in average aircraft size at Sydney Airport and that the forecast increase is supported by experience elsewhere in Asia.

3.4.5 Comparison of 2013 traffic results to passenger forecasts

As at November 2013, passengers and regular public transport aircraft movements are expected to be approximately 3% below the Master Plan forecasts, which were prepared in mid-2012. Both domestic airline groups have stated that they expect Australian domestic traffic growth of 1-2% pa for the next few years, below the domestic traffic forecasts for Sydney in this Master Plan. This reflects both the re-establishment of a domestic duopoly (with each airline group comprising a full service and low cost airline) and lower demand.

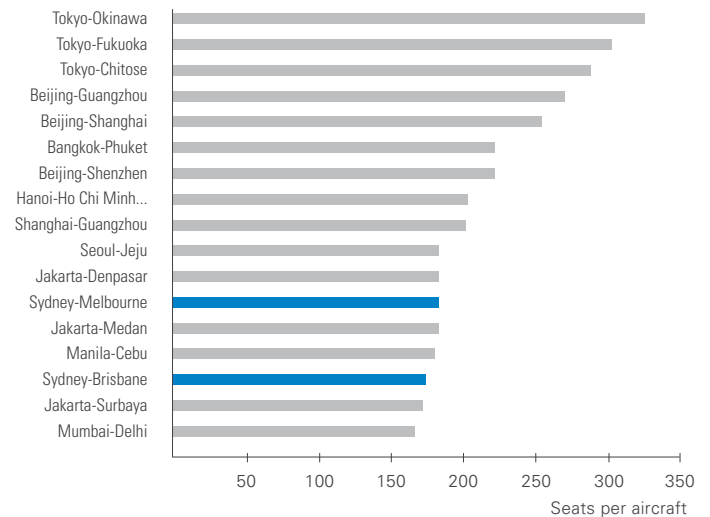
Traffic forecasts always include a degree of uncertainty. In isolation, these factors would suggest that traffic is more likely to be lower than the forecasts rather than higher, particularly for domestic traffic. However, the Master Plan forecasts for 2033 remain appropriate for the preparation of a long term development plan.

Figure 3.8 Top Asian and Sydney Airport routes based on annual seats in 2011/12



Source: TFI

Figure 3.9 Top Asian and Sydney Airport routes based on annual seats in 2011/12 – ranked by seats per aircraft

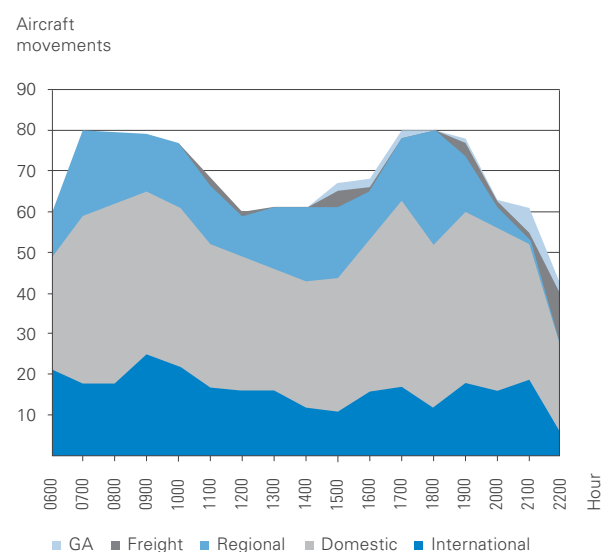


Source: TFI

Table 3.4: Comparison of traffic forecasts

PDMP: Sydney 2010-2030	
- International	4.4% pa
- Domestic	2.8% pa
- Total	3.4% pa
Joint study: Sydney 2010-2030	
- International	4.1% pa
- Domestic	2.8% pa
- Total	3.2% pa
BITRE: Sydney 2010-2030	
- International	4.5% pa
- Domestic	3.1% pa
- Total	3.6% pa
ICAO: world 2010-2030	
- Low	3.7% pa
- Most likely	4.7% pa
- High	5.2% pa
ACI / DKMA: world 2010-2029	
	4.1% pa
Airbus: world 2012-2031	
	4.7% pa

Figure 3.10 Forecast representative busy day hourly aircraft movements, 2033



Source: Airbiz and TFI

As discussed in Chapter 4, the development plan included in this Master Plan is the best plan for infrastructure development for a wide range of traffic developments. Traffic growth that is significantly different to the forecasts would predominantly result in changes to the development timetable and phasing rather than the development plan itself.

3.5 Representative days and noise sharing

A representative busy day schedule was developed for 2033 for use in assessing facility requirements. This was based on a busy Monday in August selected as a representative busy day for Sydney Airport. This is consistent with previous airport master plans and with the practice of the slot coordinator for Sydney Airport.

The representative busy day analysis assessed:

- The operational suitability of an aircraft type for a given route network
- The aircraft rotations compatible with a high level of utilisation
- The use of commercially feasible arrival and departure timings throughout the network
- All regulatory requirements

Figure 3.10 shows the forecast representative busy day hourly aircraft movement profile for 2033 broken down by flight category. This covers Sydney Airport's normal 17-hour operating day between 6am and 11pm, as well as a small number of international passenger aircraft arrivals in the 5am-6am curfew shoulder period. During the 11pm-6am curfew period, permitted freight and GA aircraft movements are projected to be four and

18 respectively. In 2011, a representative busy day (9 August) had 24 movements by freight and GA aircraft collectively. It is expected that NSW regional air traffic at Sydney Airport will continue to account for a substantial proportion of slots in the peak hours in 2033.

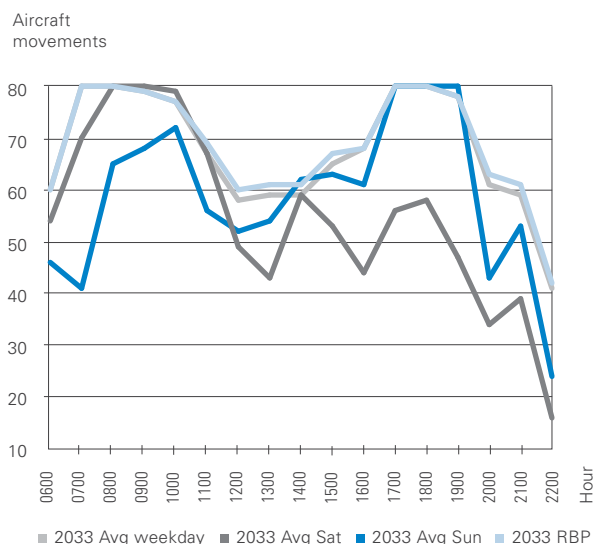
Figure 3.11 compares the representative busy day with an averaged weekday, Saturday and Sunday. The averaged weekday is lower outside the peak hours than the representative busy day. The averaged weekend days show different peak patterns, due to the reduced domestic business traffic over the weekend and increased leisure traffic.

Based on current and historic practice, overall runway capacities for noise sharing modes are within a range of 55 to 70 movements per hour (dependent on the weather). Expert noise consultants have demonstrated that the noise sharing modes can continue to be used throughout the planning period. The estimated times of the day during which noise sharing modes would be available in 2033 on the projected representative busy day include periods in the early morning, middle of the day and evening, as shown in Section 14.2.1.

The forecast number of aircraft movements per hour in 2033 is lower than was forecast for 2029 in the 2009 Master Plan, particularly during the hours when there is the greatest potential for noise sharing. This is shown in **Figure 3.12**.

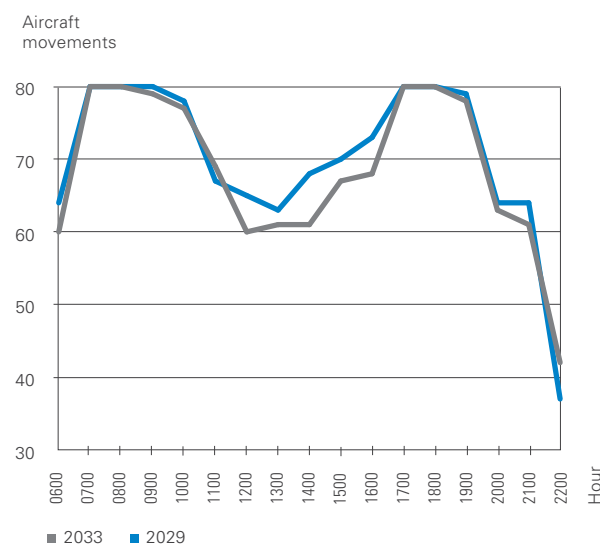
Modernisation of the operational regulations that govern Sydney Airport, as recommended by the joint study, could reduce the number of aircraft movements during the off-peak and increase the potential for noise sharing.

Figure 3.11 Representative busy and typical days, 2033



Source: Airbiz and TFI

Figure 3.12 Comparison with 2009 Master Plan forecasts



Source: Airbiz and TFI



**Sydney
Airport**

The right future.
Starting now.



An aerial photograph of an airport terminal and surrounding runways. The terminal is on the left, with several aircraft parked at gates. Runways and taxiways extend across the middle of the image. In the background, there's a body of water and a city skyline under a bright sky. The number '4.0' is overlaid in large white font in the center-right area.

4.0

**DEVELOPMENT
PLAN OVERVIEW**

4.0 DEVELOPMENT PLAN OVERVIEW

Key points

- The development plan:
 - Benefits all passengers through the more balanced use of the airport's roads, terminals and airfield
 - Increases the productivity, flexibility and capacity of the airport
 - Results in significantly improved road and intersection performance in and around the airport in 2018 and 2033
 - Includes new major international terminal infrastructure to be developed north of Terminal 3; resulting in up to 16 additional A380 type international contact gates – almost doubling¹ the number of A380 gates from previous master plans
 - Includes the capability to deliver up to 30 swing gates across the terminals that can be used for international and domestic/regional aircraft
 - Preserves the Terminal 1 international freight and aviation fuel facilities on-airport, providing increased long term certainty, which will support investment in productivity and capacity
 - Enhances the airfield safety and efficiency, and therefore improves on-time performance
 - Will reduce the number of inter-precinct transfers by 65% and improves the transfer passenger experience for the remaining 3% of passengers who transfer inter-precinct
- The development plan is the result of extensive consultation with stakeholders to understand their priorities:
 - The details of the development plan can be further refined to reflect changing airline needs, new technology and ongoing operational improvements
- The development plan presented in this Master Plan is designed to ensure Sydney Airport can facilitate the growth of tourism and trade well beyond the 2033 horizon of this Master Plan, within the existing regulatory framework



The development plan in the Master Plan is the best infrastructure plan for the airport as it can accommodate a wide range of future air traffic scenarios and benefits all passengers.

As Australia's largest airport and its major international gateway, Sydney Airport will remain the premier airport for passengers and freight servicing Sydney, NSW and Australia. For this reason, it is important to optimise the use of Sydney Airport by ensuring that it operates safely and efficiently and can grow to its maximum practical operational capacity.²

Sydney Airport's development plan included in this Master Plan is based on the following objectives for the airport:

- Maintain a safe, secure and reliable airport operating environment
- Provide for an improved quality customer experience for the travelling public and airport visitors
- Plan and develop airport capacity to cater for the forecast growth and in a manner that provides greatest flexibility and adaptability to meet airline, passenger and other stakeholder requirements
- Operate and develop the airport to enhance and optimise the productivity and efficiency of existing and new infrastructure
- Be a sustainable business which is a valued member of the community and a key economic driver for Sydney, NSW and Australia

1 The 2009 Master Plan included 18 A380 type international contact gates

2 Joint study "Key Findings and Directions", pages 6 and 9-10



- Operate the airport in an environmentally sustainable and responsible manner

The development plan is designed to ensure that Sydney Airport will continue to facilitate the growth of tourism and trade well beyond the 2033 horizon of the Master Plan.

This Master Plan (including the Airport Environment Strategy) complies with all relevant laws (including the Airports Act). The Master Plan is consistent with Sydney Airport's obligations under existing leases, including those in respect of the environment, development, planning and building works.

The development plan establishes the strategic direction of the airport. It was developed following extensive consultation with the airlines and other stakeholders to understand their priorities, and will continue to be refined to incorporate new technologies, improvements as they are identified, and changing priorities.

The development plan for two integrated international, domestic and regional terminal precincts is a key feature of this Master Plan. Creating integrated terminal precincts rather than retaining the existing segregated terminal precincts will ensure Sydney Airport has the ability to be responsive and flexible in the future development and use of its facilities. This flexibility enables it to accommodate an ever-changing landscape of airlines and associated passenger services.

In particular, the ability to share swing gates between international and domestic/regional aircraft operations provides Sydney Airport with significant advantages. It enables Sydney Airport to respond to fluctuations in actual demand between international, domestic and regional airline operations. By making this fundamental step change, the development plan is, to a large degree,

future proofed against variances in the forecast market share between international, domestic or regional services over the planning period.

Sydney Airport has also undertaken a sensitivity analysis to understand how the development plan responds to differing levels of demand, particularly in relation to aircraft gauge. This analysis demonstrates that the development plan is able to respond to and accommodate a wide range of demand forecasts and is superior to previous plans under a wide range of demand scenarios.

The development plan:

- Creates integrated precincts with terminals and aprons for international, domestic and regional passenger operations, including development of swing gates that can be used for international and domestic/regional passengers at different times during the day
- Provides for the development of multiple engineering precincts which may accommodate multiple airlines in the long term
- Optimises the use of the total land area, by expanding the terminal facilities into the area north of Terminal 3 (T3) and north east of Terminal 2 (T2)
- Preserves on-airport freight in both the Terminal 1 (T1) and T2/T3 precincts
- Preserves future terminal expansion areas for capacity expansion beyond the 20 year master planning period
- Provides additional aircraft stand capacity, enabling it to be implemented in a staged and controlled manner
- Provides for improvements in airfield infrastructure to facilitate safe and efficient aircraft movements

- Provides layover apron capacity to meet the respective terminal demand on the same side of the main runway, reducing substantially the need to tow aircraft across the main runway
- Creates transport interchanges, well located to the terminal precincts, to facilitate fast, affordable and reliable access to multiple transport options
- Includes a number of road traffic improvement projects
- Incorporates sustainable environmental initiatives into the new terminal developments

Once complete, the development plan will meet a wide variety of user needs by:

- Significantly improving the door-to-door passenger experience, including improved traffic flows on roads in and around both terminal precincts
- Enhancing efficiency on the airfield and in the terminals through taxiway enhancements, the development of dual taxiway aprons and the provision of terminal swing gates
- Using swing gates to maximise flexibility across the day, week and year to meet changing aviation demand, thus embedding adaptability within the development plan
- Minimising the need for the disruptive towing of aircraft across the main runway
- Increasing the apron and terminal capacity of the airport within the planning period, particularly for large aircraft such as the A380, as well as preserving future zones for expansion of terminals and aprons beyond the planning period
- Increasing the ground transport capacity within the airport precinct and the capacity of road intersections at the entry and exit points of the precincts
- Improving the international, domestic and regional passenger experience and connectivity by reducing the need for inter-precinct transfers for connecting passengers
- Retaining the existing freight precinct adjacent to T1, which facilitates the current access to aprons and improved landside access which are delivered as part of the overall ground transport plan
- Making allowance in areas east of T2 and north of T3 for new freight facilities to cater for the relocation of any existing freight facilities, impacted by terminal developments, that need to access passenger aircraft operations
- Allowing for additional areas to facilitate existing or new logistics activities in the airport's South East Sectors and Northern Airport precinct

- Retaining the existing aviation fuel facility adjacent to T1, including allowance for additional fuel infrastructure
- Providing the required sites for development of engineering facilities in the mid-field South East Sectors and in the North East precinct adjacent to the proposed terminal development. The proposed sites meet the requested demand and will improve the operation of the airfield by reducing the need for towing aircraft across the main runway

The development plan does not include any sensitive developments as defined under section 71A of the Airports Act.

4.1 Overview of the development plan

Central to the development plan is the development of a new international terminal to provide significant international contact gate capacity. The primary features of the development plan are:

- Both T1 and T2/T3 precincts will be expanded, with the largest expansion to the north of T3 and east of T2
- Both T1 and T2/T3 precincts will become integrated terminals for international, domestic and regional airlines
- T2 and T3 will be integrated by linking the two terminals
- Both precincts will include swing gates which can be used for either international or domestic/regional operations at different times of the day
- Existing aviation fuel facility locations can be retained for the period of the Master Plan
- The existing T1 freight precinct can be retained for the period of the Master Plan
- The South East and North East Sectors of the airport will be developed to accommodate additional apron parking and engineering facilities
- Taxiway extensions and significant airfield developments, including the extension of Taxiway B to the east of the main runway

The indicative airport layout plan is set out at **Figure 4.2**.

More detail is provided in Chapters 5 to 12, with information on the staging of the development in Chapter 15. In addition, the development plan includes road and other land transport improvements, which are illustrated in Chapter 7.

4.2 Benefits of the development plan

The development plan makes the most of the airport by enhancing the passenger experience, increasing airline efficiency and maximising infrastructure productivity.

The development plan for Sydney Airport in this Master Plan is considered superior to those in previously approved master plans under a wide range of demand scenarios. The benefits of the development plan in this Master Plan arise from a number of areas, including those discussed below.

4.2.1 All passengers will benefit from the more balanced use of the airport's roads, terminals and airfield

The integration of international, domestic and regional terminals results in a more even distribution of activity across the airport and improves the experience for all passengers.

Today during some peak hour periods it is common to have 80% of aircraft movements in the T2/T3 precinct with only 20% occurring in the T1 precinct. This development plan rebalances this activity to an improved 66:34 split.

Similarly, there is an imbalance today in the total number of annual passengers handled in each precinct, with 66% occurring in the T2/T3 precinct and 34% in the T1 precinct. Under this development plan this improves to a more balanced split of 57:43.

The more balanced activity will benefit all passengers by reducing congestion on the roads, taxiways and runways, and in the terminals.

4.2.2 Introduction of swing gates increases the productivity, flexibility and capacity of the airport

The development plan includes the capability for up to 30 swing gates. The introduction of swing gates will make more productive use of the existing and proposed infrastructure, and increase the ultimate capacity of the

airport. Swing gates are facilities where a single aircraft stand can flexibly accommodate international and domestic/regional aircraft at different times, often by the aerobridge link and ramps being able to serve three levels of the terminal (for domestic, international arrivals and international departures).

The development plan takes advantage of the different peaks in the international and domestic/regional operations to increase the efficiency of use of the facilities. As shown in **Figure 4.1**, there is no overlap between the busiest three international hours and the busiest four domestic/regional hours.

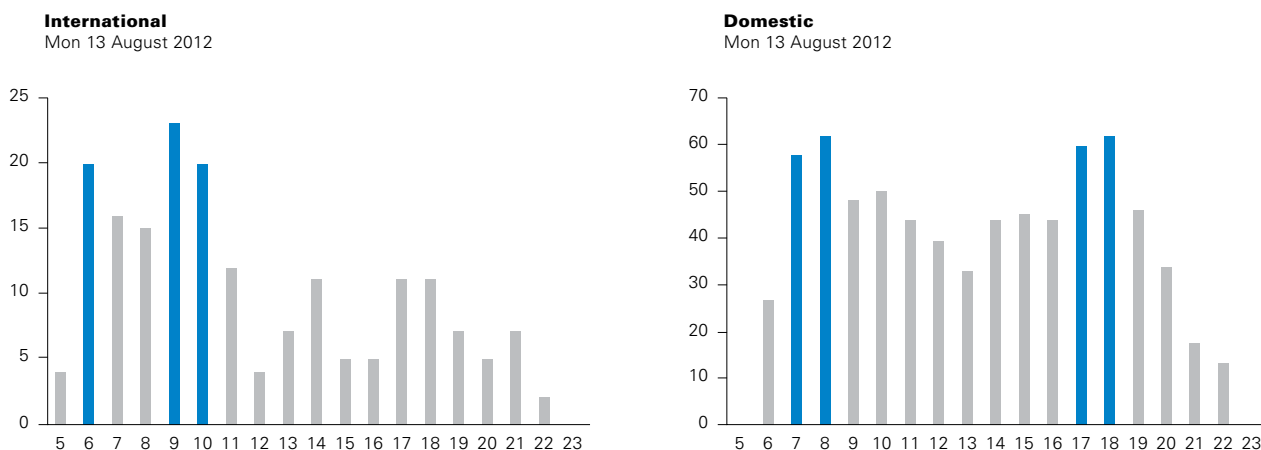
Swing gates also provide substantial flexibility for variations in the market share of international and domestic/regional services over the planning period. They enable airlines to mix their international and domestic fleets. For example, an aircraft could arrive from a domestic route in the morning peak and depart during the off-peak to an international destination, providing airlines with more flexibility for route planning, and facilitating the introduction of larger domestic aircraft.

Figure 4.3 shows an example of the swing gate potential at T1, with the swing gates shown as the locations where the red and blue lines overlap.

4.2.3 International A380 contact gate capability is almost doubled

The expansion of T3 to the north and T2 to the east provides the potential to deliver 16 more A380-type contact gates than under the previous 2009 Master Plan. In addition to providing substantial potential for future capacity, the additional contact gates will reduce or eliminate bussing of international passengers between the aircraft and the terminal.

Figure 4.1 International and domestic busy day aircraft movements by hour



Source: Sydney Airport

Figure 4.2
Development Plan

This drawing has been prepared to illustrate the Sydney Airport Master Plan and is not intended to serve any other purpose. The drawing must be read in conjunction with the Master Plan.

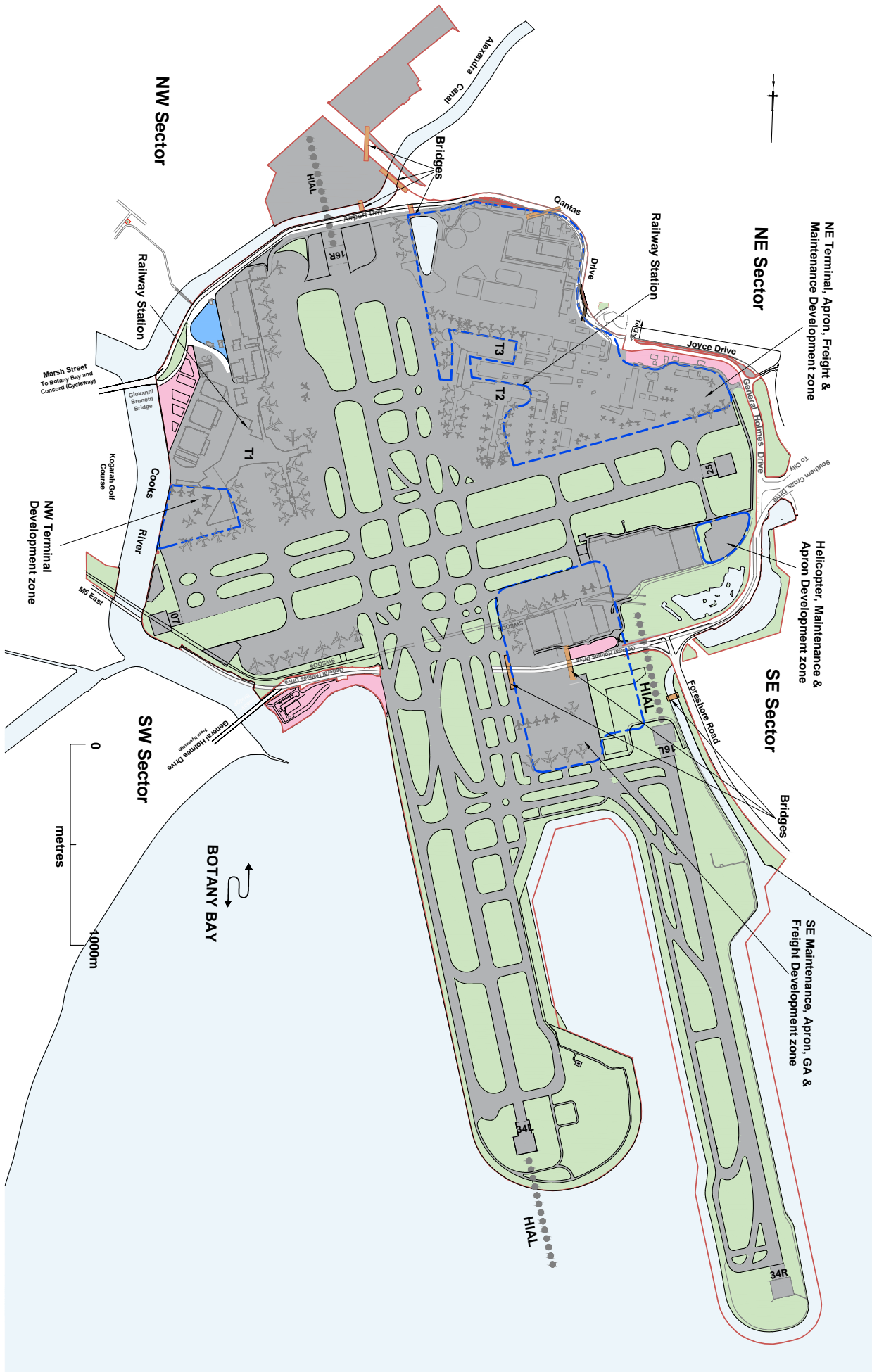
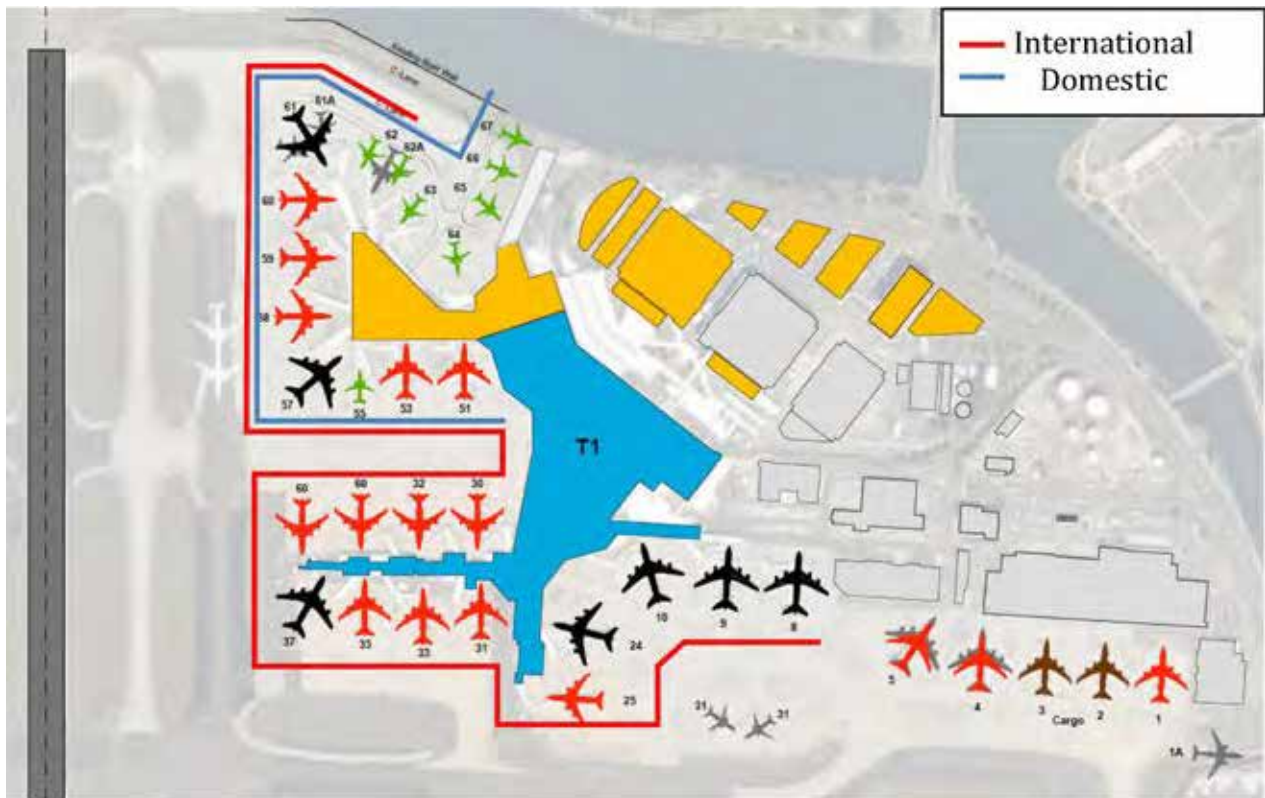


Figure 4.3 Example of potential T1 swing gate capability



4.2.4 The development plan is designed to facilitate improved ground transport access

The proposed ground transport solutions will result in better road and intersection performance in 2018 than today and comfortably support the forecast traffic associated with the airport. These solutions were developed in consultation with the NSW Government transport agencies, and complement the broader state infrastructure strategy prepared by Infrastructure NSW.

The creation of integrated international, domestic and regional terminal precincts will also result in a substantial reduction in the number of passengers transferring by road between the terminal precincts. In addition it will result in a better distribution of road traffic across the terminal precincts because of the complementary nature of domestic and international arrival and departure peaks.

Sydney Airport is working closely with the NSW Government and is advocating for improved public transport access to the airport. In the short term, we advocate for removal or reduction of the station access fee and new bus routes (the benefits of which are not relied upon in this Master Plan but if implemented would result in further improvements), and traffic flow improvements on O'Riordan Street and Robey Street as well as the widening of Joyce Drive and General Holmes Drive.

4.2.5 The development plan is designed to improve airfield safety, efficiency and on-time performance

Towed aircraft crossings of active runways will be substantially reduced due to the location of engineering facilities and layover aprons relative to the terminals. Reduced towed aircraft runway crossings provide the opportunity for improved airline on-time performance, reduce delays, reduce carbon and air emissions, and enhance safety.

The proposed extension of Taxiway B to the south will also enhance airfield efficiency and eliminate the need for jet aircraft operating at the T2/T3 precinct to cross the main runway for departures to the north. The modelling indicates that the remaining powered runway crossings, including from T1 to Runway 16L/34R, has no impact on the airport capacity and does not generate taxiway congestion.

Other airfield enhancements, designed in consultation with Airservices, will relieve the existing and potential points of congestion, and ensure that aircraft are able to taxi between the runways and terminal aprons without delay. The Civil Aviation Safety Authority (CASA) has confirmed the airfield will comply with Manual of Standards Part 139 (MOS139).

4.2.6 The development plan will improve the transfer passenger experience

Creating integrated terminal precincts where international, domestic and regional services are co-located will make the passenger transfer process simpler, easier and faster for passengers, and will provide the opportunity for improved airline on-time performance.

There are forecast to be 7.1 million domestic-international transfer passengers² in 2033. By mixing international and domestic/regional passengers within integrated terminals, the development plan reduces the forecast inter-precinct transfer passengers to 2.5 million. As a result 4.6 million transfer passengers will no longer have to travel from one side of the airport to the other.

The remaining inter-precinct transfer passengers will represent approximately 3% of total passengers – an average of 15 departing passengers each way every 10 minutes. These passengers will benefit from an airside corridor linking the T1 and T2/T3 precincts (currently only Qantas provides an airside transfer link).

4.2.7 The development plan is designed to support growth of the already significant contribution to the economy and tourism made by Sydney Airport

The development plan will grow Sydney Airport's contribution to tourism, jobs and the economy. As noted in Chapter 2, direct and indirect activity at Sydney Airport generates and facilitates the equivalent of 6% of the NSW economy and generates almost 300,000 jobs. Growth of the airport will increase this contribution – for example with an additional daily A380 service from China contributing an estimated \$388 million to Australian GDP, \$233 million to Australia's household income, and 5,000 jobs.

The development plan, by improving airline efficiency and ensuring sufficient airport capacity, will support the growth of Sydney Airport's contribution to the economy and tourism. It also improves the transfer process between regional and international flights.

Further, the new aircraft engineering facilities will allow for retention and up-skilling of aircraft engineering and support jobs in Sydney.

4.2.8 The development plan is the best proposal

Independent modelling by Airbiz (undertaken in consultation with Airservices Australia and peer reviewed by Landrum and Brown) confirms that the development plan has sufficient airfield capacity and aircraft stands to accommodate forecast demand, under a variety of air traffic scenarios. The Airbiz modelling also demonstrates the productivity, flexibility, capacity and other benefits of the development plan.

While other infrastructure proposals could deliver some benefits, the development plan is able to meet a broader range of objectives and provide benefits to all passengers. For example, retention of the existing segregated terminals would:

- Require approximately three times as many passengers to transfer between terminal precincts, and even with an expensive airside transfer system for passengers, would not enable the efficient transfer of bags between international and domestic flights
- Require the removal and relocation of the existing aviation fuel and international freight facilities
- Result in many international passengers being bussed to their aircraft
- Require continued towing of international aircraft across active runways, reducing airfield safety and efficiency and reducing on-time performance
- Provide no flexibility for changes in actual demand between international, domestic and regional airline operations

2 3.5 million arriving and 3.5 million departing transfer passengers





**Sydney
Airport**

The right future.
Starting now.



5.0

TERMINAL DEVELOPMENT PLAN



5.0 TERMINAL DEVELOPMENT PLAN

Key points

- The development plan in the Master Plan includes the expansion of terminal infrastructure, creating integrated terminals for international, domestic and regional passenger operations in the North East (today known as the Qantas Jet Base) and North West Sectors
- Two expanded integrated terminal precincts servicing a mix of international, domestic and regional passengers will:
 - Provide a more even distribution of activity across the airport
 - Optimise the use of terminal infrastructure by introducing swing gates that can accommodate international and domestic/regional aircraft
 - Be capable of delivering up to 30 swing gates across the terminal precincts
 - Be capable of delivering 16 additional A380 contact gates, almost double the number in the 2009 Master Plan, by developing new infrastructure north of Terminal 3 and east of Terminal 2
 - Maximise airport capacity over the planning period by developing enhanced terminal apron and airfield infrastructure to increase efficiency and throughput
 - Improve the door-to-door experience for all passengers, including enhanced ground transport access
 - Improve passenger connectivity by reducing inter-precinct transfers
 - Enhance airline efficiency in the terminal by reducing minimum connection times and improving aircraft utilisation
 - Increase the flexibility of the infrastructure to respond to changing airline business models
- Investment in next-generation technologies will enhance the passenger experience, improve total journey times and increase the efficiency of passenger processing



The terminal development plan provides almost double the A380-type contact gate capability at Sydney Airport, and is capable of delivering up to 30 swing gates that can service international and domestic/regional aircraft

Sydney Airport has developed a plan that is flexible and adaptable in order to meet passenger expectations and the changing requirements of its airline partners. This will ensure that Sydney Airport remains Australia's international gateway and continues to attract global aviation business.

After significant consultation with stakeholders' the Sydney Airport development plan reconfigures and expands the existing terminals and precincts to create two integrated terminal precincts for international, domestic and regional operations.

Sydney Airport has demonstrated that the proposed terminal plan can accommodate the projected passenger, aircraft and ground transport traffic flows over the planning period.

The passenger experience will be improved through enhancements to ground transport, terminal and



passenger processing facilities. In particular those transferring between international and domestic/regional flights will benefit from improved connectivity with a 65% reduction in the total number of inter-precinct transfer passengers by 2033, providing a single terminal experience for 97% of passengers. An inter-precinct airside transport corridor will be provided for the remaining 3% of passengers requiring inter-precinct transfers in 2033, equating to less than 6,800 passengers per day.

The development plan includes dedicated transfer lounges for these passengers as well as maintaining alternate landside transfer options.

The terminal plan also delivers other tangible improvements through enhancement of the multimode transport facilities in the terminal precincts to provide airport user access to reliable transport options. Further information is provided in Chapter 7.

One of the key benefits of the development plan is the ability to service aircraft demand through the use of swing gates that can accommodate both international and domestic/regional aircraft in each of the two terminal precincts. This provides the airport the ability to easily respond to fluctuations in actual demand between its international, domestic and regional operations.

By facilitating Code F international aircraft (such as the A380) operations in the North East Sector as well as the current North West Sector, Sydney Airport will have the ability to deliver almost twice the Code F contact gates compared to the previous master plan and deliver the ability to facilitate Code F aircraft well beyond the Master Plan planning period.

Further, the ability to provide swing gates at both of the proposed terminal precincts provides additional opportunities to efficiently increase Sydney Airport's capacity to handle the growing demand for Code E (such as A330 and B787) aircraft. Where feasible the larger gates will also be configured to accommodate multiple smaller aircraft, so if demand presents differently, multiple smaller Code C aircraft (such as A320 and B737) can be accommodated on the same infrastructure.

Significant improvements will be made to the road flows in and around both terminal precincts as a result of the reconfiguration and expansion of the terminal facilities. The rebalancing of passenger numbers as outlined in Chapter 4 between the terminal precincts is predicted to ease congestion inside and outside the terminals.

The proposed development plan for the expansion of the terminals will:

- Improve the experience for all passengers through enhancements to ground transport, terminal and passenger processing facilities
- Improve service levels through the provision of additional contact gate capacity
- Increase the capacity and flexibility of the two terminal precincts to accommodate larger Code E and F aircraft on contact gates
- Reduce transfer times and promote the efficient use of infrastructure through mixing of international, domestic and regional passengers

- Improve gate utilisation, flexibility and increase airline aircraft utilisation by incorporating swing international/domestic/regional gates
- Enhance and maximise flexibility of existing facilities and infrastructure by promoting common use principles while supporting specific product differentiation requirements from our airline partners
- Increase the flexibility to accommodate multiple smaller aircraft on larger category/code stands
- Adopt new technologies for passenger processing to improve the passenger experience and reduce processing times
- Integrate sustainable technologies, design and operations that deliver environmental solutions, particularly energy and water efficiencies, and enhance passenger experience and comfort

Significant benefits from reduction in inter-precinct transfers

The current system of inter-precinct transfers has the potential to impact on airport operations in a number of ways. On the airfield, the current transfer process may contribute to delays to aircraft flight schedules given the time required for passengers and bags to move between the precincts. In addition, millions of people transferring landside during the peak periods each year contribute to road congestion in and around the airport.

Some airlines provide a passenger transfer operation between the terminal precincts. Passengers not travelling with these airlines currently use the Sydney Airport TBus or public transport modes such as rail, bus or taxi to transfer between the domestic and international precincts.

A primary benefit of the terminals plan is the reduction in inter-precinct transfers. The ability to transfer passengers and baggage within the same terminal facility is considered to be the most reliable, convenient and efficient method of transfer, reducing the minimum connect time to transfer passengers between flights.

Under this Master Plan the number of inter-precinct transfer passengers is projected to reduce by 65% to approximately 3% of all passengers in 2033, due to the benefits of creating the integrated precincts. In the absence of the two integrated precincts it is forecast that inter-precinct transfers would increase to approximately 7.1 million in 2033¹.

5.1 Inter-precinct transfer process improved

While the vast majority of transfers will be intra-precinct under the development plan, an airside transfer product is proposed for the 3% of passengers and baggage still requiring an inter-precinct transfer.

An airside transport corridor is proposed between the terminal precincts, which will be able to accommodate buses or other modes of transport. Transfer lounges are proposed in each terminal precinct. An airside inter-precinct transfer product provides a reliable service as well as avoiding the need for passengers to be processed twice.

The existing landside pedestrian links to the international and domestic train stations and between Terminal 1 (T1) and Terminal 2/Terminal3 (T2/T3) respectively are planned to be maintained and enhanced.

Sydney Airport will work with the NSW Government and the private infrastructure owners of the airport rail link stations to investigate options that could be undertaken to make better use of the existing rail link between T1 and T2/T3.

5.1.1 Enhanced landside services and facilities associated with T2/T3

The concept is designed to provide for the connection of the integrated terminals to a redeveloped ground transport interchange, expanded multi-level car parking facility, hotel and other commercial buildings.

These improvements in passenger facilitation are expected to contribute to enhancing the overall passenger experience at Sydney Airport. Further details on ground transport and commercial developments are provided in Chapters 7 and 10 respectively.

5.2 Proposed terminal plans

This section provides details of the proposed future terminal developments at Sydney Airport.

Efficiency improvements including the introduction of new technologies and service systems are expected to occur over the next few years, offering passengers greater choice and improved service level standards. Such systems are also envisaged to assist airlines in offering product differentiation and achieve operational efficiencies.

The terminal developments are proposed to be equipped with the technology required to offer improved passenger facilitation and choice. The security and border control facilities are likely to also see ongoing improvements in technology and automation which should facilitate improvements in efficiency and passenger processing times.

In the same way that automation and technology improvements are seen as important customer service initiatives, the advent and roll-out of these systems also provides greater opportunity to achieve improved building floor space efficiencies and minimise the requirement to undertake capital-intensive terminal expansions.

¹ 3.5 million arriving transfer passengers and 3.5 million departing transfer passengers

5.2.1 Terminal 1 plan – international, domestic and regional passenger precinct

Under the proposed terminal plan, domestic and regional aircraft operations will be incorporated into T1.

The plan provides for changes to the terminal infrastructure, improvements to passenger facilitation and supports the changing needs of airline partners.

Changes to terminal infrastructure

- Reconfiguration of the existing T1 Pier C to facilitate handling of international and domestic/regional passengers
- Development of a new terminal pier by extending T1 to the south west to provide additional capacity and flexibility
- Development of international-domestic swing gates, while meeting passenger segregation requirements
- Development of multiple-aircraft ramp system (MARS) gates that can service multiple aircraft types
- Apron reconfiguration to cater for the greater variety of operating aircraft, including implementation of a dual Code C taxiway to increase the handling capacity and enhance safety for domestic and regional aircraft operation
- Improved contact gate capacity across the airport to accommodate the larger international Code F aircraft and increased flexibility to accommodate the up-gauging of domestic aircraft to Code E

Passenger facilitation improvements

- Additional passenger and baggage processing facilities
- Segregated security processing for international and domestic/regional passengers
- Improved check-in systems
- Infrastructure to streamline domestic and regional passenger flows and processing
- Opportunities to share terminal infrastructure between international and domestic/regional operation
- More efficient use of gates for passengers

Supporting aircraft utilisation and airline service delivery

- Accommodating airline product differentiation
- Improved capacity of the terminal to accommodate contact gates, minimising the need to bus aircraft, particularly in peak periods

Departing passengers plan

The development plan allows departing passengers to directly access the terminal from new multi-level car

parking facilities. Multiple public transport options are also provided, with facilities in close proximity to the terminal.

Provision is included for the introduction of new technology check-in facilities, reducing the future growth in demand for development of more traditional check-in counters. Introduction of domestic and regional passengers into T1 is likely to see a change in demand for check-in facilities. Efficiencies and improved processing rates at the check-in are likely to require provision to be made for expansion of the baggage handling system.

The layout provides for enhanced emigration and security facilities to manage future international passenger demand, including the use of new technologies assisting border control processes. All current known security requirements, such as body scanning, have been taken into account in the proposed terminal plans. Any future security requirements involving passenger or non-passenger screening point design including enhanced inspection points, changed technology, screening facilitation or intervention rates could result in different spatial outcomes, although it is envisaged that any such different spatial outcomes should be able to be accommodated within the proposed expanded footprints of the terminals.

An additional domestic screening point is envisaged to facilitate domestic and regional passengers into a segregated domestic/regional airside zone.

Once through security, it is planned that all passengers will proceed through to retail area offerings, other services, airline lounges and gate lounges.

Arriving passengers plan

The separation of arriving and departing international passengers is planned to continue in order to meet security and border control requirements. Border control facilities will be expanded and it is expected that new border control technologies will improve efficiency and processing times.

It is proposed to work with the government agencies to accommodate the customs and quarantine processing requirements to meet forecast demand.

Border control, customs and quarantine processing facilities are the responsibility of government agencies. Those services grow in line with passenger demand. The Master Plan does not anticipate growth ahead of forecast. However the physical location of services may be required to be enhanced.

Domestic and regional passengers are proposed to be segregated from international passengers and be provided with streamlined facilitation, as they currently enjoy, with inbound security screening required for transferring passengers entering the terminal from unscreened destinations.

The baggage reclaim hall is proposed to be enhanced with new baggage reclaim units being added to meet demand within this planning period and incorporate segregated domestic operations.

Transfer facilities for passengers transferring between international and domestic/regional flights for passengers other than those that will be transferring between these services within T1 are planned to remain (see Section 5.2) immediately adjacent to the terminal. Arriving passengers will continue to have the full choice of transport modes including trains, buses, taxis, limousines, rental cars and public parking facilities.

The terminal development plan has been integrated with the proposed landside developments.

Inter-terminal transfer passenger plan

Inter-terminal transfer facilities for international travellers transferring or transiting within T1 will use transit screening points within Pier B and Pier C, with facilities being enhanced as required to meet future demand. Passengers transferring between international and domestic/regional flights operating from the T1 precinct shall transfer internally within the integrated terminal. Inbound security screening is required for passengers transferring through T1 from unscreened destinations.

5.2.2 Terminals 2/3 plan – international, domestic and regional passenger precinct

Under the proposed development plan international operations will be incorporated into the expanded T2/T3 precinct.

The plan proposes to develop new terminal capacity to the north of T3 and east of T2 providing significant international and domestic/regional swing contact gate capacity, offering a far greater benefit to all passengers over the previous 2009 Master Plan under a wide range of future air traffic scenarios. Over the planning period the infrastructure as proposed in the development plan has been developed to be capable of and flexible in accommodating a range of different airline grouping scenarios between the two integrated terminal precincts.

The plan provides for changes to the terminal infrastructure, improvements to passenger facilitation and supports the changing needs of airline partners.

Changes to terminal infrastructure

- A new international terminal to cater for the processing of international passengers with extensive contact gate capacity for international operations
- Linking of the two existing T2/T3 terminal cores on the western side to facilities domestic/regional passenger and new larger aircraft gates on the western link

- Refurbishment and upgrading of passenger facilities in T2 and T3
- A new swing domestic/international passenger pier north of T3 to cater for the larger Code E and F aircraft
- New T2 swing domestic/international Piers C and D to the east of the current T2 Pier A to cater for Code C and larger Code E/F aircraft
- A link between the proposed new international terminal and T2 Pier C on the eastern side, providing passenger and baggage handling facilitation for international and domestic/regional passengers
- New transfer facilities within the expanded T2/T3 terminal
- Development of MARS gates that can service multiple codes of aircraft such as a large Code E or Code C aircraft
- Development of swing gates capable of handling international and domestic/regional aircraft while maintaining segregation requirements between international and domestic passengers
- Apron reconfiguration to cater for the greater variety of operating aircraft, including implementation of Code E and dual Code F taxiways to increase the handling capacity and enhancing safety for international and domestic/regional aircraft operation
- Integration of sustainable technologies, design and operations that deliver environmental solutions, particularly energy and water efficiencies, and enhance passenger experience and comfort

Passenger facilitation improvements

- More contact gate capacity
- Additional passenger and baggage processing facilities
- Additional and improved check-in systems
- Centralised immigration and baggage examination lines for international passengers
- More efficient use of gates and logical flow paths for passengers
- Augmentation of existing terminal facilities to incorporate international operations into the terminals
- Opportunities to share terminal infrastructure between international, domestic and regional operations
- Improved transfer facilities for inter-terminal and between terminal precinct passenger transfers

Supporting airline aircraft utilisation and service delivery

- Opportunities for airline product differentiation
- Sufficient area to develop the terminal to provide the required processing facilities for projected peak hour operations

Departing passenger plan

The development plan allows departing passengers to access the terminals from existing and new roadways and multi-level car parking facilities. Multiple public transport options are also provided, with facilities in close proximity to the terminal. It is envisaged that the new international terminal will allow departing passengers to directly access the terminal from multi-level car parking and public transport facilities.

At the departures level, introduction of international passengers into the precinct will see the development of new international processing facilities such as check-in, baggage handling facilities, security screening and emigration.

To ensure passengers can transfer between terminals before and after the check-in and security processes, the landside and airside concourses of each terminal are proposed to be linked at the western and eastern ends.

The proposed plan provides for centralised emigration and security facilities to manage future international passenger demand, including the use of new technologies assisting border control processes.

It is envisaged that domestic and regional passengers will continue to be processed in an improved streamlined manner through T2 and T3.

All current known security requirements have been taken into account in the proposed terminal plans. Any future security requirements involving passenger or non-passenger screening point design including enhanced inspection points, changed technology, screening facilitation or intervention rates could result in different spatial outcomes, although it is envisaged that any such different spatial outcomes should be able to be accommodated within the proposed expanded footprints of the terminals.

Once through security, it is planned that all passengers will proceed through to retail and food offerings, other services, airline lounges and their gate lounges.

Arriving passenger plan

The separation of arriving and departing international passengers is planned to continue in order to meet security and border control requirements. Border control, customs and quarantine processing facilities are also proposed for the international passenger facilitation. It is proposed to work with the various agencies to deliver an efficient service.

Domestic and regional passengers will continue to be processed through T2 and T3 and be provided with streamlined facilitation, with inbound security screening required for passengers transferring through the terminal from unscreened destinations.

Baggage reclaim halls are proposed to be expanded with new baggage reclaim units being added to meet demand within this planning period for domestic operations and new facilities developed for international operations.

The development plan incorporates a reservation for a proposed airside transport corridor to provide a direct airside link between the two terminal precincts apron areas. The proposed corridor may also allow for the movement of passengers and baggage between the two terminal precincts.

Transfer facilities for passengers transferring between international, domestic and regional flights for passengers other than those that will be transferring between these services within the new international, T2 and T3 are planned to be kept (see Section 5.1) immediately adjacent to the terminal, arriving passengers will continue to have the full choice of transport modes including railway, buses, taxis, limousines, rental cars and public parking facilities. New transfer facilities are proposed to be developed at T2/T3 to enhance the capacity and facilitation of passengers transferring to/from T1 and the T2/T3 precinct.

The terminal plan has been integrated with the proposed landside developments.

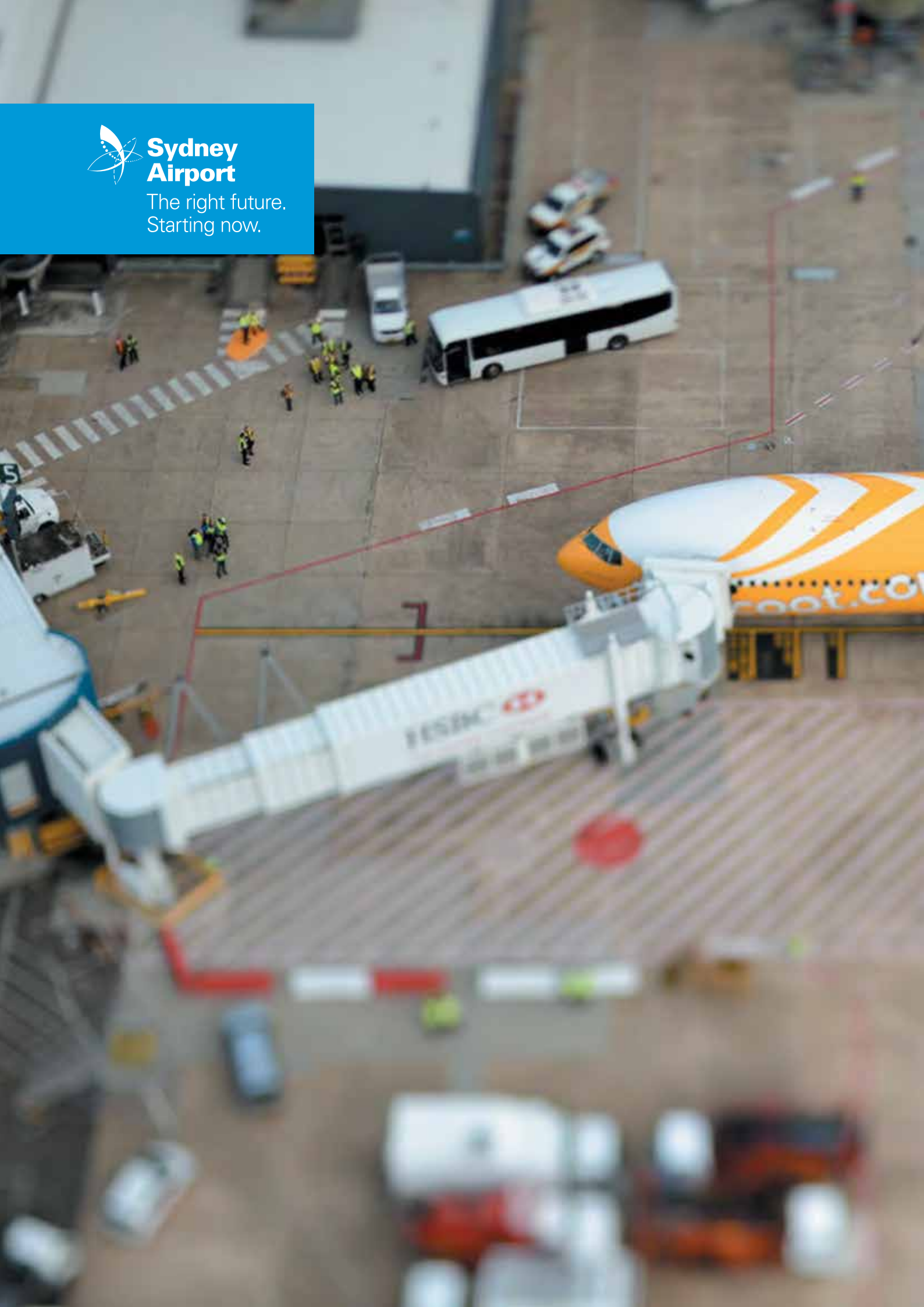
Inter-terminal transfer passenger plan

New inter-terminal transfer facilities will be incorporated into the proposed terminal expansion for international travellers transferring or transiting within the T2/T3 precinct. Passengers transferring between international and domestic/regional flights within the T2/T3 precinct will transfer within the integrated terminals, with proposed new airside and landside links provided between the T2/T3 terminal buildings.



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6.0

AIRFIELD DEVELOPMENT PLAN

6.0 AIRFIELD DEVELOPMENT PLAN

Key points

- The airfield development plan in this Master Plan is capable of meeting forecast demand to 2033 and beyond. The development plan:
 - Increases the safety and the efficiency of the airfield for the airlines, improves the passenger experience and maximises the capacity of the airfield
 - Enables flexibility and adaptability of the airfield and allows its development and operation to respond to the changing demand and the constantly evolving aviation industry
 - Incorporates taxiway developments to improve disruption management and support noise sharing modes
 - Will be sequenced to meet apron, taxiway and customer demand
- The creation of integrated international, domestic and regional passenger precincts improves the safety, efficiency and capacity of the airfield through:
 - Improved balancing of airside aircraft movement activities across the precincts. Today during some peak hour periods it is common to have 80% of aircraft movements in the Terminal 2/Terminal3 (T2/T3) precinct with only 20% occurring in the Terminal (T1) precinct. This development plan rebalances this activity to an improved 66:34 split. The more balanced activity will benefit all passengers by reducing congestion on the roads, taxiways and runways, and in the terminals
 - Improved utilisation of aprons/gates throughout the day, with the use of international-domestic/regional capable swing gates
 - Reduced towed aircraft runway crossings, which are generally conducted at slow speed and have the potential to cause taxiway congestion. In contrast the modelling indicates that the incidence of powered runway crossings has no impact on airport capacity and does not generate taxiway congestion
 - Improved capacity across the airfield to operate and park larger Code E and F aircraft such as the A380. New terminal infrastructure is capable of delivering 16 additional A380 contact gates, almost twice the capability of the 2009 Master Plan, by developing new infrastructure north of T3 and east of T2
- Improved future expansion capability to accommodate the up-gauging of aircraft
- An independent airfield model using the Comprehensive Airport Simulation Technology (CAST) fast time simulation demonstrated that the airfield development plan:
 - Improves the capability to store aircraft accessing the runways
 - Reduces taxiing delays for arriving aircraft
 - Reduces aircraft taxiing conflicts
 - Provides a capability to assist with disruption management
 - Provides a capability to accommodate all aircraft types, in particular Code F aircraft, at both terminal precincts
 - Eliminates the need for jet aircraft operating from T2/T3 to cross Runway 16R/34L for departures to the north
 - Can accommodate forecast demand for airfield capacity and aircraft stands under a wide variety of air traffic scenarios
- These improved airfield efficiencies will provide the opportunity for flow-on benefits such as improved airline on-time performance at Sydney Airport and across the broader network
- New navigation and surveillance technologies are anticipated to provide continued benefits to passenger and aircraft safety and reduced airline operating costs
 - Sydney Airport continues to collaborate with Airservices Australia to deliver one of the most technologically advanced airports in the world
 - Sydney Airport will continue to support the introduction of new technologies to further improve safety and efficiency





The airfield development plan improves safety, efficiency and capacity of the airfield and incorporates taxiway developments to improve disruption management and support noise sharing modes.

The development plan in this Master Plan provides the opportunity for Sydney Airport to optimise the efficiency of the airfield for the airlines. It facilitates flexibility and adaptability of the airfield to respond to the changing priorities and the constantly evolving aviation industry. It also allows for the development of taxiways and aprons to be sequenced to meet demand.

A number of airfield developments are proposed to support the forecast growth in passenger and aircraft movements, including the development of additional contact gate capacity and further apron developments.

The proposed development plan was developed following extensive consultation with the airlines to understand limitations experienced on the airfield today and potential design solutions.

The broad outcome of the development plan is that it provides a more evenly balanced airfield operation

across the two precincts, particularly in peak periods. Today during some peak hour periods it is common to have 80% of aircraft movements in the Terminal 2/Terminal 3 (T2/T3) precinct with only 20% occurring in the Terminal 1 (T1) precinct. This development plan rebalances this activity to an improved 66:34 split. This will support airlines in achieving improvements to their on-time performance through reduced congestion on apron areas and improved runway access. Terminal aprons and gates can also be better utilised throughout the day through the use of swing gates and additional contact gates.

The ability to use swing gates between international and domestic/regional aircraft operations provides significant advantages for the airport to respond to fluctuations in actual demand between international, domestic and regional operations. Through this fundamental step change, the development plan is to a large degree future proofed against variances in the forecast market share between international, domestic or regional services over the planning period.

As well as providing an outcome that meets the projected traffic demand, this Master Plan also incorporates initiatives to improve Sydney Airport's ability to manage aircraft during periods of disruption, whether caused by off-schedule aircraft movements or consequential disruption as a result of capacity constraints at other airports.¹ The planned enhancements better equip the airport through the use of taxiways and remote aprons that can provide storage to facilitate off-gate holding capability.

¹ All airlines report the reasons for every off-schedule flight to the Slot Compliance Committee. Off-schedule movements occur for a wide variety of reasons, with the most common including aircraft engineering, weather, faster/slower flight times (generally due to winds), safety (generally aircraft related) and delays for passenger convenience. Airport facilities (whether Sydney Airport or the departing airport) are cited for fewer than 3% of off-schedule movements.

6.1 Airfield modelling confirms the capability to meet 2033 planning horizon

Independent modelling by Airbiz using the 2033 representative busy day forecast schedule confirmed that the Master Plan development plan for the airfield layout is capable of efficiently handling the predicted traffic volumes. The modelling was reviewed by Airservices Australia as part of their endorsement of the ANEF noise contours, and has been peer reviewed by Landrum & Brown.

The airfield modelling study was carried out using the Comprehensive Airport Simulation Technology (CAST) fast time simulation model. The model is a gate to gate real time simulator of aircraft movements. Real time simulators produce stochastic models and results that include an element of randomisation.

The CAST simulation model was structured around:

- The 2033 Master Plan development plan for the airfield movement area layout
- The 2033 representative busy day forecast schedule
- Weather assumptions facilitating maximum runway capacity in all runway modes of operation (RMO).

The model was tested against a 2012 traffic and movement area configuration for calibration. Both peak period and noise sharing runway operating scenarios were modelled based on typical weather patterns.

When developing the taxiway enhancement plan, consideration was given to the areas where congestion is currently observed, namely:

- Congestion on Taxiways B and C in the vicinity of the existing T3
- Congestion on taxiways to the east of Taxiways B10 and L and the intersection of Runway 16R/34L
- Congestion at the eastern end of Taxiway G between the Runway 25 threshold and T2.

Anticipated congestion in the T3 and new international terminal area is proposed to be alleviated by the development of a taxiway racetrack system that ensures access to the terminal for inbound aircraft under the most demanding conditions. The apron has been designed to facilitate a dual Code F taxiway system.

The Taxiway B extension and the development of a number of entrance taxiways to the south of existing taxiways is expected to alleviate congestion in the Taxiway B10 and Taxiway L areas.

The development of Taxiway J East and a Code C taxiway to the north of Taxiway G at the eastern end of the airport are planned to alleviate congestion in the T2 area and to better facilitate Long Term Operating Plan (LTOP) runway modes.

The realignment of Taxiways B and C and the development of a number of rapid exit taxiways on the eastern side of Runway 16R/34L will be required to facilitate the relocation of Code F (A380) operations to the T2/T3 area and to ensure ongoing MOS – Part 139 compliance.

Overall the modelling demonstrated:

- Improved capability to store aircraft accessing the runways
- Reduced taxiing delays for arriving aircraft
- Reduction in aircraft taxiing conflicts
- A capability to assist with disruption management
- A capability to accommodate all aircraft types, in particular Code F aircraft, at both terminal precincts
- Elimination of the need for jet aircraft operating from T2/T3 to cross Runway 16R/34L for departures to the north

6.2 Airfield development plan – planned upgrades

The development plan will see the proposed expansion and reconfiguration of the airfield precincts to accommodate increased numbers of larger aircraft types such as the Code F and Code E aircraft for international and domestic operations.

The proposed development of the two integrated international, domestic and regional terminal precincts and associated supporting airfield infrastructure developments is designed to provide a number of benefits for the airlines and airport. These include:

- Improved balancing of aircraft movements
- Improved utilisation of aprons/gates throughout the day, with the use of swing gates
- Reduced towed aircraft runway crossings
- Improved capability to handle Code F and Code E aircraft
- Improved capability to respond to changes in aircraft up-gauging
- Consolidation of airline equipment and resources
- Dual apron taxiways to improve capacity and enhance safety
- Improved responsiveness to disruption
- An opportunity for airlines to improve their aircraft utilisation, with aircraft able to operate as an international or a domestic service without the need for towing between precincts across the main runway
- Removal of the current need for all jet aircraft operating from the integrated T2/T3 precinct, including Code F, to undertake a powered Runway 16R/34L crossing for departures to the north

Aircraft runway allocations in the airfield model are in accordance with parameters provided by Airservices Australia. To comply with the agreed runway allocations a number of powered runway crossings are required. The modelling indicates that the incidence of powered runway crossings has no impact on the airport capacity and does not generate taxiway congestion.

In contrast towed runway crossings are particularly disruptive to airport operations as they are generally conducted at slow speed, and consequently have the potential to cause significant taxiway congestion. The reduction of towed runway crossings envisaged under this development plan provides a significant benefit to airfield operations.

These improved terminal and airfield efficiencies will provide the opportunity for flow-on benefits such as improved airline on-time performance at Sydney Airport and across the broader network.

The existing runway system is adequate to cater for future projected traffic and is proposed to be retained in its existing configuration. The development plan proposes a number of new taxiway elements and apron developments to support the forecast increase in traffic. In addition, low visibility enhancements will improve the reliability of the airfield during poor weather conditions. The main Master Plan airfield developments are:

6.2.1 T2/T3 precinct airfield development

- Additional Code E and F gates on the new T2/T3 integrated terminal precinct
- Development of dual Code F taxiways to serve the proposed Code F aircraft gates
- Additional Code E/F aircraft gates on T2, in particular at the proposed swing gates
- Realignment of Taxiway G east of T2 and development of a proposed new parallel Code C taxiway to improve aircraft circulation to and from T2 as well as improving taxiway capacity when operating under noise sharing runways modes.

6.2.2 T1 precinct airfield development

- Development of dual Code C taxiways to serve the proposed Code C domestic aircraft operations on the western apron of T1, served through Pier C and a new proposed Pier D.

6.2.3 General airfield development

- Realignment of Taxiways B and C between the Runway 16R threshold and Taxiway L to accommodate independent Code F operation on both taxiways
- Extension of Taxiways J and D to provide improved access to the two integrated terminal precincts

- Extension of Taxiway K between Taxiway C and Taxiway D to provide access to the proposed South East Sector apron
- Development of a maintenance and engineering precinct in the North East and South East sectors of the airport, reducing the number of aircraft towed across Runway 16R/34L
- Implementation of Cat 2 approach lighting systems for runway approaches on Runways 16R and 34L to enhance runway capacity during low visibility conditions
- Provision of a link taxiway segment between Taxiway U and Taxiway B10
- Provision of additional entry/exit taxiways on Runway 16R/34L
- Extension of Taxiway B for the full length of Runway 16R/34L to accommodate Code F operations, eliminating the need for all jet aircraft operating from T2/T3 to cross Runway 16R/34L for departures to the north
- Development of a new entry taxiway on Runway 16L/34R to provide improved operations for regional aircraft
- Development of two additional rapid exit taxiways on the eastern and western side of Runway 16R/34L

Figure 6.1 illustrates the anticipated developments in the airfield.

6.2.4 Aprons and stands development

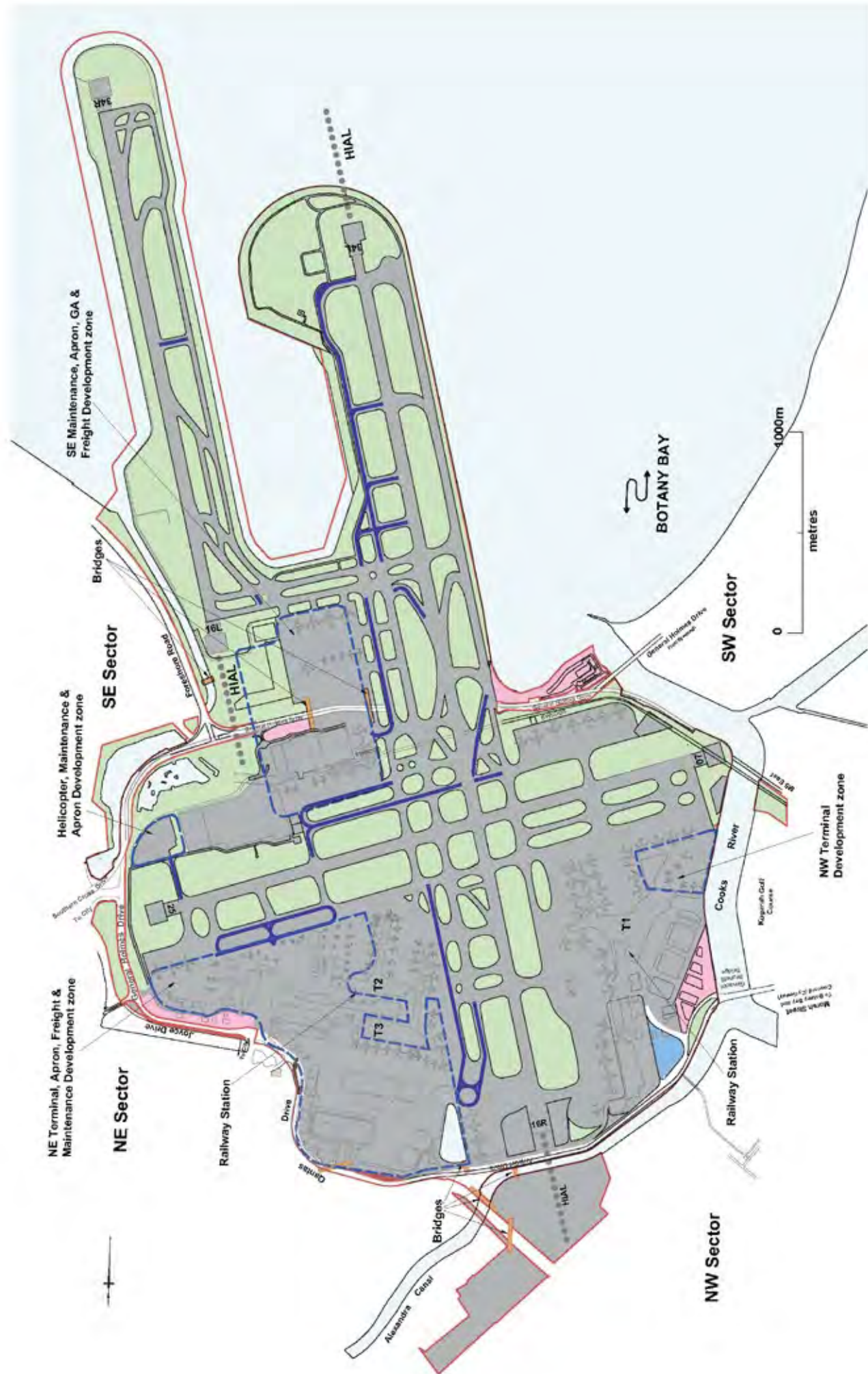
Sydney Airport works closely with the airlines to ensure that aprons are developed to meet demand, and adapts the development program as airline demand changes. Sydney Airport has sufficient capacity to meet current demand, with additional aprons in development to meet the expected increases in demand over the planning period.

As a result of the proposed two integrated terminal precincts and additional apron developments, Sydney Airport will have apron and stand capacity to meet the forecast growth in airport activity up to and beyond the 2033 horizon of the Master Plan. Airbiz demonstrated that the forecast stand demand would be met by the development plan. Their analysis has been peer reviewed by Landrum & Brown. Airbiz has separately demonstrated that the development plan would be able to meet stand demand under a wide variety of future air traffic scenarios.

The ability to handle Code F (such as the A380) international aircraft in the North East Sector, as well as the current North West Sector, enables Sydney Airport to substantially increase its capacity to accommodate Code F aircraft well beyond the Master Plan planning period.

Figure 6.1
Indicative Taxiway Developments

This drawing has been prepared to illustrate the Sydney Airport Master Plan and is not intended to serve any other purpose. The drawing must be read in conjunction with the Master Plan.



Further, swing gates at both of the proposed integrated terminal precincts provide additional opportunities to efficiently increase Sydney Airport's capacity and flexibility to handle the growing demand of Code E (such as A330 and B787) domestic aircraft as well as an improved ability to respond to fluctuations in actual demand between international, domestic and regional operations.

The 2033 representative busy day forecast schedule was used to determine aircraft parking requirements and airfield demand to inform development options.

The number and size of the aircraft parking stands was determined through modelling the bay allocation rules/principles. The traffic forecasts presented in Chapter 3 include a 101% increase in passengers between 2012 and 2033, made up of:

- A 27% increase in aircraft movements, including a replacement of existing aircraft with quieter, new generation aircraft. This increase includes a significant growth in the off-peak (which typically does not significantly increase apron demand) and a 5-10% increase in peak period movements
- A 58% increase in average passengers per aircraft, reflecting a growth in passenger aircraft size, increased seat density, higher load factors and a reduction in non-passenger aircraft movements

The development plan meets the apron demand by:

- Substantially increasing the average size of the aprons
- Developing swing gates which can be used in both the international and domestic peaks
- Increasing the total number of aprons

The aircraft parking stand demand for each category was determined on the basis of the largest aircraft type using a particular stand over the entire busy day. Larger stands can be configured to accommodate smaller aircraft (potentially multiple smaller aircraft) and will be the subject of detailed project planning.

Under the Master Plan Sydney Airport will meet the forecast 2033 stand/apron demand outlined in **Table 6.1**.

Sydney Airport has also undertaken a sensitivity analysis to understand how the development plan responds to a differing level of demand, particularly in relation to aircraft gauge. This analysis demonstrates that the development plan is able to respond to and accommodate a wide range of demand forecasts. The development plan is also capable, and over the planning period, flexible in accommodating a range of different airline grouping scenarios between the two integrated terminal precincts.

Additional apron areas are proposed to provide for the projected aircraft stand requirements. The proposed additional passenger aircraft aprons include the completion of the South West Sector and new apron

Table 6.1 Stand demand forecasts, 2033

Category	T1	T2/T3	Freight (Note 3)
Active (Note 1)			
Code F	5	8	0
Code E	16	20	2
Code C	8	25	0
Subtotal	29	53	2
Layover (Note 2)			
Code F	3	8	0
Code E	6	7	0
Code C	0	11	0
Subtotal	9	26	0
Total	38	79	2

Note 1: Active stands are those used for actual passenger processing. They can be contact stands (i.e. those served by an aerobridge or walk-up) or passengers can be bussed to and from other locations.

Note 2: Layover stands are those stands where aircraft not carrying out an immediate turnaround are towed and parked prior to being towed back to the terminal for departure.

Note 3: This is the demand for freight stands occurring concurrently with passenger peak stand demand. Dedicated freight aircraft will operate from common use passenger stands.

Note 4: The stand demand for each category was determined on the basis of the largest aircraft type using a stand. Larger stands should be able to accommodate smaller aircraft codes subject to detailed project planning.

Note 5: For the purposes of land use planning and to maintain future flexibility, domestic Code C regional stands were sized to accommodate the largest code aircraft type.

developments in the North East and South East sectors of the airport. The proposed future apron areas were reviewed as part of the airfield modelling exercise.

6.2.5 Airfield supporting infrastructure development

The Master Plan envisages the upgrade of the airfield to facilitate improved low visibility capability for conditions such as fog. During the master planning period it is expected that Runway 16R/34L approaches will be upgraded to facilitate landings in visibility conditions down to 350 metres (Category 2).

Runway 16R will require the current Category 1 ILS and approach lighting system to be upgraded to Category 2. Runway 34L ILS already has Category 2 capability but it will need an upgraded approach lighting system to be installed.

ICAO has recommended that all member states implement satellite-assisted navigation technologies at major airports by 2016. Australia's independent aviation safety regulator, CASA, supports this proposal.² On-board aircraft technologies will be progressively introduced to facilitate standard instrument departures (SIDS) and standard arrival routes (STARs) (see Section 6.6).

It is envisaged in the longer term that the GPS landing system (GLS) currently on trial at Sydney Airport will replace or augment the current ILS equipment. Operation of the GLS is discussed in Section 6.6.

The GLS delivers a range of benefits including:

- One GLS unit replaces six ILS units on a single site
- Less exposure to interference from ground based activities (such as aircraft, buildings etc)

A doppler very high frequency omni range and co-located distance measuring equipment (DVOR/DME) is currently located in the South East Sector of the airport. Using technology first deployed around the world in the 1940s, it provides the ability to conduct non-precision approaches in poor weather and also serves as an inbound and outbound tracking and en-route navigation aid.

Today, nearly all modern aircraft have the capability to fix their position using a range of air navigation systems, including satellite-assisted navigation technology, and are therefore not reliant on the DVOR/DME. Aircraft can (and do) rely on a number of other inputs such as global navigation satellite systems (GNSS), other DME units and precision approach aids provided at Sydney Airport.

Airservices Australia is, over time, upgrading the air navigation systems, including the replacement of the DVOR/DME.

During the Master Plan period it is envisaged that the DVOR/DME will be relocated to allow the proposed development of expanded apron areas for additional aircraft parking, associated new taxiway works and new engineering facilities. The Master Plan makes provision

for the DVOR to be located at the southern end of Runway 16R/34L, should it be required. A DME may also be co-located with this facility. Provision has also been made in the Master Plan to facilitate a DME at the site of the decommissioned PRM facility. Discussions with Airservices Australia indicate that flight procedures based on the use of GNSS technology could be developed to replicate Sydney Airport's existing flight tracks which use the existing DVOR/DME location as a reference/datum point. Sydney Airport supports the development of such procedures.

6.3 Airservices Australia facilities

Sydney Airport and Airservices Australia, together with the aviation industry, are working co-operatively on the implementation of new technologies which are delivering improvements to air navigation and surveillance. The development plan takes advantage of these technologies as they become available.

Consistent with the previous 2009 Master Plan:

- The proposed airfield development will require the relocation of existing Airservices Australia facilities
- The proposed development of expanded apron areas for additional aircraft parking, new engineering facilities and associated new taxiway works in the South East Sector may impact on the existing control tower sightlines as well as navigational and radar aids. As a result, if necessary the impacted aids and the existing facilities will need to be relocated to ensure that airfield surveillance is maintained
- If relocations are required, development sites are available in the Southern Sectors of the airport, noting that some of the new aid/radar facilities may not require replacement or may be accommodated off airport

Given the critical importance of air traffic control services to all airport users, Sydney Airport will maintain an ongoing close dialogue with Airservices Australia on a range of Issues, including:

- On the impact and timing of any Manoeuvring Area developments
- Any potential new air traffic control tower, fire station(s) and A-SMGCS Remote Units. Appropriate sites will be protected and made available when required

6.4 Business and general aviation

The business and general aviation industry using Sydney Airport is almost exclusively limited to the premium corporate market, such as business jets.

Some of these aircraft types are currently unable to be accommodated at other airports in the Sydney Basin on a regular basis. It is recommended that over time these airports be upgraded to also accommodate such aircraft.

2 Information sourced from Airservices Australia website: <http://www.airservicesaustralia.com/environment/smart-tracking/> (accessed March 2013)

RAAF VIP flights operate through one of the fixed base operators and are irregular and low-frequency users of Sydney Airport.

As demand increases for passenger aircraft parking in the North East Sector the business and general aviation facilities will be progressively relocated to the South East Sector. The South East Sector is proposed to include facilities such as aircraft maintenance hangars, aircraft parking, freight and aviation support.

6.5 Helicopters

The Master Plan forecasts that demand for helicopter air traffic will not exceed current levels over the planning period and, consequently, the existing facilities are expected to be adequate for the planning period.

6.6 Emerging technologies

Several of the emerging technologies described below have been implemented for the benefit of airline and airport operations. These technologies will continue to be implemented as they are complemented by aircraft equipment and regulatory rule changes.

6.6.1 GPS landing system (GLS)

The global positioning system (GPS) is currently used for en-route and non-precision terminal and instrument approach navigation. As other space based navigation systems become available the term GNSS will come into use. In the more critical phases of flight (approach, departure and landing), GNSS requires augmentation to realise the accuracy needed for guidance. These systems are referred to as GBAS (ground based augmentation) or GLS.

As indicated in Section 6.1.5, a GBAS unit is currently operational at Sydney Airport and Category 1 certification is expected by early 2014.

6.6.2 Multilateration systems (multistatic dependant surveillance or MDS)

Multilateration (MLAT) is a surveillance system that receives and locates transponder and other transmissions radiating from aircraft on various frequencies, typically 1090MHz - the frequency used by SSR, Mode S and automatic dependant surveillance broadcast (ADSB) transponders. All aircraft operating into Sydney Airport are equipped with transponders and nearly all are equipped with transponders capable of interrogation.

A wide area multilateration system has now been commissioned to replace the precision runway monitor and to supplement the terminal area radar (TAR).

The system can be augmented to facilitate increased coverage or to facilitate developments in the vicinity of the airport that may otherwise be impossible due to sterilisation of land by on-airport radars or unacceptable reflections from radar transmissions. MLAT receivers are also capable of receiving ADSB transmissions.

The transition to this technology will enable development of land on- and off-airport including the Sydney Port Development and the proposed hangar developments in the South East Sector of the airfield.

6.6.3 Automatic dependant surveillance broadcast

Automatic dependant surveillance broadcast (ADSB) is a system that gives aircraft the capacity to automatically broadcast aircraft position, altitude, velocity and other data continuously.

Other aircraft and ATC can access the data on display screens without the need for radar. ADSB systems are being defined and standardised by ICAO and other standards organisations worldwide.

Aircraft position is derived from the GNSS or internal navigation systems on board the aircraft.

The ground unit is simply a receiver for the data, which is then integrated into the ATC system. ADSB units are currently being deployed to provide surveillance of airspace above 30,000 feet over the entire continent, including areas not currently provided with radar coverage.

6.6.4 Required navigation performance

Required navigation performance (RNP) is a statement of the navigation performance necessary for the operation of aircraft within a defined airspace. Procedures based on RNP provide for approaches to a lower minima than non-precision but typically higher than instrument landing systems. Such approaches can be conducted independently of any ground based aids.

Most modern aircraft are capable of performing RNP approaches subject to procedure development and crew training. RNP approaches will provide safety and operating benefits by providing pilots with a predictability of operations and further reducing reliance on ground based aids.

Such predictability will provide environmental benefits by reducing aircraft fuel burn and providing for more flexible tracking in airspace around the airport, thus improving noise outcomes for some communities in the vicinity of the airport.

6.6.5 Advanced surface movement control and guidance systems (ASMGCS)

ASMGCS have been introduced at Sydney Airport. The system comprises surface movement radar (SMR), multilateration (MLAT) and automatic dependant surveillance broadcast (ADSB) system. This system, in conjunction with stop bars, will maximise capacity in low visibility conditions and increase airport safety.



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7.0

GROUND TRANSPORT DEVELOPMENT PLAN OVERVIEW

7.0 GROUND TRANSPORT DEVELOPMENT PLAN OVERVIEW



Key points

- On Airport Drive, non-airport through-traffic accounts for up to 52% of movements in the morning and afternoon peaks. General commuters and Port Botany traffic place a significant additional load on the roads surrounding the airport
- Completion of the WestConnex motorway within the 20 year horizon of the Master Plan will allow some non-airport traffic to bypass the airport and will provide the opportunity for journey times to and from the CBD to both terminal precincts to be more reliable
- The proposed ground transport solutions result in improved road and intersection performance in and around Sydney Airport in 2018 and beyond. Planned enhancements to these solutions support the forecast road traffic associated with airport activity beyond the 2033 horizon of the Master Plan
- These proposed solutions include:
 - A new one-way roadway configuration for the Terminal 2/Terminal 3 (T2/T3) precinct by 2018, providing a dedicated entrance and exit roadway to the precinct, significantly improving traffic flows for all vehicles including taxis, limousines and coaches
 - Upgrades to traffic flow within the Terminal 1 (T1) precinct by separating parking traffic and creating a dedicated and specially configured public pick-up area
 - Consideration of the WestConnex motorway project and its interface with the airport.
- The creation of integrated international, domestic and regional terminal precincts has significant benefits for road and intersection performance
 - There will be a substantial reduction in passengers transferring by road between the terminal precincts as passengers will be able to transfer between international and domestic flights within one terminal
 - There will be a more even distribution of road traffic across the airport precincts because international and domestic departure and arrival peaks are complementary
- Sydney Airport is well advanced on finalising a position with the NSW Government on WestConnex enabling works that will significantly improve the experience for passengers and others travelling to and from the airport as well as reducing the impact of non-airport traffic
- Sydney Airport has consulted with the NSW Government transport agencies in developing and testing the proposed solutions using the standard Roads and Maritime Services (RMS) model, as used in the joint study. This was enhanced with up-to-date travel data, localised traffic intersection modelling and new road solutions, making this modelling very robust
- Funding for the design and construction of the initial phase of works has been approved and detailed discussions on design and coordination with Transport for NSW (TfNSW) and RMS has commenced
- Sydney Airport continues to advocate for improved public transport to the airport, including additional buses and competitive rail fares, to:
 - Provide improved public transport options for all airport users including passengers and staff to further reduce congestion and improve environmental outcomes
 - Achieve an even greater public transport mode share in the future.
- Sydney Airport has invested more than \$200 million over the past decade in ground transport facilities to improve the customer experience of Sydney Airport



Sydney Airport has identified ground transport solutions that are designed to improve the performance of the roads and intersections in and around Sydney Airport. To function at an optimal level, these proposed solutions will require work both inside and outside the airport boundary. Once completed, the ground transport modelling predicts that the forecast traffic demand can be met in 2018 and beyond the 2033 horizon of the Master Plan.

This ground transport plan has been developed in consultation with Transport for NSW (TfNSW) and RMS.

Expert transport modelling and design team

The detailed ground transport modelling was prepared for Sydney Airport by AECOM. A global professional services company providing transportation services in more than 100 countries, AECOM has been ranked number one in transportation globally for 10 consecutive years.¹

AECOM's transportation division has been operating in Australia for over 30 years, during which time it has delivered strategic and detailed transportation modelling and design services for private and government projects. Specifically relevant to this work for Sydney Airport, AECOM has completed ground access planning for airports including Melbourne, Brisbane and the Gold Coast, and has performed transport studies and modelling for major NSW transport projects including the Sydney CBD corridor modelling and the Port Botany transport improvement plan.

The AECOM team assembled for this work included leading transport planners, strategic modellers, simulation specialists, urban planners, aviation specialists and civil engineering specialists. AECOM has extensive Australian and international teams who were drawn upon to ensure that global skills and experience were applied to this work.

¹ Engineering News Record Magazine, July 2012

Terminal 1 precinct – five year ground transport plan

The proposal to remove the existing car park entry and exit gates will allow a new road to be constructed directly in front of the existing multi-storey car parks, providing an easy and free-flowing entry to, through and out of the car park. This reduces the likelihood of queues at the entry gates extending back and disrupting the flow of traffic onto Departures Road.

The construction of a proposed new exit point in the open air parking area for traffic travelling to the city and eastern suburbs will facilitate a quicker exit from the precinct for all traffic.

The construction of these new access roads is expected to reduce current congestion points for traffic merging from Marsh Street and Airport Drive, therefore improving efficiency and reliability for all road users.

Funding for the initial phase of improvements on Airport Drive near Link Road has been approved, and will provide improved access for traffic from Airport Drive to Terminal 1 (T1). A development application has been lodged to progress the design work for the additional works required to fulfil the T1 five-year ground transport plan as described in Appendix A. Subject to planning approval it is proposed to commence these works as a matter of priority.

Terminal 2/Terminal 3 precinct – five year ground transport plan

Modelling shows that planned road changes in the Terminal 2/Terminal 3 (T2/T3) precinct, together with NSW Government initiatives outside the airport boundary, will deliver improved traffic flow around the precinct with increased capacity for traffic throughput.

The development of an additional road connection from Shiers Avenue to Qantas Drive at Robey Street will allow the creation of a one-way road system within the precinct with incoming traffic allocated to the current junction and outgoing traffic to the new junction.

The additional road and junction capacity, and the more efficient one-way road system, support a higher traffic throughput within the precinct by:

- Increasing road capacity for traffic into and out of the precinct
- Increasing 'green light' time by about 33% for the key traffic movements

The conversion of the lower sections of Robey Street and O'Riordan Street, outside Sydney Airport's boundary, into one-way roads northbound and southbound respectively would smooth both the entry and exit of traffic onto the roads surrounding the airport.

Modelling shows that this configuration can support the forecast volume of traffic for 2018 and beyond at an improved service level when compared with today.

Sydney Airport welcomes the commitment of the NSW Government to widen Joyce Drive and General Holmes Drive between O'Riordan Street and Mill Pond Road. In addition the proposal to extend Wentworth Avenue to General Holmes Drive will create an alternative entry point near the airport / Port Botany precinct. This important WestConnex enabling project will result in higher traffic throughput capacity to and from the airport as well as for non-airport through traffic including Port Botany heavy vehicle traffic.

20 year ground transport strategy

Ground transport modelling undertaken by AECOM demonstrates that the proposed strategy and the NSW Government initiatives, including the WestConnex motorway system, have the ability to meet the forecast traffic demands around the airport beyond the 2033 horizon of the Master Plan.

Better outcomes can be achieved if the public transport mode share is increased by reducing the station access fee on rail and adding new bus routes to the airport.

Integrated terminal precincts, servicing a mix of international, domestic and regional passengers and related freight, as envisaged in the proposed development plan, will:

- Reduce transfer passengers between T1 and T2/T3 using road and rail
- More evenly distribute road traffic between the precincts

Further road network enhancements are proposed as part of the 20-year (2033) ground transport strategy including ground access upgrades for non-terminal areas. These include the northern lands precinct (north of Airport Drive) which will accommodate aviation support services and vehicle storage facilities, and the South East Sector, which will accommodate new maintenance and engineering facilities, aircraft parking, freight handling and transport facilities, rental car, ground support equipment and parking.

The development of the ground transport plans has benefited from the assistance of TfNSW and RMS with the use of detailed models and more up-to-date data than any previous analysis.

TfNSW has provided 2012 regional traffic and forecast regional traffic for the 2018 and 2033 periods. This information was based on the broad assumptions used for the joint study. It provides a baseline for traffic to and from the airport and a baseline for traffic through the airport precinct.

A comprehensive survey of over 14,000 passengers, visitors and staff was jointly commissioned by Sydney Airport and TfNSW in June 2012. This provided information on the journeys people took to and from the airport, including how they travelled, and their origin and destination. Previous studies have relied on less comprehensive and now out-of-date data. There have been

significant increases in public transport usage in recent years, which reduces the relevance of the older data.

The analysis has included detailed modelling of all of the roads and intersections on and immediately adjacent to the airport, and key roads and intersections in the vicinity.

Public transport facilities to be expanded

In addition to improving and enhancing the ground transport experience, it is important that customers have a range of choices when accessing the airport. Sydney Airport believes there is a great opportunity for public transport mode share to be increased and has advocated for the reduction of the station access fee on rail and the provision of additional public bus services to the airport. Sydney Airport welcomes the stated intention of the NSW Government to provide additional public buses to the airport.

To facilitate a transition to rail and bus transport, Sydney Airport will continue to work with the NSW Government, stakeholders and private infrastructure owners to further increase the attractiveness and competitiveness of public transport access modes. Additional increases in public transport will further improve the performance of the road system beyond those shown in the models.

Sydney Airport has identified a site within the T2/T3 precinct for the future location of a public bus facility designed to allow a greater frequency and volume of public bus services to and from the airport for the benefit of passengers and staff. The T1 precinct already has a very convenient and prominent location for public bus services which can be expanded to support new bus routes. Additional bus services arising from the forthcoming Sydney's Bus Future would be accommodated at these public bus facilities.

The 2012 traveller survey, jointly commissioned with TfNSW, shows that while the mode share of public buses has declined to 2% between 2006 and 2012 the mode share of trains has increased by around one percentage point a year over the same period from 10% to 15%, in the absence of any reduction in the station access fee.

On 20 October 2013, the NSW Government delivered on its commitment to increase the number of trains passing through Sydney Airport on the Airport & East Hills line during peak hours from eight to 10 trains per hour. The NSW Government has also indicated that the rail line has the potential to provide greater long-term capacity. Upgrades to the power supply and safety measures outlined in Sydney's Rail Future will allow for up to 20 train services per hour on the airport line in the medium to long term.

10 years of investments and improvements

Over the past decade Sydney Airport has invested over \$200 million in on-airport ground transport facilities,

including roads, public transport, taxis and car parks.

- Capacity has been substantially and continually increased for taxis, limousines, buses, coaches, drop-off and car parking
- Sydney Airport has introduced discounted on-line offers for car parking
- Improved signage and the introduction of automated parking guidance systems within the public multi-storey car parks has made way-finding easier

The five year ground transport plan and 20 year strategy continue the trend of substantial investment by Sydney Airport to improve access to each airport precinct.

7.1 Five year ground transport plan

Further details on the five year ground transport plan are included in Appendix A.

7.1.1 Terminal 1

In 2012, Sydney Airport completed the construction of the second multi-storey car park at an approximate cost of \$47 million. This increased capacity by 50% to approximately 7,500 spaces which is expected to accommodate forecast demand to 2018. However, the current traffic flow through the car park, as shown in **Figure 7.1**, still follows the path which existed prior to the completion of the second multi-storey car park.

Under the changes proposed in this Master Plan it will be simpler and easier to enter, move through and exit the T1 precinct.

The main entry and exit gates to the existing car park will be removed and a free-flowing 'road' system will be created through the centre of the car park as shown in **Figure 7.2**.

Entry and exit boom-gates will be relocated inside the multi-storey car parks and at the new entrance to the 'open air' area. This proposed arrangement is designed to reduce the possibility of queues at the entry gates extending back and disrupting the flow of traffic onto Departures Road. A dedicated and specially configured pick-up area is proposed to be located in the 'open air' area providing separation between those vehicles parking and those seeking to drop-off or pick up quickly. The arrivals road will also facilitate simpler access to the taxi holding area.

In addition, it is proposed that the existing Cooks River entrance gates would be converted into an east-bound exit to the city and eastern suburbs. Providing this additional exit point will help spread the exiting traffic and lower the demand on the main exit point providing the opportunity for smoother merging onto Airport Drive. The current entry ramp from Airport Drive and exit ramp to Marsh Street are planned to be widened to two lanes each, with the exit ramp optimised by a tidal lane

Figure 7.1 2012 T1 precinct traffic flow



Figure 7.2 2018 T1 precinct traffic flow



configuration to provide capacity for exiting traffic onto Giovanni Brunetti Bridge.

By separating traffic heading towards the car parks and the departures kerb, the construction of new access roads will significantly reduce existing congestion points for traffic merging from Marsh Street and Airport Drive. This will improve efficiency and reliability for all road users entering the T1 precinct.

To facilitate the planned modal shift to public transport, Sydney Airport is planning to provide for an extended public bus facility located on Arrivals Road which would cater for both additional and re-routed public buses to easily access and exit the T1 precinct.

Passengers, visitors and the public would have simple, direct and clearly signposted routes from the ground transport facilities and car parks to the terminal.

7.1.2 Terminals 2 and 3

The intersection at the entrance to the T2/T3 precinct² is heavily used by both airport and non-airport traffic. As shown in **Figure 7.3**, movements into Sir Reginald Ansett Drive from the north, east and west compete with each other for access to the terminal while simultaneously competing with movements out of the precinct from the terminals. In addition, significant volumes of non-airport heavy vehicles in the morning peak turn right from Joyce Drive into O’Riordan Street which contributes to delays.

In this Master Plan a proposed new one-way road system through the T2/T3 precinct is designed to increase the entry and exit capacity of the area and significantly improve traffic flows in and around the precinct (see **Figure 7.4**).

In combination with work directly outside the airport boundary, this one-way road system would provide a superior solution to handle airport traffic as well as providing benefits to Port Botany and general commuter traffic.

In addition, to facilitate the modal shift to public transport, Sydney Airport is proposing to construct a bus and multi-purpose parking facility located between Ninth Street and the Seventh Street extension. This facility of up to 3,000 spaces would cater for a range of uses including car rental, valet and limousine storage and general parking. It would also allow for additional and re-routed public buses to easily access and exit the T2/T3 precinct. The proposed facility is planned to be supported by new pedestrian circulation corridors, orientation spaces, way-finding signage and flight information displays.

The proposed road works/changes include a northern extension of Seventh Street from Shiers Avenue to Qantas Drive to create a new dedicated five lane exit road from the precinct. Traffic would enter T2/T3 via an

expanded entry on Sir Reginald Ansett Drive and move one way through the precinct and exit via the Seventh Street extension onto Qantas Drive or continue north on Robey Street and then O’Riordan Street.

The existing signalised control of Ross Smith Avenue / Sir Reginald Ansett Drive is planned to be optimised to ensure effective traffic flow of the Sir Reginald Ansett Drive entry point. A low volume of authorised vehicles requiring access from the terminal precinct to the South East Sector will be permitted to access Ross Smith Avenue from this point.

This design solution provides more time in each cycle at two intersections with one-way traffic than at one primary intersection with two-way traffic. This is designed to provide sufficient capacity for airport (including private vehicles, taxis, coaches, limousines and mini-buses) and non-airport traffic as well as delivering a better level of service in 2018 than exists currently.

To function at an optimal level and to complete the integrated design solution, additional proposed road-works outside the airport boundary would include:

- Robey Street becoming one way northbound from Qantas Drive to the intersection of O’Riordan Street and O’Riordan Street becoming one way southbound between Robey Street and Joyce Drive with associated intersection improvements at Joyce Drive and O’Riordan Street
- The widening of Joyce Drive and General Holmes Drive to six lanes between Mill Pond Road and O’Riordan Street to provide consistent traffic access to the airport

Sydney Airport will continue to work closely with the NSW Government to discuss, prioritise and coordinate these proposed works with those proposed inside Sydney Airport’s boundary and is well advanced in finalising a position with the NSW Government on various road and ground transport upgrades.

Passengers, visitors and the public will have simple, direct and clearly signposted routes from the car parks to the terminals.

7.1.3 North and South East Sectors

New aviation support facilities such as freight handling and transport facilities, logistics, rental car and vehicle storage are proposed to be located in the area north of Airport Drive. A proposed new signalised intersection on Airport Drive and bridge over Alexandra Canal will provide landside vehicle access to the northern logistics precinct.

New and relocated maintenance and engineering precincts and aircraft parking aprons along with freight handling and transport facilities are proposed to be

2 The intersection of O’Riordan Street (north), Joyce Drive (east), Sir Reginald Ansett Drive (T2/T3) and Qantas Drive (west)

Figure 7.3 2012 T2/T3 precinct traffic flow



Figure 7.4 2018 T2/T3 precinct traffic flow



developed south of T2/T3 with improved airside links and upgraded airside roads to service this precinct. Staff and goods access to the area will be provided on the landside including the proposed development of new or augmented intersections, roads and bridge works. The proposed development plan includes the opportunity for a landside and airside bridge link connections across General Holmes Drive to facilitate access and connectivity for airport operations.

As a result of the proposed additional aircraft parking aprons, 2,000 car parking spaces will be displaced at the Blu Emu Car Park. A single deck structure is proposed to be constructed at the Blu Emu Car Park to ensure that the current capacity is retained. Implementation of a proposed northbound slip lane on Ross Smith Avenue at the intersection with Lords Road has been completed and is facilitating enhanced access for service vehicles to T2/T3.

7.2 20 year ground transport strategy

Sydney Airport has worked extensively with the NSW Government to develop a number of road and ground transport upgrades both on- and off-airport, supported by the Australian and NSW Government's commitment to construct the WestConnex Motorway by 2022. It is contemplated that the connection from WestConnex will include ramps onto Airport Drive located between T1 and T2/3 and these would improve capacity, network efficiency and reliability of access to both terminal precincts.

Working with the NSW Government

The WestConnex motorway, which links the M4 Motorway to the M5 East at Sydney Airport, was identified as Sydney's motorway priority in the State Infrastructure Strategy released in October 2012. In December 2012 WestConnex was confirmed as Sydney's motorway priority in the NSW Government's Long Term Transport Master Plan. The WestConnex Delivery Authority was established in October 2013 and has the following core responsibilities:

- Procuring and managing contracts relating to the development, construction, funding, operation and maintenance of WestConnex
- Developing and making recommendations on scope, staging and any other matter in connection to the WestConnex scope of works
- Seeking planning approval, management of environmental assessments and related community consultation for each stage
- Administering agreements relating to the development, construction, funding, operation and maintenance of WestConnex

Completion of the motorway within the 20 year horizon of the Master Plan will allow some non-airport traffic to

bypass the airport and will provide greater reliability around journey times to and from the CBD to either precinct. This non-airport through traffic is a major contributor to congestion on the airport's roads. Together with WestConnex, which is expected to further improve traffic flow around the precinct, Airport Drive, Qantas Drive and Joyce Drive may be required to be upgraded to support the forecast growth in traffic.

7.2.1 Terminal 1

The creation of an integrated international, domestic and regional terminal at T1 is designed to provide a better distribution of traffic in the precinct as the domestic and international peak departure and arrival times are complementary.

It is proposed to further improve the terminal precinct's roads by the planned widening of the entry and exit roadways at Terminal 1 to two lanes each. The existing taxi, limousine and coach holding area and drop-off/pick-up facilities are proposed to be relocated and expanded within planned new multi-storey ground transport modules and car park facilities located next to the existing multi-storey car park. This is designed to improve traffic flow efficiency by centralising ground transport facilities within each structure and reduce the volume of circulating traffic on the precinct's roadways.

To facilitate the proposed revised layout, access roads may need to be realigned to the front of the car park/transport modules with new pedestrian links provided to the departures level. The provision of these new facilities may mean that direct access to kerbside facilities could be managed in a way that would minimise vehicles recirculating on the internal roadway.

By 2033 and to meet demand, total car parking provision for all airport users at T1 is expected to comprise approximately 10,000 spaces – an increase of 2,500 from 2013.

7.2.2 Terminals 2 and 3

The creation of an integrated international, domestic and regional terminal at T2/T3 results in a better distribution of traffic in the precinct.

The dedicated one-way road entry and exit points to the T2/T3 terminal as described in the five year plan will continue to operate in 2033. The proposed addition of a grade separated link from Qantas Drive to provide a single lane entry to and exit from the future multi-storey car park is designed to ensure that the intersections continue to operate at a good level of service.

A proposed elevated access ramp over Sir Reginald Ansett Drive to provide direct access between Ross Smith Avenue and future multi-storey car parks within the T2/T3 precinct is designed to provide an additional entry point for cars coming from General Holmes Drive. This would be supplemented with the widening of Ross Smith Avenue.

To improve the efficiency of transport movements, sections of the existing multi-storey car park may be replaced with a multi-modal transport facility incorporating rail, taxis, rental cars, limousines valet premium parking and general parking. Passenger amenity in terms of pedestrian circulation and way finding would be improved by providing centralised taxi holding and pick-up facilities at the arrivals level and reducing the need for taxis to circulate on precinct roads.

A new facility for picking up and dropping off passengers is proposed with provision for a system to aid passenger connections to the terminal building. The provision of these new facilities would be designed to allow direct access to kerbside facilities and could be managed in a way that would minimise vehicles recirculating on the internal roadway, further improving passenger amenity.

A new pedestrian/cycle overpass is proposed over the intersection of Robey Street and Qantas Drive. The overpass is designed to support linkages between the terminal access walkway and new pedestrian/cycle share paths on the northern side of Qantas Drive and Robey Street. These paths would link to the existing share path that runs along Alexandra Canal as well as improve access to urban areas to the north and east.

New primary loading dock facilities are proposed to be developed for T2/T3 to the east for ease of access and security. Limited access would be available to the existing T2 and T3 loading docks.

To meet the forecast demand by 2033, total car parking spaces in the precinct are likely to grow by an additional 6,500 spaces over and above the 8,500³ proposed as part of the five year ground transport plan.

7.2.3 North and South East Sectors

To facilitate further development of the freight handling and transport facilities, logistics and aviation support facilities precinct north of Airport Drive, a secure airside bridge network over Alexandra Canal is proposed.

Further development of the freight handling and transport logistics and aviation support facilities in the south east, both sides of General Holmes Drive, is envisaged by 2033. Access will be provided by landside and airside bridges over General Holmes Drive as well as from existing roads.

Total car parking spaces in the South East Sector are likely to be retained at approximately 6,000 spaces.

7.3 Increasing public transport mode share

Sydney Airport will continue to work with the NSW Government stakeholders and private infrastructure owners to encourage them to further increase the attractiveness and competitiveness of public transport

access modes including rail and public buses.

Travellers using the rail network to access the airport are subject to a station access fee. This fee is levied over and above the normal rail fare. It is not charged for access to other stations on the same rail line and consequently the cost of a ticket to the airport stations is considerably higher than any other similar length trip within the rail system. Sydney Airport has and continues to advocate for the reduction of the station access fee to increase rail patronage for passengers as well as staff.

There is a clear opportunity to increase the provision of public buses servicing the airport and Sydney Airport welcomes the stated intention of the NSW Government to provide additional public bus services to the airport. Sydney Airport is committed to providing public bus facilities at each terminal as part of its five year ground transport plan. Sydney Airport will continue its discussions with TfNSW and RMS to identify ways that public bus access can be integrated in a way that minimises delays to buses on external and internal roads to the airport.

Additional increases in public transport mode share will further improve the performance of the road system.

7.4 Active transport (cycling and pedestrian access)

Sydney Airport is committed to improving active transport infrastructure and public transport. The five year ground transport plan (see Appendix A) involves implementing practical measures and continued engagement with the NSW Government to encourage travel demand onto more sustainable transport modes.

Practical measures include those such as new and improved bicycle facilities in the T1 Terminal and T2/T3 Terminal precincts. To further support active transport, major new developments (including the T1 Rydges Hotel) are required to have shower facilities for commuting staff. Sydney Airport is also in discussions with neighbouring local councils, including the City of Rockdale Council, and RMS to connect the network of shared paths around the airport. Sydney Airport is committed to a number of coming projects, including the T1 ground access initiatives, the T2/T3 ground access initiatives, and the new bridge across the Alexandra Canal, which includes new shared path facilities.

Current cycle facilities

Sydney Airport has invested in cycle infrastructure access to date. For example:

- At T1, bicycle racks are located at both ends of the terminal building. There are publicly accessible shower facilities located within T1 International Terminal

³ Includes existing car parks plus spaces currently under construction at Seventh Street due for completion at the end of 2013 and the multi-modal public bus facility and car park structure located near Ninth Street due for completion by 2018

- At T2 and T3 Terminals, undercover bicycle racks are centrally located at 5th Street adjacent to the public pick-up area.

Information on each can be found on Sydney Airport's website.

Future planned cycle links and facilities

Sydney Airport is currently planning a number of improvements to the cycleway, including inter-terminal and subregional links. A number of these links will require the cooperation of state and local government agencies

T1 links

- Upgraded cycle path from Terminal 1 to Cooks River Drive and the RMS Alexandra Canal Cycleway as part of the T1 ground access initiatives
- Future crossing at Link Road and Airport Drive to incorporate links to the RMS Alexandra Canal Cycleway.

T2/T3 links

- Improved access from Qantas Drive/Robey Street via the one-way pair configuration with a new set of signals incorporating shared crossings to be installed at the western and southern legs of the intersection
- Shower facilities in T2 are being investigated as part of our ongoing refurbishment of passenger facilities.

Inter-terminal and subregional links

- Pedestrian and/or cycle links between the Alexandra Canal, Qantas Jet Base and Robey Street to upgrade existing formal and informal paths are currently being investigated. This will require funding and input from external parties such as TfNSW, and local councils for access to non-airport lands
- Sydney Airport currently is in discussions with local councils to link Sydney Airport land to the current and planned cycleways. This includes eventual links to the Princes Highway, as well as improved access from Marsh Street to the Alexandra Canal Cycleway.

7.5 Forecast demand and modelling

Traffic around the airport includes journeys to and from the airport, and journeys for through traffic travelling to and from the CBD and Port Botany. On Airport Drive, non-airport through traffic accounts for up to 52% of movements in the AM and PM peaks.

As part of the development of the Master Plan, Sydney Airport engaged in a collaborative working relationship with TfNSW and RMS to assess the transport access needs of the airport and the wider network around the airport. Sydney Airport will continue to work with TfNSW and RMS to further refine the proposals with an aim to achieving optimal outcomes.



7.5.1 Demand forecasts

To forecast demand for ground access, the projected passenger movements (from aircraft arrivals and departures) were plotted by time of day so the distribution of peak activity at each terminal was understood. Using the data from the 2012 traveller surveys, mode share proportions dependent on passenger type (international/domestic and arriving/departing) were applied to the passenger volumes to generate movements by mode. Vehicle occupancy rates were then applied to generate traffic volumes. Staff, freight, logistics and commercial traffic was also included in the development of the model.

The demand model was calibrated to 2012 observed data so that it provided a clear representation of existing conditions. As a result, the demand model provided a suitable basis from which future year demands for 2018 and 2033 could be derived.

7.5.2 Mode shift

For the purposes of the modelling work, mode share proportions have been adjusted for the future year demand forecasts to account for anticipated changes to the transport networks.

The 2012 traveller survey, jointly commissioned with TfNSW, shows that while the mode share of public buses has declined to 2% between 2006 and 2012 the mode share of trains has increased by around one percentage point a year over the same period from 10% to 15% in the absence of any reduction in the station access fee.

Consistent with these trends a mode share increase for public transport of one percentage point per year through to 2018 has been assumed. This has been offset by pro-rata reductions in road based modes. To ensure that the road network design had sufficient capacity public transport mode share was assumed to grow at only two percentage points through to 2033. As a result any improvements in public transport mode share over and above those assumed, such as might occur if the station access fee were reduced, will further increase the performance and longevity of the road network.

7.5.3 Traffic modelling

Using the demand model outputs received from Sydney Airport, RMS incorporated the forecasts into its standard road model which was used in the joint study. The RMS model considers population and employment growth in the metropolitan area as well as future road network changes. RMS provided the resultant traffic outputs for the area surrounding Sydney Airport so that an assessment of local infrastructure changes could be made.

AECOM has undertaken detailed micro-simulation traffic modelling (using Commuter software) for the roads in the vicinity of the airport. Likewise for the demand model, the traffic simulation model was developed to replicate observed conditions in 2012. This again resulted in a platform from which future year models could be developed.

Subsequently, an assessment of road infrastructure and operational changes required to support the short and long term demands was undertaken to ensure the final solution could effectively accommodate the forecast traffic movements.

7.5.4 Comparison to previous studies

The modelling methodology adopted for the Master Plan includes up-to-date information and proposals that were not available at the time the joint study was prepared. These include:

- Updated 2012 passenger estimates
- Consideration of the current characteristics and behaviours of airport users from the 2012 traveller surveys including stated travel modes
- Incorporating the new operational configuration, together with proposed road network changes in the local and wider areas
- Use of RMS's updated 2011 Sydney Highway Assignment (SHA) traffic model and Sydney Strategic Travel Model (STM) along with microsimulation software to test road network options in the vicinity of the airport for both the morning and evening peak periods
- Four hour AM and PM peak modelling
- Calibration of the 2012 traffic models to observed 2012 conditions to provide a sound base from which to undertake the future year assessments

As a result the outcomes of this modelling are up to date, comprehensive and robust.



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Airport**

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8.0

FREIGHT DEVELOPMENT PLAN



8.0 FREIGHT DEVELOPMENT PLAN



Key points

- Continued growth of freight is important to airlines and the economics of passenger services
 - Approximately 80% of freight at Sydney Airport is carried in passenger aircraft
 - Sydney Airport handles approximately 48% of all Australian international air freight – 76% more than any other Australian airport
- Air freight is a vital economic activity that contributes significantly to trade, the community and Sydney Airport
- On-airport freight facilities and services for quality and time-critical products are preserved under this Master Plan
- The existing freight precinct next to Terminal 1 (T1) is retained and provision is made for new facilities in close proximity to the expanded Terminal 2/Terminal 3 (T2/T3) passenger terminals. The 2009 Master Plan proposed the expansion of T1 passenger facilities over the Link Road freight precinct requiring freight facilities to be relocated to the Northern Airport precinct or off-airport. In this Master Plan, expansion of passenger facilities north of T3 rather than north of T1 will allow the existing T1 freight precinct to remain as freight over the planning period
- Provision is made for logistics activities to be located in the South East Sectors and in the Northern Airport precinct, north of Airport Drive. The on-airport freight concept provides a framework that facilitates investment in modern and efficient facilities
- Sydney Airport will work with the freight community and airlines to increase the productivity and efficiency in the freight operations

The development plan delivers an improved position for freight services and facilities in and around Sydney Airport due to the preservation of the on-airport Terminal 1 (T1) freight precinct and provision for new facilities in the expanded Terminal 2/ Terminal 3 (T2/T3) precinct.

Importantly, the Terminal 1 (T1) freight precinct is preserved on the airport and on-airport provision is made for new facilities in close proximity to the expanded Terminal 2/Terminal 3 (T2/T3) terminal. This provides a framework that will encourage investment that in turn will increase productivity and improve services over time.

New facilities can be developed north and east of the expanded T2/T3 terminal to facilitate airside access to the various aircraft apron areas. This provides an opportunity for freight facilities to be provided in each of the terminal precincts in close proximity to airline passenger operations and meet the requirements for express freight.

Air freight is a vital economic activity that contributes significantly to global business and to the NSW and Australian economies. It is a critical component of the airline industry forming part of a value chain that includes airports, related trucking and logistics services, manufacturing and consumer operations as well as supporting industries.

Sydney Airport is the largest international and domestic air freight hub in Australia. Freight volumes are projected to



approximately double over the planning period to 2033. It is estimated that around 80% of this freight is carried in passenger aircraft, and is important to the economics of the passenger services. A substantial proportion of the dedicated freight activity takes place outside of the passenger peaks, providing a more even spread of freight activity across the day.

Reflecting Sydney Airport's substantial network of international passenger flights, Sydney Airport handles 48% of Australia's international air freight. This is 76% higher than any other Australian airport.

Under the development plan, areas for freight activity are retained in close proximity to the T1 and T2/T3 precincts, ensuring freight facilitation for both T1 and T2/T3 airlines. Efficient access to the airport is also provided for off-airport freight facilities.

- The expansion of passenger facilities to the north of T3 rather than the north of T1 will prolong the use of the existing T1 freight precinct for freight compared with the previous plans envisaged under the 2009 Master Plan
- Consistent with previous plans, an airport logistics precinct is proposed to the north of Airport Drive to accommodate additional or relocated freight facilities
- The development plan also makes an allowance in the airport's South East Sector to facilitate freight handling and transport facility, logistics and aviation support activities

This outcome delivers a longer-term opportunity to operate the on-airport freight facilities and facilitate ongoing improvements to efficiency and productivity through investments. Subject to Master Plan approval, the longer tenure and increased certainty can be reflected in commercial discussions with the freight industry.

Sydney Airport is committed to promoting efficient and productive on-airport handling of freight. It will achieve this by focusing on service and quality, which are critical to the development and growth of air freight, airlines and the airport.

Promoting rationalised and efficient landside and airside air freight traffic vehicle flows will also reduce overall airport traffic and improve customer service.

8.1 Freight development plan – principles and approach

The freight development plan is designed to encourage efficient processes and provision of quality products, through:

- Efficient, effective and productive operations of airside freight terminals
- A focus on quality and time critical products, supported by landside on- and off-airport terminals where required
- Minimisation and centralisation of landside access points where possible to reduce vehicle movements, thereby optimising customer service

- Locating freight handling terminals and airside logistics areas with good access to aircraft locations
- Segregating landside freight vehicle movements from landside terminal passenger movement areas where possible

The development plan leverages the existing T1 freight areas and ensures access for off-airport freight operators through a proposed common-use bypass facility.

Sydney Airport will work with airlines, cargo terminal operators (CTOs) and the freight community to increase the productivity and efficiency of freight operations. Specifically, Sydney Airport proposes to:

- Facilitate ground and terminal handling of air freight by CTOs over the forecast period
- Work with service providers to promote investment and increased productivity in air freight facilities
- Work with CTOs to deliver air cargo terminals and processes available for freight in the most efficient and productive manner
- Work with CTOs to improve ground transport movements and access

8.2 Background – air freight at Sydney Airport

The vast majority of air freight at Sydney Airport is transported in the cargo hold of scheduled passenger airline services. Supporting this flow of goods is vital to the efficiency of the airport, airlines, and continued customer service to suppliers and consumers. Air freight is also of economic importance to passenger services.

Exports from Australia are dominated by fresh, chilled or frozen perishables such as meat, seafood, fruit, vegetables, flowers, livestock and manufactured goods. International imports are typically high value manufactured products such as computers and car parts.

Mail is also an important segment of international freight. Express and parcel services form a growing component of the international and domestic air freight business.

Supporting productive, efficient and effective landside and airside logistics for service providers is important to the future growth of freight at Sydney Airport and the ability of service providers to deliver quality customer service.

8.3 Proposed location of freight facilities

The development plan provides for an ongoing freight presence on-airport over the planning period, including in both terminal precincts, the South East sectors and a planned freight handling and transport facility, logistics and aviation support facility zone located north of Airport Drive.

The development plan provides freight facilities on-airport in the vicinity of operational areas. The existing air freight precinct next to T1 will remain at its current location near Link Road. Landside manoeuvring areas for the freight facilities is optimised by segregating it from the passenger facilitation traffic. The area will also contain a proposed new common user bypass facility to facilitate off-airport operations.

Other freight handling facilities supporting quality and time critical products with airside and landside interface are planned to be located adjacent to the T3 development as well an existing site east of the planned T2 Pier C development.

An airside corridor will also be provided that links the two integrated terminal precincts. This corridor will provide an efficient and reliable connection for vehicles, including freight, that need to access aprons in both precincts. The airside corridor also provides an opportunity for CTOs to develop centralised freight facilities which will be able to service both precincts.

Balancing activity more evenly throughout the airfield, terminals and roads will reduce congestion and improve the terminal and apron infrastructure utilisation. The peak hour balance is expected to improve aircraft movements from an 80:20 split between T2/T3 and T1 at present to a 66:34 split between T2/T3 and T1 by 2033. Balancing of the aircraft movements and development of aprons with dual taxiways provides for an overall safer and improved operation for aircraft and for ground services equipment.

The area north of Airport Drive is planned to be established as an airport freight handling and transport facility, logistics and aviation support zone to support airport freight operations and support facilities providing a direct landside and airside vehicular access. The terminal development plans in the development plan, and extensive consultation with the airlines and CTOs, has ensured that the development plan can accommodate additional on-airport logistics zones.



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9.0

DEVELOPMENT PLAN FOR AVIATION SUPPORT FACILITIES AND UTILITIES



9.0 DEVELOPMENT PLAN FOR AVIATION SUPPORT FACILITIES AND UTILITIES



Key points

- Continuity of reliable aviation support services is vital to the operation of the airport for our customers
- By developing passenger facilities to the north of Terminal 3 (T3) rather than the north of Terminal 1 (T1), the development plan is able to preserve the existing facilities for fuel storage and enable investment in additional facilities on the existing site
- The development plan continues to include significant land areas available for airlines to invest in modern engineering facilities
- Sydney Airport has prepared a Services Master Plan to ensure there will be adequate and robust provision of utilities and services
- Sydney Airport will work with the airlines, fuel suppliers, ground handlers, flight caterers and other relevant organisations to increase productivity, efficiency and environmental performance of the aviation support services

There is a range of aviation support activities at Sydney Airport that supports the core airline business of transporting passengers and freight. Facilities include supply, storage and distribution of aviation fuel, aircraft maintenance, ground support equipment storage and maintenance, and flight catering. Utilities include electricity, gas, telecommunications, water supply, sewerage and stormwater drainage.



Under the development plan, Sydney Airport will create new aircraft maintenance and engineering zones, additional aircraft parking, increased aviation fuel storage, provide for new facilities for ground support equipment (GSE) storage, maintenance, flight catering and additional freight handling and transport facilities and upgrade of capacity and distribution for utilities and services.

In contrast to previous plans, the existing joint user hydrant installation (JUHI¹) aviation fuel facility is expected to remain and be expanded on its current site.

Purpose built maintenance and engineering facilities for new generation aircraft are also provided for within the development plan.

To meet growth demands, other aviation support functions such as aviation fuel, ground support equipment and flight catering facilities are planned to be expanded. The design of amplified utility systems provide for airport infrastructure such as terminals and other development sites to be serviced in the most efficient and sustainable ways possible.

9.1 Aviation fuel

9.1.1 Development plan

By developing passenger facilities to the north of Terminal 3 (T3) rather than the north of Terminal 1 (T1) (as was contemplated in previous master plans), the development plan is able to preserve the existing facilities for fuel storage and enable investment in

additional facilities on the existing site.

Additional aviation fuel capacity to meet growing demand is planned to be provided through a combination of upgraded supply throughput, new storage tanks and related pumping equipment and pipework, extended and augmented hydrant lines to service new terminal extensions and aircraft parking configurations. New planned storage capacity will require fuel vehicle depot and servicing facilities to be relocated. It is also proposed to review the potential of reconfiguring a secondary fuel facility to the north of T3 which would if feasible provide additional fuel supply options.

These developments would ensure the safe and continuous supply certainty of on-time and economically delivered jet fuel to aircraft.

9.1.2 Existing facilities

Jet fuel is supplied to Sydney Airport by pipeline from refinery facilities and bulk storage terminals.

Jet fuel supplied from these underground pipelines is stored at the JUHI located at the northern end of the T1 precinct, and distributed across the airport via underground pipelines.

'Into-plane' dispensing is undertaken directly by the fuel companies (or their appointees) at the aircraft parking position. Bulk tanker vehicles are used for the fuelling of some aircraft where hydrant access is not available. These mobile tankers and dispensers are parked in close proximity to several different aircraft aprons.

¹ The JUHI is an unincorporated joint venture

Qantas has some on-site storage adjacent to its engineering facilities, and a number of the general aviation and helicopter operators have small refuelling storage facilities and equipment close to their operations.

9.1.3 Current capacity

The current maximum storage capacity at the JUHI facility is 29 million litres contained in five bulk tanks. The arrangements provide for approximately two to three days capacity at current consumption rates.

9.1.4 Storage

The basin area surrounding Sydney Airport contains significant jet fuel supply and storage infrastructure, with an estimated storage capacity of approximately 196 million litres. The majority of jet fuel imports are currently handled by Vopak through the liquids berth at Port Botany.

Jet fuel can be pumped through a pipeline from three separate facilities, including the Vopak storage facilities. The pipelines can be used simultaneously to transfer fuel into JUHI.

On-airport storage is currently catered for in the existing JUHI facility. The site is capable of increasing storage which is dependent on configuration and conditions. This site could physically fit another two large tanks. The development plan facilitates the expansion of the current fuel storage facility and the retention of the aviation fuel facility in its current location in the longer term.

The proposed reconfigured secondary fuel facility located north of T3, if found feasible, could provide additional fuel supply options within the airport environs. Additional off-site storage opportunities are also possible in the longer term to provide flexibility and system redundancy.

9.1.5 Hydrant system

The existing apron hydrant systems are proposed to be extended incrementally to serve the proposed two terminal precincts. The expansion of the other apron areas and additional and modified aircraft parking positions may require further augmentation of the on-airport hydrant distribution pipelines. This may extend to the provision of fuel to some remote stands to enable fuelling of aircraft operating from remote areas, particularly in the South West Sector and to the north of T3.

9.1.6 JUHI maintenance and tanker parking areas

If additional fuel storage tanks are installed at the existing JUHI site, the vehicle maintenance and administrative buildings and the tanker parking areas may need to be relocated. The into-plane refuelling

vehicle maintenance facilities could be relocated to the South East Sector adjacent to the Sydney Airport operations and maintenance depot. Dedicated tanker parking may need to be provided near T2/T3 to facilitate efficient aircraft refuelling.

9.2 Aircraft maintenance

Consistent with the 2009 Master Plan, the development plan provides for apron, maintenance and engineering capacity to be developed in a number of locations including the current Qantas Jet Base and the South East Sector both north and south of General Holmes Drive.

The new facilities, to be utilised by airlines, third party aircraft maintenance service providers and their customers, are planned to include hangars, workshops, offices and staff amenities to enable maintenance for a range of aircraft operating through Sydney Airport. In particular, it is expected that the new facilities will accommodate the new generation of aircraft.

The maintenance and engineering facilities will potentially cater for three main types of aircraft maintenance activities:

- Line/station maintenance – this occurs during transits and turnarounds and can be performed at the aircraft gate
- Base maintenance – this requires ground-time in a hangar with simple access docking, or at a gate away from the terminal. Some non-routine maintenance and supplemental checks can be carried out at an aircraft parking position in favourable weather conditions. Ground-time periods can range between 20 and 36 hours
- Heavy maintenance – this requires significant ground-time in a hangar with extensive docking capability. Ground-time periods can range between 6 to 50 days depending on the type of heavy maintenance being performed.

In addition to hangars, there is a need for support functions such as workshops, component stores and engine run facilities.

Qantas has over many years undertaken aircraft maintenance in the northern part of the North East Sector, known as the Qantas Jet Base. The Jet Base has a range of line and base maintenance facilities, including two engine run bays adjacent to the Northern Pond. Qantas also undertakes maintenance work for other carriers.

Over time, the activities performed in the Qantas Jet Base have expanded with some services being performed on land beyond the airport boundary. This trend to off-airport locations will continue as demand increases for aircraft parking areas on the airfield.

In 2011, Virgin Australia announced that it would be establishing aircraft maintenance facilities for its fleet at Sydney Airport.

Regional Express also has existing maintenance facilities and has confirmed its ongoing need for such facilities for its fleet at Sydney Airport.

Aircraft maintenance is also currently undertaken in the general aviation precinct in conjunction with fixed base operator (FBO) functions.

9.2.1 Development plan

The development plan provides for new line and base maintenance facilities at Sydney Airport, consistent with the previous master plan:

- The North East Sector, north of T3 – will in part remain available for development of new maintenance and engineering facilities and ongoing operation of the engine run facility on the northern perimeter of the existing Jet Base with the remainder of the current site being progressively redeveloped to meet the expanding demand for passenger facilitation
- The North East Sector, General Aviation Precinct – is proposed to be progressively developed for passenger aircraft operations and passenger handling facilities, with some FBO operators moving to the South East Sector
- The South East Sector – will be available for new maintenance and engineering facilities. Developments to cater for a range of hangar bays are proposed with adjoining aircraft apron parking being provided. The development of aircraft aprons and hangars is dependent on the progressive removal and/or replacement of the various radars and navigation aids over the planning period. Other existing developments including rental car, vehicle maintenance and catering facilities may be displaced over time to elsewhere on the airport

9.3 Ground support equipment

Ground support equipment (GSE) includes a range of vehicles and equipment used to service aircraft between flights while on the apron. Motorised and non-motorised equipment are required while passenger and cargo loading and unloading, maintenance and other activities are carried out on the aircraft. GSE includes items as aircraft tugs, tractors, baggage carts, ground power units, buses, aircraft refuelling vehicles, potable water trucks, catering vehicles, cabin service vehicles, container loaders, belt loaders, passenger boarding stairs, bulk cargo loaders, container dollies and tugs, unit load devices (ULDs) and aircraft waste disposal vehicles.

Storage and staging of GSE at convenient locations relative to the aprons is important for efficient turnaround of aircraft. The actual area required is dependent on the number of each aircraft type served during peak periods and is provided partly on and partly off the aircraft gate area in dedicated GSE storage areas.

There are a number of non-airline 3rd party ground handlers who contract to the various airlines to provide the necessary aircraft support services and these ground handlers own and maintain the necessary equipment.

The development plan provides for additional GSE storage areas and maintenance facilities to service new terminal, maintenance facilities and remote aircraft parking aprons.

The development plan allows for approximately 90,000 sqm of dedicated GSE parking and storage areas. The further amplification and deployment of ground power and preconditioned air (PCA) systems will reduce the demand for GSE.

Because of the nature of GSE equipment, it is necessary to provide some on-airport maintenance facilities to minimise equipment being taken off-airport for medium and minor maintenance. New facilities are proposed in the South East Sector replacing facilities being displaced by planned new developments. Other satellite facilities will continue to be provided near terminals.

9.4 Flight catering

Flight catering facilities are predominantly off-airport, with two facilities located on-site (to the east of T2 and in the South East Sector).

The development plan assumes that flight catering facilities will continue to operate primarily from off-airport locations, and access the airport via a combination of the public road system and enhanced airside security access points. Provision is also made within the land use zoning of airport logistics to allow for the development of on-airport flight catering facilities. The existing on-airport catering facilities are planned to be demolished to facilitate expansion of T2 and the development of new aircraft maintenance facilities in the South East Sector.

9.5 Utilities

New capacity and augmented network distribution of utilities is proposed to service expanded infrastructure including terminals and new aircraft maintenance and engineering facilities. Future initiatives with utilities include investigating and potentially implementing systems which reduce reliance on network supply.

The development plan includes provision for new facilities including an electricity zone substation, water supply storage and pumping capacity, trunk drainage improvements, sewer pump stations and network infrastructure upgrades.

Sydney Airport is served by a range of utilities, including electricity, gas, telecommunications, water supply, recycled water, sewerage and stormwater drainage. The Sydney Water Corporation's southern and western suburbs ocean outfall sewer (SWSOOS) also traverses the airport site.

As development takes place in various sectors of the airport, utilities are proposed to be upgraded accordingly.

9.5.1 Electricity

Sydney Airport is connected to the electricity grid by Ausgrid at two locations. From these supply locations, Sydney Airport owns and maintains two 10.25kV medium voltage networks feeding the T2/T3 and T1 precincts respectively. Agreed supply capacity from Ausgrid to the Sydney Airport medium voltage systems is 59.5MVA.

Over the planning period, total power demand is forecast to increase from 42 MVA but is not expected to exceed 70MVA. To meet this increasing demand, negotiations with Ausgrid has indicated that a new 33kV zone substation may be required, allowing an existing supply substation to be retired.

The proposed zone substation is to be developed on the eastern boundary of the airport to cater for demand for most sectors of Sydney Airport. The proposed relocation of the existing T2/T3 zone substation as well as the age and capacity of the existing infrastructure within the T2/T3 precinct will require a significant proportion of the existing feeders to be replaced and upgraded during the planning period.

Developments in the South East Sector will require the installation of new and upgraded electricity networks. In addition to supply augmentations during the planning period, Sydney Airport proposes to continue to explore demand side management options and to monitor the feasibility of alternative supply options including cogeneration and trigeneration as developments are considered. A trigeneration plant supplying cleaner energy is being planned for T3.

In accordance with Civil Aviation Safety Authority (CASA) and International Civil Aviation Organisation (ICAO) requirements, Sydney Airport will continue to supply emergency standby power for key aviation facilities. The current capacity of these generating systems is 12MVA across the airport with the generators supporting the North West Sector recently upgraded.

9.5.2 Water supply

Sydney Airport's water is supplied to the North East and North West Sectors from Sydney Water Corporation's mains supply. At both locations, tanks and pumps provide pressure and capacity for domestic and fire services. Over the planning period, increased development will require additional or upgraded pumps and increased storage in both precincts.

Limited infrastructure exists in the South East Sector of the airport. As the proposed new developments occur in this sector, additional supply infrastructure is proposed to be installed as required.

Sydney Airport has completed various studies for a

range of water conservation and reuse options to meet increasing demand. One of the major water saving initiatives that has been adopted is a recycled water scheme consisting of a recycled water treatment plant (RWTP) to mine sewage from the North West Sector to supply non-potable water demands including T1 and adjacent commercial buildings for toilet flushing, irrigation and cooling tower make-up water. The T1 RWTP can recycle approximately 750,000 litres per day for non-potable water demands.

A study is currently being undertaken to analyse the possible expansion of the RWTP to increase its production capacity. A separate study will be undertaken to explore the possible introduction of a second proposed RWTP in the North East Sector and Southern sectors.

Groundwater extraction was investigated as a supplementary source for the proposed recycled water supply but is not considered environmentally appropriate or suitable at this time.

Sydney Airport is currently reassessing the required potable water infrastructure upgrades in the light of changes to future development and the proposed recycled water supply expansion options. Supply options being investigated include upgrades to pumps and increased storage in both the North West and North East Sectors, potable ring main connections between sectors, and additional Sydney Water connection points. To enhance water supply redundancy, a minimum of two points of connection to the external Sydney Water network is being considered for each sector.

Sydney Airport has invested in a remote water monitoring system to assist in the management of its water reticulation network to manage water use and provide early leak detection in both the terminal precincts. As the system expands over time, new ideas and technology will be explored to assist both Sydney Airport and tenants to minimise water consumption and maximise water use efficiency.

9.5.3 Sewerage

Sydney Airport operates sewerage networks at the airport in the North East and North West Sectors. These systems involve gravity mains servicing the developed areas feeding into deep sewer pump stations. These pump stations feed into the SWSOOS, which traverses the site.

As demand grows in these sectors, there will be a need to augment the existing gravity mains, and to increase the capacity of the existing sewer pump stations, associated emergency storage and rising mains. Analysis undertaken to date indicates that the SWSOOS will be able to accommodate the increased demand.

Developments in the South East Sector will require the development of new sewerage infrastructure reticulation networks as required.

9.5.4 Gas

The airport is supplied with gas through a major high pressure main to facilities in the North East and North West Sectors. This main is expected to be capable of meeting forecast demand over the planning period.

9.5.5 Stormwater

Sydney Airport has extensive stormwater systems in the North East and North West sectors. In these sectors, most of the areas that are expected to be developed during the planning period are already paved and served by stormwater networks. These networks may require local modifications as developments proceed to minimise impacts from development footprints and to provide new connection points. Existing infrastructure will be upgraded and/or new drainage infrastructure is proposed to be provided to mitigate the impacts of possible flood risk where identified as feasible.

The southern sectors currently have satisfactory stormwater infrastructure. Development of facilities and aircraft parking positions in these areas will require the development and installation of additional stormwater systems as required.

9.5.6 Telecommunications

Sydney Airport has optical fibre communications networks installed across the airport, which facilitate the use of the airport management system, including critical operational and security functions.

A second secure optical fibre network has been installed to the airside of the airport for airfield lighting control and monitoring, and interfaces with operational equipment including transmission meters and security systems.

The networks are proposed to be extended into new developments as these are constructed.

Sydney Airport manages the installation of telecommunications including cabling (voice, video, data), mobile telephone and wireless technology infrastructure across the airport, and provides commercial access to third parties on the external network.



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All Gates, Custom



Express Path



Sho



ms

ps  Food

Staff →

Toilets, Parents Room   

All Gates, Customs   →

Duty Free  Food, Shops  

  Toilets  Observation Deck

10.0

COMMERCIAL DEVELOPMENT PLAN

10.0 COMMERCIAL DEVELOPMENT PLAN



Key points

- The development plan allocates 91.6% of the total land for aviation activity. Sydney Airport also provides facilities and services for its passengers, staff and the aviation community based on extensive research on customer needs on the remaining 8.4% of the allocated land. This remaining land is used for business activity, interim land uses, utilities and environmental conservation. These facilities and services include:
 - Improving the in-terminal experience for passengers and staff
 - Improving ground transport options for all users (see Chapter 7)
 - Ensuring a wide variety of retail and food and beverage is available
 - Facilitating the provision of airline lounges for premium passengers
 - Providing convenient hotel accommodation for passengers
 - Providing a range of car parking products for different market segments at competitive prices including online offers
 - Providing facilities for the aviation community including office facilities for government agencies, airlines and other service providers
- Sydney Airport continually seeks to enhance its offerings to reflect changing market and customer expectations. A new customer charter has been communicated to all on-airport stakeholders, recognising customers as the cornerstone of our commercial business
- The airport works with its retail partners to offer passengers and staff:
 - A wide choice of product from coffee, water and a variety of convenience brands to upmarket eateries and halal restaurants, reflecting the demographics served
 - The convenience of a Flight Centre travel agency within Terminal 1 to facilitate passengers whose flight needs have changed
 - Stores and products not available in the Australian domestic market.
- Sydney Airport's aim is to maintain flexibility in commercial development planning in order to respond to customer needs as they arise



Customer responsiveness and flexibility with business-to-business and business-to-consumer engagement are key to Sydney Airport's commercial planning activities, which comprises 5.8% of allocated land. Sydney Airport actively engages in customer research to prepare itself for changing customer needs and seeks to respond to customer requests as quickly as possible.

With currently more than 100,000 passengers per day travelling through the airport for a wide range of different purposes and lengths of travel time, there are consequential demands for a range of airport services. Some examples include: hotel accommodation, vehicle services (fuel, servicing and cleaning), IT services, luggage services, pet consignment and boarding, and food and beverage.

In addition, of the 28,000 staff at Sydney Airport around 12,000 work at or transit through the airport on a daily basis. Staff need convenient access to services such as food and beverage offerings, medical centres, banking, convenience stores and recreation options (walk, run, cycle, gym, etc). The availability of these services and amenities at their workplace provides convenience, saves time, simplifies commuter travel and promotes healthy lifestyle choices.

Recent Sydney Airport commercial initiatives include enhancements to consumer offerings for retail, car parking and the opening of a four star Rydges Hotel in May 2013. Beyond 2013, Sydney Airport's ongoing commercial activities are expected to include further hotel accommodation developments across the airport in the vicinity of the terminals.

New projects and developments will be assessed against development principles that include a consideration of how they meet customer needs, planning and regulatory requirements and demand.

10.1 Commercial activities at Sydney Airport in context

Aviation activity remains the priority at Sydney Airport and uses 91.6% of its total land. Accordingly, Sydney Airport will pursue property leasing and development strategies that allow for delivery of the aviation needs shown in the Master Plan.

Proposed airfield and terminal aviation developments are likely to require progressive displacement of some existing functions, including some commercial activities. A number of developments – to be discussed in this chapter – may be relocated to alternative areas of the airport. To facilitate this there will be on-going tenure reviews and the consideration and implementation of short or medium term alternative uses for land.

In addition, there are a number of commercial activities that can be located on land that may not be required for aviation activities until later in the planning period, or on land not required for aviation activities.

Beyond the core aviation uses (such as runways and terminals), the Master Plan provides for a range of commercial land uses which not only support the airport's function but will also provide a degree of civic amenity. These commercial activities include general commercial, community, office and retail. Developments will only be considered in accordance with the principle of 'highest and best' use.

There is also growing demand from businesses or agencies that require facilities in close proximity to the airport (such as administrative offices, airline and freight businesses, hotels and car parking). Refer to Chapter 11 for further information on land use zonings.

The airport planning and approval process outlined in Appendix E addresses regional planning context issues as well as sustainability, social and economic factors.

In the period to 2018 as well as the rest of the planning period, Sydney Airport will require increased emphasis on sustainable design in all commercial developments (see Section 13.3.1).

10.2 North West Sector

The North West Sector includes Terminal 1 (T1), freight terminals, aviation support functions including aviation fuel storage, ground transport facilities including car parking structures, and office accommodation for agencies including Customs and Australian Federal Police.

Over the first five years of the Master Plan, further multi-storey car parking expansions and other transport-related infrastructure will be considered in response to

the developing needs of the precinct and Sydney Airport customers.

A variety of commercial developments may also be considered to complement the precinct and terminal forecourt of T1 including offices, hotels, retail, service facilities and advertising signage.

Over the long term, the North West Sector can accommodate demand for up to a total of 120,000 square metres of floor space (excluding the T1 terminal). This will comprise both the existing precinct built form and proposed additions. It is envisaged that approximately 10,000 square metres of that floor space will be allocated for general retail purposes including food and beverage offerings and convenience stores.

Opportunities exist for a waterfront development along the banks of the Cooks River. This is located opposite the proposed Cook Cove development and may provide opportunities to incorporate pedestrian links between these developments.

The 320-room four star Rydges Hotel was completed in May 2013.

In the period to 2018, an additional hotel of approximately 200 to 300 rooms could also be developed within the North West Sector.

Aviation support developments in the North West Sector are expected to include some additional fuel storage facilities (refer to Chapter 9) and some freight facility consolidation and redevelopment (refer to Chapter 8).

10.3 North East Sector

The North East Sector, which includes Terminal 2 (T2), Terminal 3 (T3) and the proposed new international terminal, has a range of aviation support activities including aircraft maintenance, freight handling and transport facilities, flight catering, vehicle servicing and business and general aviation operations being conducted mainly from leased sites. Car parking has been accommodated within multi-storey parking structures in proximity to T2, T3 and the proposed new international terminal.

Over the long term, planning provision has been made for meeting a variety of commercial demands including offices, hotels, retail, service facilities and advertising signage in this area. The precinct can accommodate demand for up to a total of 120,000 square metres of commercial floor space (excluding the T2, T3 and proposed new international terminal), which will comprise both the existing precinct built form and proposed future additions.

It is envisaged that approximately 15,000 square metres of that floor space may be allocated for general retail and roadside service centre facilities, including food and beverage offerings and convenience stores.

In the period to 2018, a new Seventh Street multi-storey car park and new public transport facility with access from an extended Robey Street may be required as proposed ground transport improvements discussed in Chapter 7 are progressed. It is also possible that a hotel or hotels of approximately 300 to 500 rooms could be developed in the precinct.

10.4 South East Sector

The South East Sector of Sydney Airport (south of Runway 07/25 and east of Runway 16R/34L) will gradually be developed for aviation and aviation support activities, including aircraft maintenance and engineering, business and general aviation, freight handling and transport facilities, hangars and aprons. If these developments proceed, they may displace current commercial uses that include car rental support facilities, part of the Blu Emu Car Park, flight catering and vehicle servicing facilities. Until the aviation use of this land reserve is required, these areas will remain available for commercial development.

In the period to 2018, the animal boarding facility may expand and existing roadside services on General Holmes Drive, including fast food facilities, will remain. RMS has indicated that it is planning to develop truck inspection facilities along Sydney Airport's Foreshore Road land, separated from the airport by the Millstream stormwater drainage canal. If this occurs, Sydney Airport would consider establishing adjacent roadside services centre and advertising signage areas.

Over the longer term, Sydney Airport has indicated in the land use plan that the Botany Bay and Cooks River foreshore may be used for commercial activities.

10.5 Other airport lands

It is possible that Sydney Airport may establish roadside and advertising services areas adjacent to other proposed developments described in this Master Plan.

For example, **in the period to 2018** as part of initial development of an airport logistics precinct to the north of the airport, a landside bridge is being developed across the Alexandra Canal to enable access to, and the development of, vehicle storage areas to potentially accommodate displaced facilities from the South East Sector.

The Northern Airport precinct is also proposed to facilitate a number of uses such as flight catering, freight handling and transport facilities along with the development of additional landside and airside bridge connections and ground transport infrastructure.



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A diverse variety of aviation and commercial activity takes place at Sydney Airport. Hanrob Pet Hotels, opened in 2007, offers convenient pet boarding for passengers using Sydney Airport.



11.0

LAND USE PLAN

11.0 LAND USE PLAN



NSW Tourism Minister George Souris turning the first sod for the new Rydges Hotel at Terminal 1 with Sydney Airport chairman Max Moore-Wilton and chief executive officer Kerrie Mather

Key points

- The land use plan is very similar to the land use plan set out in the 2009 Master Plan. Changes are minimal:
 - Some small areas zoned for commercial use in the 2009 Master Plan are zoned in the Master Plan for aviation purposes
 - More than 90% of land is classified as available for aviation purposes
- This Master Plan presents the strategic direction of the airport, in accordance with the Airports Act:
 - Implementation of individual developments within the framework of the strategic direction will adapt to meet the changing needs of airlines and other customers

The Master Plan outlines Sydney Airport's land use plan for the period to 2033, over 90% of which is land zoned for aviation purposes.

This chapter provides an airport land use zoning plan (**Figure 11.1**).

It provides an explanation of each zone, providing the community and government with appropriate visibility of Sydney Airport's vision for the evolution of Sydney Airport while maintaining the flexibility required to allow investments and detailed design to respond to market needs. This approach is consistent with the purposes of a final master plan for an airport set out in Section 70(2) of the Airports Act, including:

- To establish the strategic direction for efficient and economic development at the airport over the planning period of the plan; and*
- To provide for the development of additional uses of the airport site; and*
- To indicate to the public the intended uses of the airport site... "*
- To reduce potential conflicts between uses of the airport site and to ensure that uses of the airport site are compatible with the areas surrounding the airport*

and the reality that the aviation industry may evolve beyond that which is currently foreseen.

11.1 Indicative airport layout plan

The existing layout for Sydney Airport is shown at **Figure 11.3**. The development plan that reflects consultation to date with respect to the airport layout and aviation forecasts up to 2033 is set out at **Figure 11.4**. As noted



in Chapter 3, the aviation industry is continually and rapidly changing. Sydney Airport responds to these changes by adapting and reprioritising its program of investment. **Figure 11.4** must be interpreted in light of these conditions and it is not intended to be taken as a definitive description of the future development of Sydney Airport.

11.2 Land use zoning plan

The land use planning framework for proposed future development and operation of Sydney Airport operates by designating zones and identifying permissible uses for each zone. All proposed developments on the airport site identified in the land use tables require development approval (refer to Appendix E).

This chapter together with Appendix E demonstrates how the proposed on-site uses set out in this Master Plan can be reconciled with the zones and land uses adjoining and adjacent to the airport, identifying consistency with the NSW state planning systems, where practicable.

Sydney Airport's land use zoning plan (**Figure 11.1**) supports the indicative airport layout plan at **Figure 11.4** for the airport.

11.3 Key planning and land use changes in this Master Plan

The land use plan is very similar to the land use plan set out in the 2009 Master Plan:

- Some areas classified for business use in the 2009 Master Plan are now zoned for aviation purposes
- Some areas classified for utilities and environmental conservation are now zoned for business purposes
- More than 90% of land is classified as available for aviation purposes
- Permissible developments within the varied zones are not considered to have a significant environmental impact. All future development proposals will be appropriately assessed and managed through comprehensive planning and environmental strategies and controls

The airport has an approximate total site area of 907 hectares, 900 hectares which is subject to the provisions of the Airports Act 1996 and associated regulations. Seven hectares of this land is owned by Sydney Airport on a freehold basis and therefore any development is subject to the NSW Environmental Planning and Assessment Act 1979. As a result of the changes made in the Master Plan, there has been a further reduction in the area of land being made available for interim land uses (discussed further below). **Table 11.1** provides an overview of the land use changes.

This shows that the Master Plan 2033 has:

- Increased the area of land zoned for aviation purposes by 11.4 hectares
- Increased the area of land available for interim, non-aviation development by 0.9 hectares
- Marginally decreased land zoned for business development by 0.4 hectares

Table 11.1 Land uses (at end of 20 year planning periods)

Land uses	2023/4 (MP 2003/4)		2029 (MP 2009)		2033 (MP 2033)	
	Area (ha)	Share (%)	Area (ha)	Share (%)	Area (ha)	Share (%)
Aviation activities	771.5	85.7%	819.0	91.0%	830.4	91.6%
Interim land uses	93.4	10.4%	18.7	2.1%	19.6	2.2%
Business activities	26.9	3.0%	33.2	3.7%	32.8	3.6%
Utilities and environmental conservation	8.0	0.9%	29.0	3.2%	24.2	2.7%

Source: Sydney Airport and AECOM

Table 11.2 Land use zone areas

Land use zones	Area (hectares)
AD1 Aviation Activity and Aviation Support Facilities	598.6
AD2 Airport Terminal and Support Services	188.4
AD3 Airport Logistics and Support	43.4
AD4 Utilities Reservation	0.002
AD5 Aviation Reservation	19.7
BD1 Business Development	20.3
BD2 Enviro-Business Park	12.6
EC1 Environmental Conservation	24.0
Total	907.0

Source: Sydney Airport and AECOM

The allocation of zones to land owned by Sydney Airport was based on demand from aviation land uses such as terminal extensions, aircraft stands, hangars, taxiways, and defined by operating and safety constraints such as obstacle limitation surfaces, navigational aid surfaces, and environment protection zones. Land reserved for logistics and business activities plays a key role in supporting the aviation function through the development of supporting infrastructure such as freight, administrative facilities/offices and on-airport hotels.

Residual parcels of land are reserved for interim uses or are remnant areas with minimal aviation utility, which may be used for appropriately scaled business opportunities. These residual parcels are predominantly located on the periphery of the airport and as such offer the opportunity to create a defined, soft edge to the airport as well as provide an appropriate transition zone between on-site and off-site land uses, including facilities such as food and drink premises.

While Section 112 of the Airports Act states that land use planning and the regulation of building works on an airport operates to the exclusion of state legislation, a conscious effort has been made to adopt, where practicable, the land use definitions contained in the

Standard Instrument – Principal Local Environmental Plan now being used in NSW. This provides a greater degree of consistency, understanding and transparency in relation to proposed land uses on the airport. See Appendix E.

11.4 Land use zones

Figure 11.1 sets out Sydney Airport's land use zoning plan, which is to be read with the zoning tables below that reflect appropriate land uses within the leased site (and on adjacent land holdings owned by Sydney Airport) to satisfy the provisions of Section 71(6) of the Airports Act.

In order to meet the requirements of Section 71 of the Airports Act and Regulation 5.02(2) of the Airports Regulations 1997, the NSW planning terminology and controls have been used from the Standard Instrument – Principal Local Environmental Plan (NSW Department of Planning 2008) (known as the LEP Template), where practicable, to be as consistent as possible with current NSW planning practice.

The land use zone plan at **Figure 11.1** identifies land within the boundaries of Sydney Airport, and also identifies land holdings beyond the airport's boundary owned by Sydney Airport. For the land holdings beyond

the airport, the zonings and permissible uses are generally consistent with those adopted by the relevant local government authority under the NSW planning system. The land use zone areas are set out in **Table 11.2**.

Appendix H defines terms for the purposes of the Master Plan and the nominated land uses based on, where practicable, definitions contained in the NSW LEP template. However, in some instances, definitions have been altered or a new one prepared to adequately reflect airport operations.

Before approval is granted for any land use which is identified as being permissible within the relevant zone, regard must be had to the objectives of the relevant zone.

Where there are inconsistencies between current land use on Sydney Airport and the development concept as represented by the land use zoning plan, the current land uses may continue and development of those sites and their curtilage for their current purpose shall be regarded as an existing and additional permissible form of development on those sites.

11.4.1 AD1 – aviation activity and aviation support facilities

This zone (yellow on the land use zoning plan) primarily caters for aviation activities to meet aviation requirements currently and over the planning period. Refer to **Table 11.3**

Aviation activity, airfield operations and air freight volumes provide the fundamental basis for the planning of airport facilities. In this regard, the content in Chapters 4, 6 and 8 of this Master Plan have had significant influence on the land area that was required to be reserved for aviation activities and aviation support facilities. As such, the area (approximately 598.6 hectares) designated as AD1, representing 66% of the total site area, has been zoned to meet these operational requirements.

In addition, development for the purposes of aviation support facilities, which maximise the efficiency of airport operations, are permissible within this zone. This includes any development that is ordinarily incidental or ancillary to development for those purposes.

11.4.2 AD2 – airport terminal and support services

This zone (purple on the land use zoning plan) applies to the terminal precincts. Refer to **Table 11.4**.

Growth of international, domestic and regional traffic has required ongoing upgrade and expansion of the passenger terminals and their support activities (such as landside access, car parking and utilities). To accommodate the projected growth in traffic forecasts as detailed in Chapter 3 of the Master Plan and the associated needs of the terminal and passenger systems as detailed in Chapter 5 of the Master Plan, the terminals are proposed to be developed as two integrated terminal precincts servicing a mix

Table 11.3 AD1 aviation activities and aviation support facilities

Objectives	Permissible Uses with Consent
The objectives of the AD1 zone are to:	Advertisement
Provide for aviation activities and aviation support facilities	Advertising structure
Facilitate compatible and ancillary functions within the zone provided that development does not render the land unfit for aviation activities	Aircraft maintenance facility
Protect the long-term viability and operational efficiency of Sydney Airport for its primary function	Aviation activity
To ensure heritage items are appropriately considered and managed	Aviation support facility
Coordinate the orderly and economic use and development of land until such time as it is required for aviation activities or aviation support facilities	Car park
	Food and drink premises
	Freight handling and transport facility
	Liquid fuel depot and distribution facility
	Navigational aids
	Office premises
	Parking space
	Passenger transport facility
	Public administration building
	Research station
	Road
	Service station
	Signage
	Takeaway food and drink premises
	Temporary structure
	Transfer corridor
	Transport depot
	Utility undertaking
	Warehouse and distribution centre
	Works depot

Table 11.4 AD2 airport terminal and support services

Objectives	Permissible uses with consent
The objectives of the AD2 zone are to:	Advertisement Advertising structure Amusement centre Aviation activity Aviation support facility Business premises Car park Child care centre Convenience store Entertainment facility Food and drink premises Freight handling and transport facility Function centre Health care professional Hotel or motel accommodation Kiosk Liquid fuel depot and distribution facility Medical centre Mixed use development Navigational aids Office premises Parking space Passenger transport facility Public administration building Restaurant Retail premises Road Service station Shop Signage Takeaway food and drink premises Temporary structure Tourist or visitor accommodation Transfer corridor Utility undertaking Vehicle sales or hire premises Warehouse and distribution centre Works depot
Protect the long-term viability and operational efficiency of Sydney Airport for its primary function	
Facilitate development of contemporary passenger terminals and related facilities for the handling, transfer and processing of passengers that are capable of meeting the standards expected by international, domestic and regional travelers as well as supporting the needs of Sydney Airport's workforce	
Encourage employment opportunities	
Facilitate compatible and ancillary functions within the zone provided that development does not render the land unfit for aviation activities	
To ensure heritage items are appropriately considered and managed	
Provide for aviation activities and support facilities	

of international, domestic and regional passengers during the planning period. Accordingly, the area (approximately 188.4 hectares) designated for AD2 purposes, representing 20.8% of the total site area, has been zoned to meet these operational demands.

Development to facilitate the provision of goods and services to meet the quality and standards that international, domestic and regional travellers have come to reasonably expect from a world-class transport hub are also permissible in this zone.

11.4.3 AD3 – airport logistics and support

This zone (orange on the land use zoning plan) applies to land for airport logistics.

Freight volumes are projected to grow over the planning period, as detailed in Chapter 8 of this Master Plan. To accommodate and support the projected growth, an airport logistics zone has been created in the northern part of the airport (approximately 43.4 hectares) which represents 4.8% of the total site area.

Development to facilitate freight logistics operations as well as other ancillary uses identified in Table 11.5 are permissible in this zone, including office space which

is ancillary to any of the identified permissible uses in **Table 11.5**.

11.4.4 AD4 – utilities reservation

This zone (light blue on the zoning map) applies to various portions of land surrounding the main area of the airport (approximately 0.002 hectares), representing approximately 0.02% of the total site area, which essentially reflects current usage (refer to Chapter 9 of the Master Plan). Refer to **Table 11.6**.

Development consistent with the provision of infrastructure and softening the visual impact of such works is permissible with consent in this zone.

11.4.5 AD5 – aviation reservation

This zone (pink on the land use zoning plan) is reserved both for future aviation activities and aviation support facilities and will be incrementally released for aviation purposes over the next 20 years as it becomes operationally required. However, until such time as the land is required for aviation activities or aviation support facilities, this Master Plan will facilitate the highest and best use of the land. Refer to **Table 11.7**.

The area designated (approximately 19.7 hectares) for

Table 11.5 AD3 airport logistics and support

Objectives	Permissible uses with consent
The objectives of the AD3 zone are to:	Advertisement Advertising structure Aircraft maintenance facility Animal boarding or training establishment Aviation activity Aviation support facility Business premises Car park Child care centre Freight handling and transport facility Hotel or motel accommodation Industrial retail outlet Industry Light industry Liquid fuel depot and distribution facility Mixed use development Navigational aids Office premises Parking space Passenger transport facility Public administration building Research station Road Self-storage units Service station Signage Storage premises Takeaway food and drink premises Temporary structure Transfer corridor Transport depot Utility undertaking Vehicle sales or hire premises Warehouse and distribution centre Wholesale supplies Works depot
Protect the long-term viability and operational efficiency of Sydney	
Airport for its primary function	
Facilitate the development of freight services and airport logistics (and ancillary office space)	
Ensure development is compatible, where practicable, with surrounding land uses in this area	
Facilitate compatible and ancillary functions within the zone provided that development does not render the land unfit for aviation activities	
To ensure heritage items are appropriately considered and managed	

Table 11.6 AD4 utilities reservation

Objectives	Permissible uses with consent
The objectives of the AD4 zone are to:	Advertisement Advertising structure Recreation areas Road Utility undertaking
To accommodate special uses off the airport site that are consistent and compatible with surrounding development and land use zones	
To ensure heritage items are appropriately considered and retained where practicable	

this purpose has been informed by the operational requirements of the airport for the planning period, as detailed in Chapters 4, 6 to 10 inclusively and Chapter 12, represents 2.2% of the total site area.

There are a number of commercial activities that can be located on that land in the interim. Sydney Airport will pursue development strategies that allow for the necessary controls to ensure delivery of the aviation needs detailed throughout the Master Plan. This includes ongoing tenure reviews and the consideration and implementation of temporary and alternative uses.

The non-aviation land uses identified in this zone are essentially land uses that are permitted with consent on a short to medium term basis.

Particular assessment requirements

Before development approval is granted within this zone for a use that is for non-aviation purposes, the consent authority must first be satisfied that the development of the kind being proposed will not render the land unfit for aviation purposes and that appropriate provisions are in place to ensure that the land can be vacated as it becomes needed for aviation activities or aviation support facilities. Such measures are to be documented in an application for development approval.

11.4.6 BD1 – business development

This zone (light green on the land use zoning plan), is dedicated to on-site business development. The operational requirements of the airport over the planning

Table 11.7 AD5 aviation reservation

Objectives	Permissible uses with consent
The objectives of the AD5 zone are to:	Advertisement Advertising structure Aircraft maintenance facility Animal boarding or training establishment Aviation activity Aviation support facility Business premises Car park Child care centre Convenience store Educational establishment Entertainment facility Food and drink premises Freight handling and transport facility Function centre Health care professional Industrial retail outlet Industry Kiosk Landscape and garden supplies Light industry Liquid fuel depot and distribution facility Medical centre Mixed use development Navigational aids Office premises Parking space Passenger transport facility Public administration building Research station Restaurant Retail premises Road Self-storage units Service station Shop Signage Storage premises Takeaway food and drink premises Temporary structure Tourist or visitor accommodation Transfer corridor Transport depot Utility undertaking Vehicle sales and hire premises Warehouse and distribution centre Wholesale supplies Works depot
Protect the long-term viability and operational efficiency of Sydney Airport for its primary function	
Co-ordinate the orderly and economic use and development of land until such time as it is required for aviation activities or aviation support facilities	
Integrate compatible aviation, business and industrial activities in accessible locations	
Encourage appropriate employment opportunities in accessible locations	
Ensure that development will not render the land unfit for aviation activities or aviation support facilities when it is required for these purposes	
To ensure heritage items are appropriately considered and managed	

period have been detailed throughout the Master Plan and have been adequately provided for in the Master Plan's zone plan. In this regard, the operating capacity of the airport will not be compromised by the provision of a business development zone. Refer to **Table 11.8**.

Six parcels of land, occurring primarily on the periphery of the airport holding (approximately 20.3 hectares in total), have been identified as residual for any number of reasons, including but not limited to, matters such as:

- Air navigation services requirements
- Obstacle limitation surface requirements
- Access
- Ground access circulation requirements
- Depth
- Airfield connectivity - physical separation via roads, passenger terminals, built form and the like

The respective approximate areas of these residual parcels are: 7.06 hectares (T1 precinct), 3.54 hectares (T2/3 precinct), 0.96 hectares (Joyce Drive North), 1.04 hectares (General Holmes Drive North), 1.75 hectares (General Holmes Drive South and 5.91 hectares (M5 East Freeway). Collectively, the BD1 zone represents 2.2% of the entire site area.

Appropriately, this land has now been reserved for the purpose of business development to provide employment opportunities in accessible locations, support the local workforce and locate suitable businesses along significant corridors. In designating the peripheral residual parcels of land for the purposes of business development, regard has been given to landside access issues contained in Chapter 7 of this Master Plan. Generally, it is envisaged that the BD1 zone will be accessed via an internal road network (to the airport), with existing access and egress points utilised, where possible.

Table 11.8 BD1 business development

Objectives	Permissible uses with consent
The objectives of the BD1 zone are to	Advertisement
To enable a mix of business, retail and industrial uses in locations that are close to and that support the functioning of the airport	Advertising structure
To integrate suitable and compatible land uses in accessible locations so as to maximise public transport patronage and encourage cycling	Aviation activity
To encourage employment opportunities and promote businesses along main roads	Aviation support facility
Enable a limited range of other land uses that will provide facilities and services to meet the day-to-day needs of local workforce	Bulky goods premises
To ensure heritage items are appropriately considered and managed	Business premises
To maximise, where possible the use of existing access and egress points	Car park
	Child care centre
	Convenience store
	Educational establishment
	Entertainment facility
	Food and drink premises
	Freight handling and transport facility
	Function centre
	Health care professional
	Hotel or motel accommodation
	Industrial retail outlet
	Industry
	Kiosk
	Landscape and garden supplies
	Light industry
	Marina
	Medical centre
	Mixed use development
	Office premises
	Parking space
	Passenger transport facility
	Public administration building
	Research station
	Restaurant
	Retail premises
	Road
	Self-storage units
	Service station
	Shop
	Signage
	Storage premises
	Takeaway food and drink premises
	Temporary structure
	Tourist or visitor accommodation
	Transfer corridor
	Transport depot
	Utility undertaking
	Vehicle sales and hire premises
	Warehouse and distribution centre
	Wholesale supplies

The development of these areas for business purposes and resulting floor space will be restricted by operational aviation requirements in conjunction with physical constraints associated with development. Such constraints include:

- Building height
- Building separation
- Landscaping
- Internal circulation areas and parking
- Obstacle limitation surface requirements
- Air navigation services requirements
- Access and egress points

Particular assessment requirements

Before development approval is granted within this zone, the consent authority must first be satisfied that

the development of the kind being proposed will not adversely impact on any aviation activity or aviation support facility, either existing or proposed during the planning period.

11.4.7 BD2 – enviro-business park

This zone (dark green on the land use zoning plan) caters for environmentally sensitive business uses on land close to the environmentally significant Mill and Engine Ponds and to the Cooks River and Mill Stream. The BD2 zone has an approximate area of 12.6 hectares which represents 1.4% of the total site area. Refer to **Table 11.9**.

Development in this zone is generally of a kind that is sensitive to the environmental values of the land in this zone and adjacent lands. Development permissible in this zone must have no more than a minor impact on the

Table 11.9 BD2 enviro-business park

Objectives	Permissible uses with consent
The objectives of the BD2 zone are to:	Advertisement Advertising structure Animal boarding or training establishment Business premises Child care centre Earthworks or engineering works Environmental facility Environmental protection works Food and drink premises Office premises Parking space Recreation area Service station Sewage reticulation system Signage Takeaway food and drink premises Utility undertaking Vehicle layby area
Provide for a limited range of sustainable development, particularly for business purposes, that will not compromise the ecological, cultural or scientific value of this land or adjacent land including the Mill and Engine Ponds and the Mill Stream	
Ensure buildings achieve design excellence having particular regard to the surrounding natural and built environment and the associated sensitivities	
Encourage appropriate employment opportunities in accessible locations	
Enable a limited range of other land uses that will provide facilities and services to meet the day-to-day needs of local workforce	
Incorporate appropriate environmental management principles and controls into development proposals	
To ensure heritage items are appropriately considered and managed	

Table 11.10 EC1 environmental conservation

Objectives	Permissible uses with consent
The objectives of the EC1 zone are to:	Advertisement Advertising structure Environmental protection works Kiosk Parking space Recreation area Road Signage Utility undertaking Waterway and foreshore management activities
Protect the ecological and scenic values of the waterways in this area	
Maintain the health and natural flows of the waterway	
Enable maintenance dredging of the Mill Stream and related activities to maintain water depths and to ensure sedimentation accumulation is managed and controlled	
To ensure heritage items are appropriately considered and managed	

environment when all appropriate measures to avoid, reduce or minimise its impact on the locality have been implemented.

When any development is operational, it must not pose a significant risk to the health of the immediately adjoining biophysical environment. Due to the environmentally sensitive nature of this land, proposed development will be required to comply with applicable environmental legislation and the current Sydney Airport Environment Strategy.

The development of these areas for enviro-business purposes and resulting floor space will be restricted by operational aviation requirements in conjunction with physical constraints associated with development.

Such constraints include:

- Building height
- Building separation
- Landscaping
- Internal circulation areas and parking
- Obstacle limitation surface requirements
- Air navigation services requirements
- Access and egress points

Particular assessment requirements

Before development approval is granted within this zone, the consent authority must first be satisfied that the development of the kind being proposed will not adversely impact on neighbouring environmentally sensitive areas. The design, construction and operation of such developments will need to consider the proximity to the sensitive areas and investigate the incorporation of appropriate mitigating strategies such as the provision of setbacks and reserves.

11.4.8 EC1 – environmental conservation

This zone (dark blue on the land use zoning plan) applies to the environmental values of the Engine Ponds, Mill Pond and Mill Stream as they form part of the Botany Wetland System and the wider aquatic environment of Botany Bay. The EC1 zone represents 2.6% of the total site area (approximately 24 hectares). As a result of the presence of the parallel runway in conjunction with tidal influences, the Mill Stream requires ongoing maintenance to control the accumulation of sediment and facilitate natural flow and flushing processes. Refer to **Table 11.10**.

Particular assessment requirements

For the purposes of this zone, advertisements and advertising structures are to be erected only along the roadside.

Before development approval is granted within this zone, the consent authority must first be satisfied that the development of the kind being proposed will not adversely impact on neighbouring environmentally sensitive areas. The design, construction and operation of such developments will need to consider the proximity to the sensitive areas and investigate the incorporation of appropriate mitigating strategies such as the provision of setbacks and reserves.

11.5 Consistency with NSW statutory planning framework

The NSW land use planning framework is set by the Environmental Planning and Assessment Act 1979 (EP&A Act) and the Environmental Planning and Assessment Regulation 2000 (EP&A Regulation). Parts 3 to 5 of the EP&A Act regulate development and land use planning in NSW from preparation of environmental planning instruments to development and environmental assessment procedures.

11.5.1 Development objectives

The development objectives for Sydney Airport are consistent with the objects of the EP&A Act, in that environmentally responsible development based on sustainability principles is encouraged, as is the promotion and co-ordination of the land. The preparation of major development plans (MDPs) for major developments on Sydney Airport includes an environmental impact assessment, considering all potential impacts of the proposed development on the environment. Appendix E provides an outline of the development assessment process at Sydney Airport, which is similar to the processes for assessing development under the EP&A Act.

11.5.2 State environmental planning policies

State environmental planning policies (SEPPs) are prepared under Part 3 of the EP&A Act and deal with issues significant to NSW. SEPPs are administered by the Minister for Planning and Infrastructure as statutory environmental planning instruments that require consideration in the development assessment and environmental assessment processes.

In the preparation of this Master Plan, regard was given to the SEPPs (including REPs now deemed to be SEPPs), identified that would apply to Sydney Airport if it were governed by state legislation (refer to Appendix E). The proposed land uses and the process for gaining approval for development at Sydney Airport are generally consistent with the provisions of these SEPPs.

11.5.3 Regional environmental plans

As of 1 July 2009, regional environmental plans were removed from the hierarchy of environmental planning instruments in NSW. However, all existing REPs are now deemed to be SEPPs and therefore still require consideration.

During the preparation of this Master Plan, REPs that would be applicable to Sydney Airport if the site were subject to NSW legislation were identified and reviewed to demonstrate the Master Plan's consistency with such provisions (refer to Appendix E).

11.5.4 Section 117 ministerial directions

Under section 117(2) of the EP&A Act, the NSW Minister for Planning and Infrastructure is authorised to direct a local council to do or have regard to certain things when exercising its functions. These directions generally apply to all local councils unless a direction is area specific.

The current local planning directions, the majority of which were issued on 1 July 2009, have been considered for the purpose of this Master Plan (refer to Appendix E). If Sydney Airport were subject to NSW planning provisions, the following s117 ministerial directions would have to be applied specifically to the land use zoning provisions of the Master Plan:

1. Employment and resources

- Business and industrial zones (refers to Direction 1.1)

2. Environment and heritage

- Environmental protection zones (refers to Direction 2.1)
- Coastal protection (refers to Direction 2.2)
- Heritage conservation (refers to Direction 2.3)

3. Housing, infrastructure and urban development

- Integrating land use and transport (refers to Direction 3.4)
- Development near licensed aerodromes (refers to Direction 3.5)

4. Hazard and risk

- Acid sulfate soils (refers to Direction 4.1)

5. Regional planning

- Second Sydney Airport Badgerys Creek (refers to Direction 5.8)

6. Local plan making

- Approval and referral requirements (refers to Direction 6.1)
- Reserving land for public purposes (refers to Direction 6.2)

- Site specific provisions (refers to Direction 6.3)

The Master Plan is considered to be consistent with the above directions insofar as it:

- Encourages employment growth through the co-location of business and industry on site and in a suitable location which is highly accessible (Directions 1.1 and 3.4)
- Provides measures to protect and conserve environmentally sensitive areas and heritage items (Directions 2.1, 2.2 and 2.3)
- Integrates land use and supports the increased use of public transport (Directions 1.1 and 3.4)
- Ensures appropriate obstacle clearances areas are adhered to and ensures the effective and safe operation of the aerodrome by appropriate on-site zoning and land use (Direction 3.5)
- Does not include provisions for concurrence, consultation or referral for development applications (MDP included) unless so prescribed, has not identified designated/major developments and does not include restrictive planning controls (Direction 6.1)
- Permits the creation of recreation areas within the BD2 enviro-business park zone and AD4 utilities reservation zone (Direction 6.2)

Having regard to the above, the Master Plan has given appropriate consideration to the current s117 directions. The proposed land use zones and associated planning provisions for Sydney Airport are generally consistent with each of the identified directions.

11.5.5 Standard Instrument – Local Environmental Plan

On 21 September 2005, the NSW Minister for Planning announced the introduction of a Standard Instrument – Principal Local Environmental Plan (LEP template) for all local government areas within the state of NSW. Of particular relevance for the Sydney Airport Master Plan are the LEPs for the Botany Bay, Marrickville and Rockdale local government areas (LGAs) as these LGAs either apply to part of the land on Sydney Airport as well as land that is either adjoining or adjacent to the airport.

The Botany Bay Local Environmental Plan 2013, as amended, was prepared in accordance with the standard Instrument and gazetted on 21 June 2013. The Botany Local Environmental Plan (LEP) 2013 is discussed in Appendix E.

The Marrickville Local Environmental Plan 2011, as amended, was prepared in accordance with the standard instrument and gazetted on 12 December 2011. The Marrickville Local Environmental Plan (LEP) 2011 is discussed in Appendix E.

The Rockdale Local Environmental Plan 2011, as amended, was prepared in accordance the standard

instrument and gazetted on 5 December 2011. The Rockdale Local Environmental Plan (LEP) 2011 is discussed in Appendix E.

As shown in **Figure 11.2**, the land use zones for Sydney Airport on the periphery of the airport site take into consideration the future zones likely to be implemented in the adjoining LGAs in order to offer a degree of consistency between the zones and land uses on Sydney Airport and those of the surrounding lands.

11.5.6 Consistency with local environmental plans

Local environmental plans (LEPs) are prepared under Part 3 of the EP&A Act and provide the local planning provisions and development controls for a local government area.

As noted above, the Sydney Airport site is located within the LGAs of Botany Bay, Rockdale and Marrickville as shown in **Figure 11.2**.

For the first five years of the planning period, the Airports Act requires the Master Plan to include an analysis of how the proposed developments in the Master Plan fit within the planning schemes for commercial and retail development in the area that is adjacent to the airport.

The relevant planning schemes in this instance are:

- Botany Bay Local Environmental Plan (LEP) 2013
- Marrickville Local Environmental Plan (LEP) 2011
- Rockdale City Local Environmental Plan (LEP) 2011

A review of the land use provisions of the master plan and those in the above LEPs was undertaken to assess planning consistency (see **Appendix E**). The Master Plan is compatible with the local planning objectives of adjacent local government areas. As such, they fit within the planning schemes for commercial and retail development in areas adjacent to the airport.

11.6 Consistency with Sydney metropolitan planning

Metropolitan Plan for Sydney 2036

The Metropolitan Plan for Sydney 2036 (metropolitan plan) is the NSW Government's long-term strategic plan to maintain Sydney's role in the global economy and to plan for growth and change within the Sydney metropolitan area over the next 25 years. The metropolitan plan acknowledges that development at Sydney Airport is not currently subject to state or local planning controls¹ and as such, specific development initiatives as they relate to the future growth and development of the airport have been limited within the strategy.

Reference is, however, made to the airport, its typology as a specialised strategic centre and its significant location and role within the global economic corridor (GEC).

Economic corridors play a critical role for the metropolitan

¹ NSW Department of Planning "Metropolitan Strategy – City of Cities: A Plan for Sydney's Future", pg 101, 2005

economy. The GEC in particular is a key driver of Sydney's wealth generation and will continue to be into the future. The GEC extends from Macquarie Park via Chatswood, St Leonards, North Sydney, Sydney city, Green Square through to Sydney Airport. Employment and economic activity are concentrated in these types of corridors.

Strengthening the role of the economic corridor has been targeted through infrastructure upgrades ensuring connectivity via the Eastern Distributor and the M5 East, with the Orbital Motor Network, and the Airport Rail Link. Infrastructure upgrades in and around the GEC will continue to be required over the planning period.

Subregional strategies

Subregional planning is a component of the metropolitan plan that provides the detailed level of the subregions of Sydney within the City of Cities long-term framework. Sydney Airport is identified in two subregional strategies, as the airport is located within the local government area of Botany Bay in the East Subregion and Marrickville and Rockdale in the South Subregion.

Draft East Subregional Strategy 2007

The East Subregion Draft Subregional Strategy 2007 identifies the important role the East Subregion plays in the provision of transport infrastructure through Sydney Airport and Port Botany. The strategy outlines the significant employment opportunities and the transportation of passengers and freight, facilitating trade and cooperatively assisting to maintain Sydney's role as a global city.

Economic gateway

Sydney Airport is identified a number of times within the key directions for the East Subregion. The first key direction is to support and strengthen the nation's economic gateways through the protection of strategic employment lands in the area around Sydney Airport and Port Botany. The significance of Sydney Airport and Port Botany and particularly their adjacency is such that they provide the economic gateway to Sydney and the nation. The role of Sydney Airport within the GEC by providing employment and business opportunities will be strengthened through the Master Plan.

Retail centres

A further key direction for the East Subregion is the need to support the future role of retail centres within the subregion. The strategy identifies Sydney Airport and environs as a specialised centre for the East Subregion, through its provision of employment opportunities, and subregional and metropolitan services. While it is important to reinforce existing retail centres, the airport and its retail services are ancillary to the operations of the airport, providing fundamental services for airport employees as well as passengers.

Public transport access

The need to improve east-west public transport access is a further key direction identified for the East Subregion. This direction considers the importance of strengthening the east-west public transport link for commuters and exploring opportunities to strengthen the movements between subregions and bordering growth centres, such as Green Square. Green Square contains significant transport infrastructure that links Sydney's CBD and western Sydney with the airport but is currently underutilised.

Mascot industrial area

The Mascot industrial area is identified as being of strategic importance and should be retained for industrial purposes. This land is located north east of the airport and is zoned predominantly for airport-related business. This land accommodates a significant amount of activity generated by the airport, such as freight and logistics. The importance of maintaining this land for airport-related purposes is emphasised, a direction that is in line with the Master Plan. Periphery land uses provide a compatible interface and an appropriate transition to aviation activities and aviation support facilities.

The Master Plan has designated land for the purposes of aviation activities, business development, freight and logistics as well as interim industrial and commercial land uses adjoining the east subregion. These will support, encourage and complement the strategic employment lands adjoining Sydney Airport as well as significantly contribute to job creation and target realisation over the planning period.

Draft South Subregional Strategy 2007

The South Subregion Draft Subregional Strategy 2007 identifies Sydney Airport and environs various times within the key directions and actions for the area.

Employment lands

The first key direction for the South Subregion is to retain strategic employment lands, specifically the older industrial developments around the airport. This surrounding industrial land is considered key employment land as it has good access to the airport, existing rail infrastructure and connecting arterial roads. This land is also considered key as it provides significant residential support services, light industry and the opportunity for more intensive employment land uses.

The South Subregional Strategy identifies the portion of the airport site and environs that are within Marrickville LGA as a significant employment lands precinct and as such has classified it Category 1 – Land to be Retained for Industrial Purposes, with its key functions being freight and logistics. Category 1 classification does not prevent sites from being intensified in their use or redeveloped to meet current industrial requirements,

creating additional employment and economic benefits, but it will continue to accommodate primarily industrial and related uses within what is generally permitted under the land use zoning.

Employment growth at Sydney Airport and environs

The second key direction for the South Subregion is to plan for employment growth at Sydney Airport and environs, including Cooks Cove, Wolli Creek and Turella, by improving connections between these areas and the airport and to protect employment lands around Sydney Airport and Port Botany. The strategy outlines that planning needs to focus on integrating the functions between commercial centres within the airport environs, by ensuring good access to adjacent subregions.

Sydney Airport – specialised centre

The South and East Subregional Strategies correspondingly identify Sydney Airport and environs as a specialised centre that plays a vital economic and employment role, generating metropolitan wide benefits. Being identified as a specialised centre, Sydney Airport and environs is linked by corridors with other strategic centres, such as the Sydney's CBD. These corridors are generally highly concentrated areas of activity.

The Master Plan has designated land for the purposes of aviation activities, business development, freight and logistics as well as interim industrial and commercial land uses adjoining the East Subregion. These will support, encourage and complement the strategic employment lands adjoining Sydney Airport as well as significantly contribute to job creation and target realisation over the planning period.

Draft Metropolitan Strategy for Sydney 2031

Draft Metropolitan Strategy for Sydney 2031 (released March 2013) builds on Metropolitan Plan Sydney 2036, providing an updated strategy for the growth of Sydney. The draft strategy collaborates with other state plans including the NSW Long Term Transport Master Plan and State Infrastructure Strategy.

Under the strategy, Sydney Airport remains as a specialised precinct and the international and national gateway to the global economic corridor (GEC). The airport is therefore a key piece of economic infrastructure for the growth of global Sydney.

NSW planning system review

NSW 2021, the 10-year state plan, sets goals and targets for the economy, employment, housing supply, infrastructure delivery and community services among other things. It seeks to supply 100,000 new jobs in NSW and facilitate the delivery of 25,000 new dwellings a year by 2020.

With a focus on its commitments in the state plan, the government has released a bill for a Planning Act

to replace the EP&A Act. The proposed new planning regime presents a number of key themes including a greater focus on strategic planning, an aim for clearer planning controls, and suggests a shift towards more categories of complying development, and substantial change to the environmental planning instruments that will apply in NSW.

The NSW Government introduced new planning legislation into NSW Parliament on 22 October 2013. The new planning legislation is known as the Planning Bill 2013 and is, at the time of finalising the Master Plan, being debated in NSW Parliament. The NSW Government proposes that the Planning Bill 2013 replace the current planning legislation, the EP&A Act. Sydney Airport is closely monitoring the review of the NSW planning system and the proposed Planning Act.

Summary

Both the East and South Subregional Strategies outline the need for obligatory working relationships between Sydney Airport and federal, state and local governments in order to manage growth of aviation and non-aviation activities at Sydney Airport.

The significance of Sydney Airport's role in the economy has been quantified in employment and economic contribution terms. A recent study by Deloitte Access Economics completed in January 2013 indicated that Sydney Airport generates 283,700 jobs (equivalent to 8% of NSW employment), including 160,000 direct jobs. The study also found that the airport provides a direct and indirect contribution of \$27.6 billion, equivalent to 6% of the NSW economy and 2% of the Australian economy.

In preparation of the Master Plan, the key directions and actions as identified in the Draft East Subregional Strategy and the Draft South Subregional Strategy have been identified and considered and it is concluded that the Master Plan is generally consistent with the relevant components of the metropolitan plan.

The metropolitan plan emphasises the significance of Sydney Airport, together with Port Botany, as being the economic gateways to the nation and with that, it is important to maintain employment lands that surround the airport, including those residual parcels on the periphery of the airport no longer required for aviation purposes.

The Draft East Subregional Strategy's key directions focus on strengthening existing centres, improving infrastructure and protecting the area's tourism. Direction 1 aims to protect the employment lands in the vicinity of the Airport/Botany Bay. The Master Plan supports this direction through zone creation and as an extension of those zones, job creation, while not reducing employment lands. Direction 4 raises concerns in relation to the growth of out-of-centre retail at the expense of existing retail centres. While it is important

to reinforce existing retail centres, the airport and its retail services are ancillary to the operations of the airport, providing fundamental services for airport employees as well as passengers.

The Draft South Subregional Strategy's key directions focus on developing employment and commerce while upgrading infrastructure in the region. Direction 1 encourages the growth of employment, particularly light industry in close proximity to the airport and Botany Bay. Direction 2 aims to increase the number of jobs within the specialised centre incorporating the airport. These policies support the introduction of both the AD2 and BD1 zones in this section of the airport as they will implement the necessary land use controls that will allow business to develop and thus generate employment. Additionally these business areas will contribute to the growth of the employment hub centred on the Airport/Botany Bay precinct in conjunction with the development of the light industrial area.

The Draft South Subregional Strategy identifies land in the Marrickville LGA abutting the northern perimeter of the airport for industrial uses associated with freight and logistics. This use is reflected in the zoning of the northern portion of the airport under the Master Plan as AD3 (airport logistics and support) that facilitates freight logistics and other industrial and light industrial uses.

There is the potential for the airport's business centres to compete with the major centres of Hurstville and particularly Kogarah which is in closer proximity to the airport. However, the Draft South Subregional Strategy notes that Kogarah may need to focus on specialist retail to distinguish itself from the centres of Rockdale and Hurstville and this in turn would further distinguish it from the airport.

The Master Plan provides the opportunity for the creation of economic precincts that will support, complement and encourage activity on adjoining and surrounding employment lands. These economic precincts will promote business activity and employment generation and in this regard, are considered compatible with the metropolitan plan and its subordinate strategies.

Figure 11.1
Land use zoning plan

This drawing has been prepared to illustrate the Sydney Airport Master Plan and is not intended to serve any other purpose. The drawing must be read in conjunction with the Master Plan.

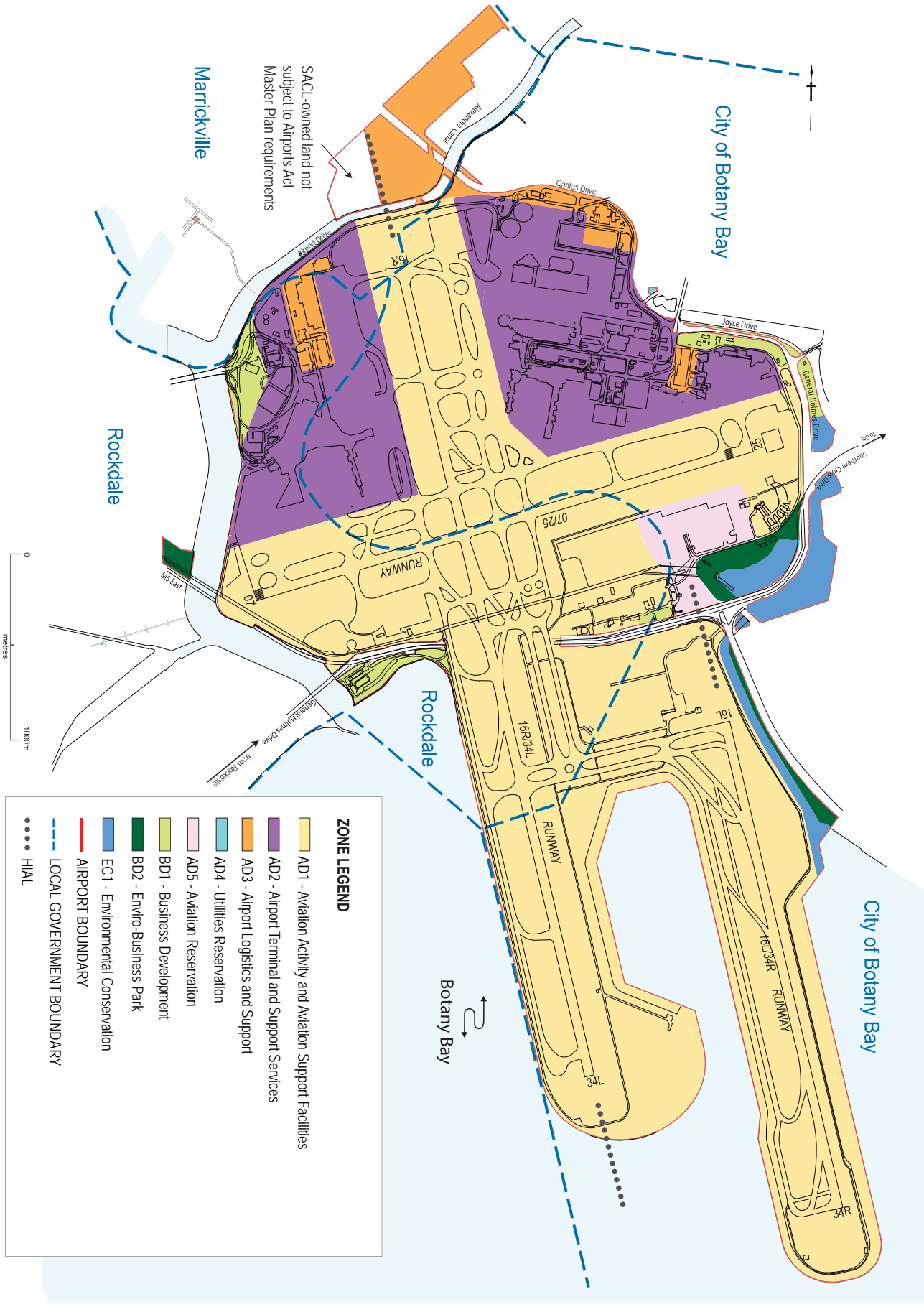
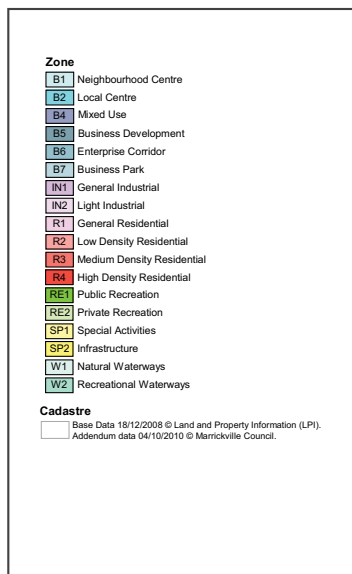
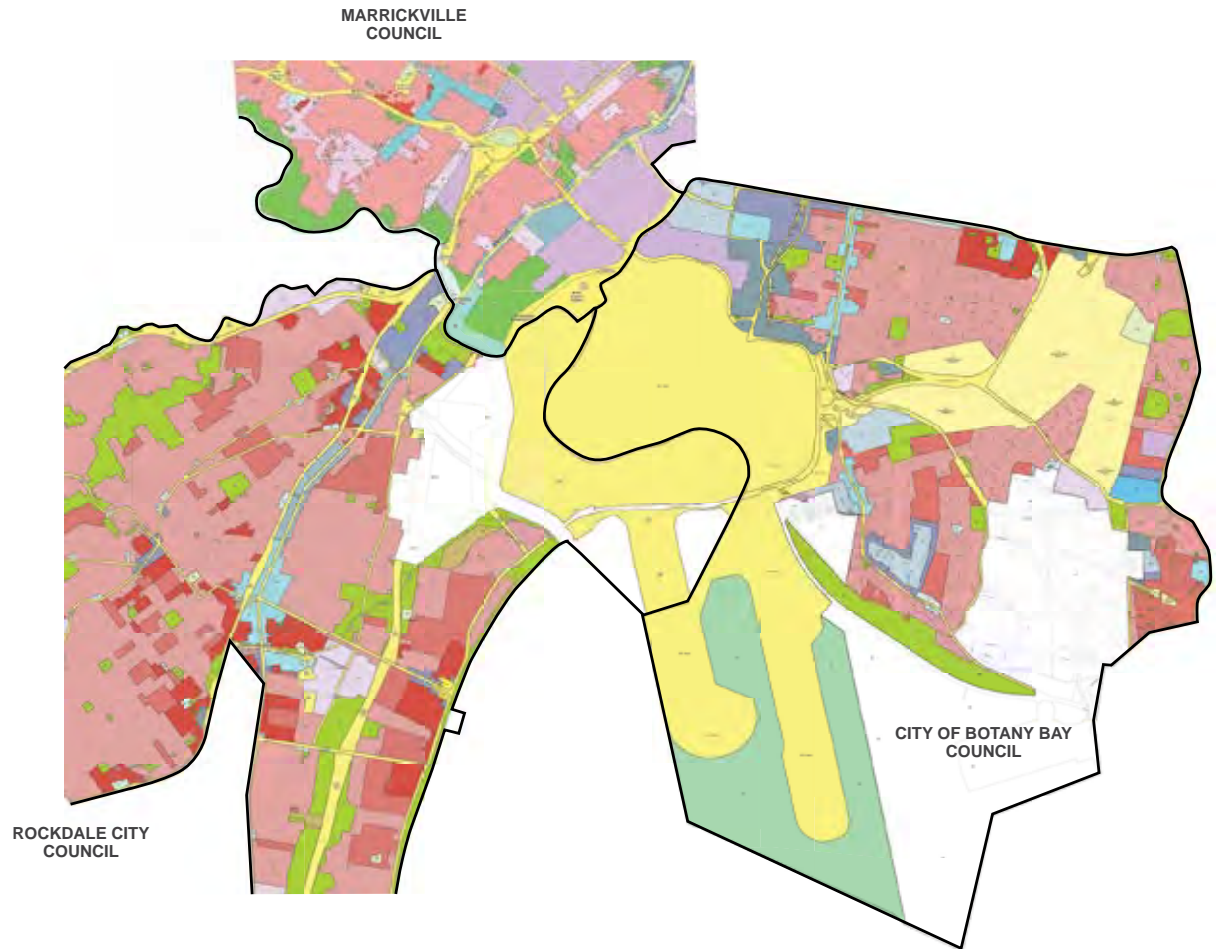
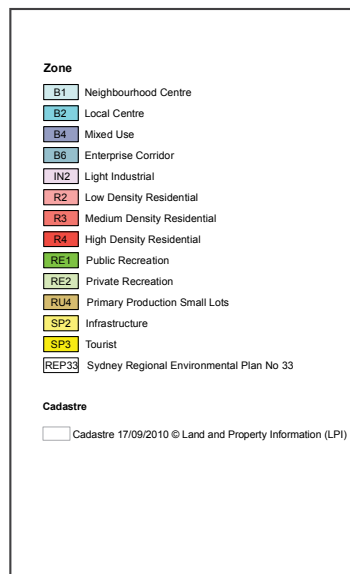


Figure 11.2
Existing land use zones around Sydney Airport

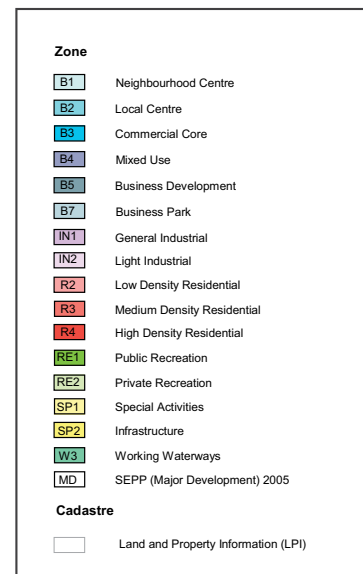
This drawing has been prepared to illustrate the Sydney Airport Master Plan and is not intended to serve any other purpose. The drawing must be read in conjunction with the Master Plan.



MARRICKVILLE
Local Environmental Plan
2011



ROCKDALE CITY
Local Environmental Plan
2011



CITY OF BOTANY BAY
Local Environmental Plan
2013

Figure 11.3
Existing airport layout

This drawing has been prepared to illustrate the Sydney Airport Master Plan and is not intended to serve any other purpose. The drawing must be read in conjunction with the Master Plan.

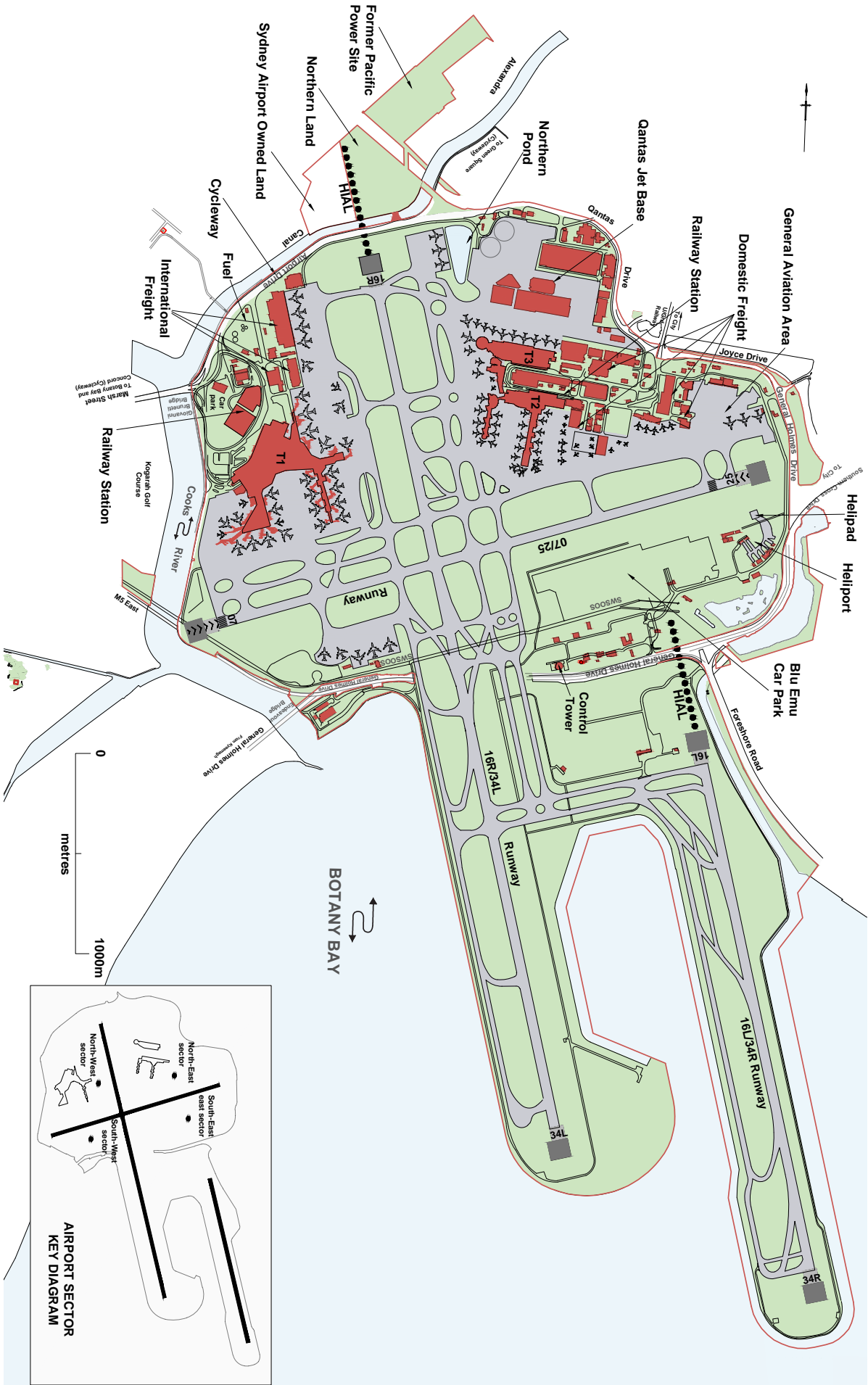
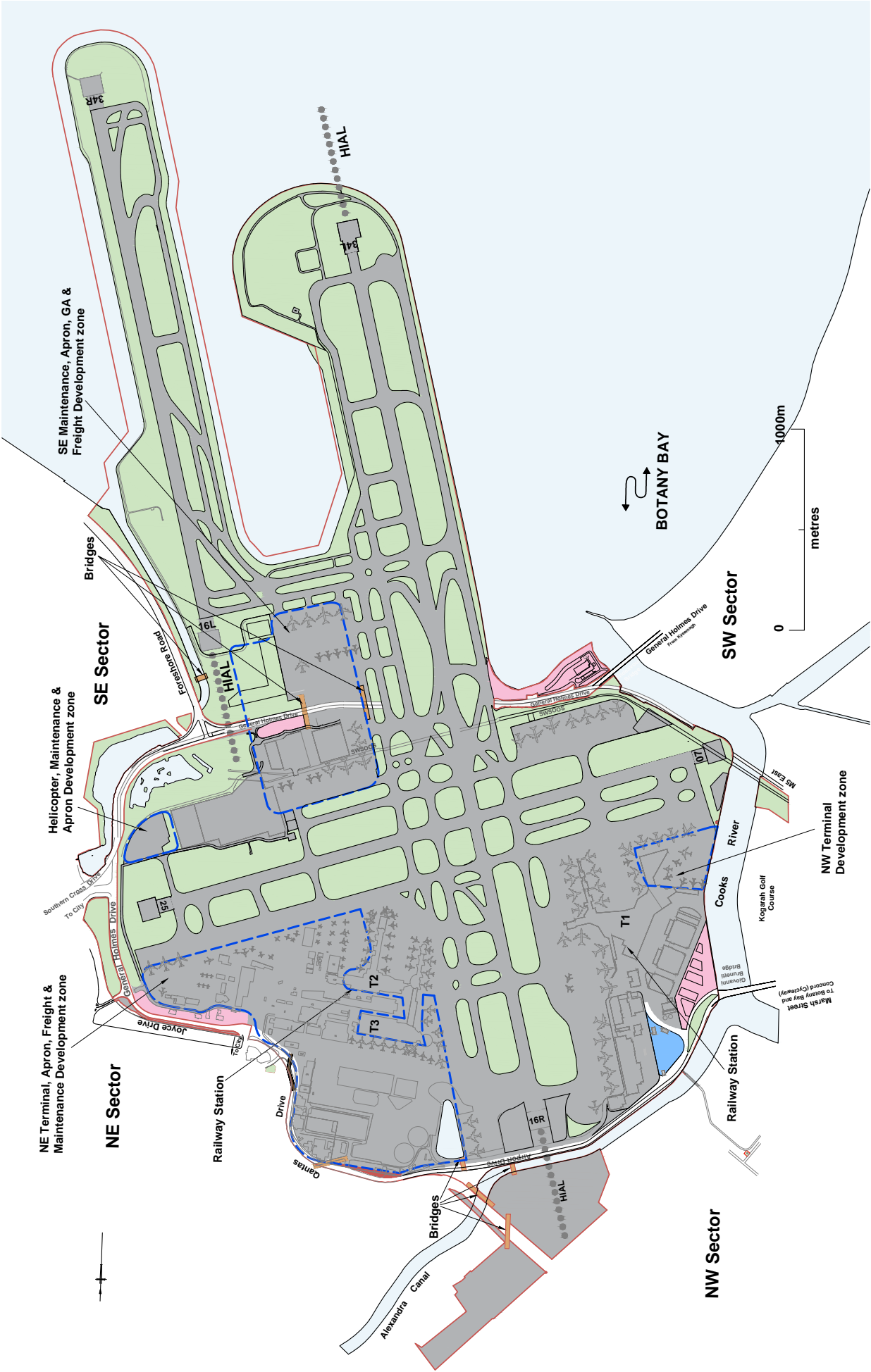


Figure 11.4
Development Plan

This drawing has been prepared to illustrate the Sydney Airport Master Plan and is not intended to serve any other purpose. The drawing must be read in conjunction with the Master Plan.





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12.0

**SAFETY AND
SECURITY**

12.0 SAFETY AND SECURITY



Key points

- The development plan within this Master Plan:
 - Will improve airfield safety by reducing the towed aircraft runway crossings and other airfield enhancements
 - Significantly enhances the airfield to ensure runway safety and aircraft operations in low visibility conditions
 - Is compliant with the relevant legislation and is designed with safety and security outcomes in mind
- Sydney Airport proactively manages safety and security:
 - There is a well-established framework to manage safety and security in collaboration with relevant third parties, including aircraft operators, tenants and government agencies
 - There has been significant investment in enhanced infrastructure and technology for safety and security. Sydney Airport is focused on enhancing the awareness culture and in August 2012 Airport Watch was launched in cooperation with the Australian Federal Police. The program is designed to encourage the identification and reporting of suspicious activity at the airport
 - Comprehensive governance mechanisms are in place to ensure that safety and security policies and procedures are followed
 - Without compromising safety and security or compliance with the legislation, Sydney Airport seeks to minimise the inconvenience to passengers and other users of the airport
 - Safety and security design considerations and airspace protection are essential to our operational environment

All airport developments are subject to an internal safety and security review to ensure compliance with legislative obligations. The Master Plan was prepared with particular regard to safety, security and risk management. The development plan will improve safety by reducing towed aircraft runway crossings and other airfield enhancements.

12.1 Investment in enhanced infrastructure and technology

Investment in enhanced infrastructure and technology is important for safety and security at Sydney Airport.

During the previous master planning period significant investment has been made to ensure safety through the following initiatives:

- Transmissometers
Transmissometers are instruments that are used to provide accurate runway visibility assessments in low visibility conditions brought about by fog and mist. At Sydney Airport transmissometers are located at three points along all of the runways to provide the tower and pilots with an overall airfield visibility perspective.



- Stop bars

To further enhance airfield safety and reduce the incidence of runway incursions, Sydney Airport has installed runway stop bars at all runway hold points along Runway 07/25, Runway 16R/34L and Runway 16L/34R. The installation of these stop bars provides further visual cues to pilots with respect to the runway hold points. Stop bars, in conjunction with runway guard lights, movement area guidance signs (MAGS) and line markings further assist in the prevention of runway incursions. The number of runway incursions has been on a steady decrease over the past seven years. The stop bar system has been enhanced with elevated stop bar lights to facilitate greater visibility from the aircraft cockpit.

- Advanced surface movement guidance and control system

Sydney Airport was designated by the Civil Aviation Safety Authority (CASA) on 1 July 2012 as an aerodrome to which advanced surface movement guidance and control system (ASMGCS) applies as per Civil Aviation Safety Regulations (CASR) paragraphs 139.252 and 139.254. This requires all vehicles operating on the manoeuvring area to be fitted with electronic surveillance equipment.

- Security infrastructure and technology

Sydney Airport has made significant investment in enhanced infrastructure and technology to deliver strengthened security outcomes. Over recent years, the security regime has been enhanced, for example, through the addition of 100% checked baggage screening, explosive trace detection, liquids aerosols and gels screening, current introduction of body scanners, and expanded closed circuit television (CCTV) and access control coverage.

Current works under way include:

- Installation of high intensity approach lighting for Runway 34L

Operations to Runway 34L will be enhanced by the installation of a reduced length high intensity approach lighting (HIAL) system. The system will facilitate Category I approaches to a runway visual range (RVR) of 800 metres and a Category II approach to an RVR of 350 metres.

- Upgrade of high intensity approach lighting for Runway 16R upgrade

Runway 16R HIAL will be upgraded to provide for Category II approaches to an RVR of 350 metres.

Sydney Airport under this Master Plan and development plan is committed to ongoing improvement of airfield safety and efficiency.

This is anticipated through a number of initiatives including:

- Enhancement of the airfield taxiway system to improve taxiing aircraft flows
- Reduction in potential taxiing aircraft conflicts and points of congestion
- Low visibility initiatives
- Aprons with dual taxilanes
- Reduction in towed aircraft runway crossings and acknowledging that the incidence of powered runway crossing has no impact on the airport capacity and does not generate taxiway congestion. The reduction in towed aircraft runway crossings provides the opportunity for improved airline on-time performance, reduces delays and enhances safety management

Sydney Airport will also continue to work closely with the Office of Transport Security to introduce optimal screening technologies in response to the evolving threat environment. In implementing upgrades to physical security infrastructure, Sydney Airport considers the relevant Australian/overseas security standards or “better practice” guides and consults with subject matter experts.

All airport developments are subject to an internal security review to ensure compliance with legislative obligations.

12.2 A well-established framework to manage safety and security

Sydney Airport is committed to maintaining a safe, secure and reliable airport operating environment through robust management frameworks.

Safety management system

A safety management system (SMS), which is required by Regulation 139.250 of the Civil Aviation Safety Regulations 1998, is in place and operating effectively at Sydney Airport. The SMS outlines the processes for effectively managing safety and is audited annually by CASA.

The SMS provides the system by which long term and daily safety management can be planned, implemented and reviewed in a continuous cycle of improvement.

Traffic management plan

To manage the flow of traffic around aircraft operations and airport infrastructure, the Sydney Airport Traffic Management Plan (the plan) was prepared in accordance with the Work Health and Safety Act 2011. The plan covers the interaction between vehicles and their immediate environment (e.g. pedestrians, other

vehicles and infrastructure) and the processes undertaken to eliminate and/or reduce the risks associated with those interactions within Sydney Airport. The plan addresses hazards associated with pedestrian/vehicle and vehicle/vehicle interactions within the workplace, which are considered to present a risk of harm to people, property or environment if not managed in a careful and systematic way.

The plan has been developed with reference to:

- Airports (Control of On-Airport Activities) Regulations 1997
- Sydney Airport Airside Vehicle Control Handbook (AVCH)
- Work Health & Safety Act and Regulations 2011 (WHS legislation)

Security management system

Security management is carried out in accordance with the regulatory obligations specified in the Aviation Transport Security Act 2004 and the Aviation Transport Security Regulations 2005. Sydney Airport undertakes security risk assessments based on the threat level established by the Australian Government. How Sydney Airport achieves certain security outcomes is shaped by the legislative requirements, the local security risk context and the operational environment. The government continues to highlight that preventative security planning in the current threat environment is the most practical mitigation strategy. Sydney Airport security plans and prevention strategies are consistent with this approach.

The security management system is described in the Transport Security Program. This Master Plan has been reviewed in accordance with Sydney Airport’s security obligations. The program sets out in broad terms Sydney Airport’s security risk context, mitigation measures, and emergency and contingency plans. It is prepared following consultation, correspondence and meetings with relevant third parties, including the Australian Federal Police, NSW Police Force, aircraft operators, tenants and government agencies. Sydney Airport regularly reviews, updates and seeks approval from the Office of Transport Security for changes to the program. An aviation industry participant security guide is produced to provide all industry participants located on Sydney Airport with an understanding of the security management system.

12.3 Creating a strong safety and security culture

A focused approach by Sydney Airport on enhancing the awareness culture for safety and security is a strategic priority. The implementation of appropriate mechanisms for the management and control of safety and security activities as well as a robust regime of compliance is an essential part of ongoing safety and security cultural improvements.

Ground handling culture and licence system

To drive cultural improvements to ramp safety and ground handling behaviour on the airside, Sydney Airport has formed a consultative group consisting of airlines, ground handlers and airport management. This group is progressing the development of guiding principles that will shape a formalised regime of ground handlers' conditions of use licensing. This strategy is supported by the Sydney Airport Airline Operators Committee and those companies that provide ground handling services to ensure an enhanced safety culture. This approach supports recent changes to Work Health and Safety (WHS) legislation that have increased the level of accountability for managers of all organisations. Regulatory bodies such as WorkCover NSW and CASA have indicated their intention to take a higher level of interest in airside ground activities to ensure compliance with associated acts and regulations.

Security culture

Sydney Airport is focused on establishing a strong security culture among airport staff. Individuals play a critical role in delivering security outcomes. Security measures are only effective if they are upheld by vigilant security attitudes. Robust security cultures support all elements of preventative security, including ensuring physical security measures are operational and effective, security procedures are adhered to, and suspicious activity is identified and resolved. Sydney Airport invests in regular staff security awareness campaigns.

Airport employees are well placed to identify and report suspicious, unusual or changed behaviours by members of the public or fellow staff. The Australian Government has implemented a new national aviation security awareness strategy called Airport Watch. The roll-out of this strategy is being managed by the Australian Federal Police and is designed to complement the existing security awareness program at Sydney Airport. This community approach, similar in principle to Neighbourhood Watch programs, not only focuses on identifying suspicious activity, but on real time resolution.

12.4 Governance mechanisms in place

Quality management system

A centralised and integrated quality management system (Q-Pulse) has been implemented to support the safety and security framework. Q-Pulse allows Sydney Airport to collect all relevant information related to incidents and the subsequent investigation in one system. In terms of internal, external and regulatory auditing, the system can schedule and track audit activities easily as well as keep track of findings and corrective actions. Analysis can be performed on incidents and corrective actions as well.

Safety audits

CASA as regulator conducts an annual safety audit of Sydney Airport to assess management's compliance with approved operational procedures and to ensure airport facilities meet the requirements under the manual of standards. As a supplementary control, an annual aerodrome technical inspection (ATI) complements the CASA audit and is undertaken by an independent auditor.

The SMS has also been reviewed, resulting in changes to the enterprise risk processes, changes in management, and the updating of various documents associated with the SMS manual. Sydney Airport has an internal audit program to ensure Sydney Airport engaged contractors are complying with the CASA Manual of Standards and WHS legislation.

Security audits

Sydney Airport engages a government licensed and professionally qualified security service provider. The security service contract is managed utilising a high standard of key performance measures and, in addition, maintains a strong policy of compliance management which includes an internal regime of audits, inspections and tests.

Along with passenger and checked baggage screening, the main security functions that are undertaken by Sydney Airport's security service provider include airport perimeter patrols, airside/terminal/landside foot patrols, gate access control, and general CCTV security surveillance and alarm monitoring.

The Office of Transport Security conducts two audits of Sydney Airport each year to ensure compliance with government-mandated airport security measures. These audits are supplemented by ongoing inspections, testing and observations to assess Sydney Airport's compliance with the approved Transport Security Program and the requirements of aviation security legislation. Sydney Airport is also audited by both international and domestic airlines as well as other international government and regulatory agencies. This includes, for example, audits by the United States Transportation Security Administration.

12.5 Seeking to minimise the impact on passengers and staff

Sydney Airport seeks to minimise the impact on passengers and staff without compromising safety and security or compliance with the legislation.

Security with service

"Security with service" is viewed as critical to the end-to-end passenger experience at Sydney Airport.

A collaborative approach with Sydney Airport's security service provider, named the One Aviation Security Team, has been implemented to deliver a new mission

of “professional security with service and integrity”. The One Aviation Security Team has resulted in improvements to the delivery of contracted security services at Sydney Airport and is positively changing the way people see and experience aviation security. The resultant “security with service” outcomes will continue to be monitored by Sydney Airport through both internal and external passenger/staff surveys.

12.6 Designing with safety and security in mind

Considering safety and security design requirements in development planning is essential to our safe operational environment.

Aircraft crash risk

The proposed on-airport land uses are considered to be appropriate. On-airport, issues relating to crash risk are considered by Sydney Airport in the approval process when assessing proposed developments. Off-airport, land use zoning falls within the jurisdiction of the surrounding local government areas. No legislation or guidelines exist at a federal or state level governing permissible land uses with respect to aircraft crash risk. Although no special arrangements have been put in place by these authorities, Sydney Airport will continue to work with them on a case-by-case basis.

Security by design

“Security by design” considerations have been incorporated into the land development plan included within this Master Plan. Incorporating measures during detailed design such as structural design, vehicle control and crowd management has benefits in terms of their effectiveness and of minimising costs, and can better take account of the needs of passengers. Future security obligations relating to enhanced airside inspection, airport front of house areas including terminal forecourts, and other physical security measures are proposed to be considered and Sydney Airport will work closely with the Office of Transport Security on these matters.

12.7 Airspace protection is essential for a safe operating environment

The protection of the immediate airspace around airports is essential in ensuring and maintaining a safe operating environment and to provide for growth. For this reason, it is necessary to restrict some types of development and land uses in the vicinity of airports. This is to guarantee that designated airspace segments remain obstacle-free, thereby contributing to the safety, efficiency and regularity of aircraft operations.

Since Sydney Airport is able to control on-airport development activities, the primary focus of airspace protection is in off-airport areas and developments under the control of other authorities. Airspace protection therefore involves aspects of land use planning

and development control that need to be managed cooperatively with external responsible authorities.

Airports (Protection of Airspace) Regulations 1996

Under the Airports (Protection of Airspace) Regulations 1996, a system has been established for the protection of airspace at and around regulated airports, such as Sydney Airport, in the interests of the safety, efficiency or regularity of existing or future air transport operations. The regulations define prescribed airspace for an airport, which includes the airspace above any part of either an obstacle limitation surface (OLS) or procedures for air navigation services – aircraft operations surfaces (PANS-OPS). These regulations apply to both on-airport and off-airport developments.

The regulations stipulate that for controlled activities, specific approval is required from the Department of Infrastructure and Regional Development. Controlled activities include constructing or altering a building, or any other activity that causes a thing attached to or in physical contact with the ground to intrude into the prescribed airspace. This includes cranes and other temporary structures.

The regulations require that proponents of proposed controlled activities provide Sydney Airport with the details of the proposal, which are then assessed against the OLS and PANS-OPS and navigation aid protection criteria. Where it is assessed to affect the safety, efficiency or regularity of air transport at Sydney Airport, Sydney Airport will oppose the infringement of the OLS and/or PANS-OPS surfaces. In considering development proposals, local government authorities should be cognisant of the restrictions imposed by the Airports Act and regulations.

Sydney Airport sends an annual letter to all local government areas surrounding the airport, reminding them of their obligations in ensuring compliance with the Airports (Protection of Airspace) Regulations 1996, as well as providing comments relating to airspace protection for local government area local environment plans.

Obstacle limitation surfaces

The OLS is a series of surfaces in the airspace surrounding an airport. The OLS defines the airspace to be protected for aircraft operating during the initial and final stages of flight, or manoeuvring in the vicinity of the airport. **Figure 12.1** depicts the OLS associated with Sydney Airport.

They are established in accordance with International Civil Aviation Organisation (ICAO) specifications, as adopted by Australia’s CASA. Australia is a signatory to the Convention on International Civil Aviation (Chicago 1944) from which the Manual of Standards Part 139 – Aerodromes (including OLS) was developed and subsequently adopted.

The drawings of the OLS and PANS-OPS depicted in **Figures 12.1 to 12.5** and described below give heights (to Australian height datum – AHD) above which developments, both on and off airport, need to consider issues relating to obstacle height. Detailed drawings of all of these surfaces are available from Sydney Airport.

Procedures for air navigation services – aircraft operations surfaces

At major airports such as Sydney, radio-navigation aids and satellite navigation enable aircraft to operate safely in poor weather conditions. PANS-OPS are established to protect those stages of take-off, landing or manoeuvring when aircraft are operating in non-visual (instrument) conditions. Pilots must be assured of obstacle clearance in these circumstances, although transition from or to visual conditions will still occur at some point in the flight.

The ICAO standards for PANS-OPS surfaces require surfaces to be defined for each published procedure for aircraft operating in accordance with that procedure. The PANS-OPS surfaces should not be infringed in any circumstances. The PANS-OPS surfaces at Sydney Airport are relatively complex because of the number of published instrument procedures. **Figures 12.2 to 12.5** give simplified depictions of Sydney Airport's PANS-OPS surfaces.

Navigation aid and radar restricted surfaces

Airservices Australia operates a number of radio navigation aids that provide guidance to aircraft operating in poor weather conditions. Airservices Australia also operates a number of surveillance systems which provide surveillance of aircraft in the air and aircraft and vehicles operating on the ground at Sydney Airport.

To meet the necessary performance requirements, airspace restrictions are established for each item of equipment and procedure. Unlike OLS and PANS-OPS, it may be possible under some circumstances (subject to detailed modelling and analysis) to permit infringements of the protective surfaces without degradation in system performance. Protection of the navigation aid and radar restricted surfaces is a mandated requirement of CASR 139 and CASR 171.

Sydney Airport refers all proposed developments and crane operations which may impact on nav aids and radar to Airservices Australia for assessment.

Engine-out procedures

Under Civil Aviation Order CAO 20.7.1B, operators of aircraft having an all-up weight in excess of 5,700kg are required to consider obstacle clearance requirements in the event of an engine failure. The specific procedures applicable to meeting these requirements are a matter for the aircraft operator concerned. Unless specifically requested by an operator, Sydney Airport's airspace

protection role does not extend to protecting CAO 20.7.1B surfaces, except where they are protected by an equivalent or more limiting OLS or PANS-OPS requirement.

Restrictions to external lighting

CASA has the power under the Civil Aviation Regulations 1988 to control ground lights where they have the potential to cause confusion or distraction from glare to pilots in the air. To assist lighting designers and installation contractors in the vicinity of airports, CASA has established guidelines on the location and permitted intensities of ground lights within a 6km radius of airports. External advertising, sports field floodlighting and street lighting are some of the more likely lighting sources requiring consideration.

The intensity of external lighting, the intensity of reflected sunlight, and smoke, dust or particulate matter may also be considered controlled activities under the Airports (Protection of Airspace) Regulations 1996, and therefore subject to the regulatory regime described in this chapter.

Figure 12.6 shows the lighting intensity guidelines with respect to Sydney Airport's runways.

Stack and vent efflux issues

Air turbulence can result from ground activities. Where these exceed 4.3 metres per second, the emission of steam or other gas may be considered controlled activities under the Airports (Protection of Airspace) Regulations 1996. Industrial activities such as manufacturing and cogeneration plants adjacent to airports are the types of industries that can produce these effects.

Wildlife management

Sydney Airport monitors and controls the presence of birds on or in the vicinity of the airport in accordance with CASA regulations. Sydney Airport's wildlife management plan describes the practices and procedures to manage wildlife hazards caused by the presence of birds or animals on or near the aerodrome. The plan has been developed based on the knowledge of local wildlife populations and the hazards various species pose to aircraft. This plan is developed in conjunction with the airport Wildlife Working Group (WWG), a forum for key stakeholder and local authority consultation, and ensures wildlife management is consistent with the Sydney Airport Environment Strategy.

Figure 12.1
Obstacle Limitation Surfaces (OLS)
Current and Future OLS

This drawing has been prepared to illustrate the Sydney Airport Master Plan and is not intended to serve any other purpose. The drawing must be read in conjunction with the Master Plan.

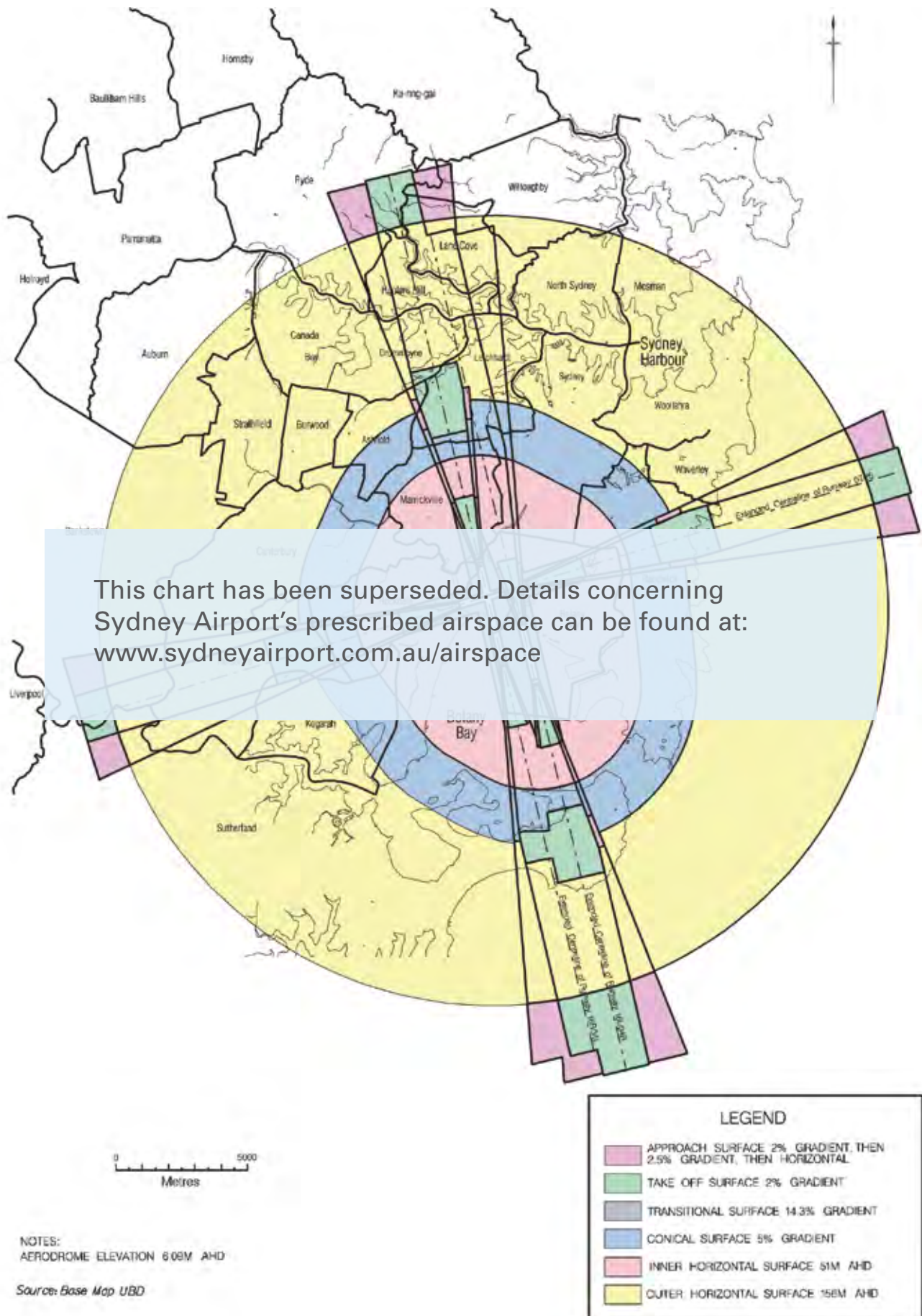


Figure 12.2
Current and Future PANS-OPS
Surfaces Basic ILS

This drawing has been prepared to illustrate the Sydney Airport Master Plan and is not intended to serve any other purpose. The drawing must be read in conjunction with the Master Plan.

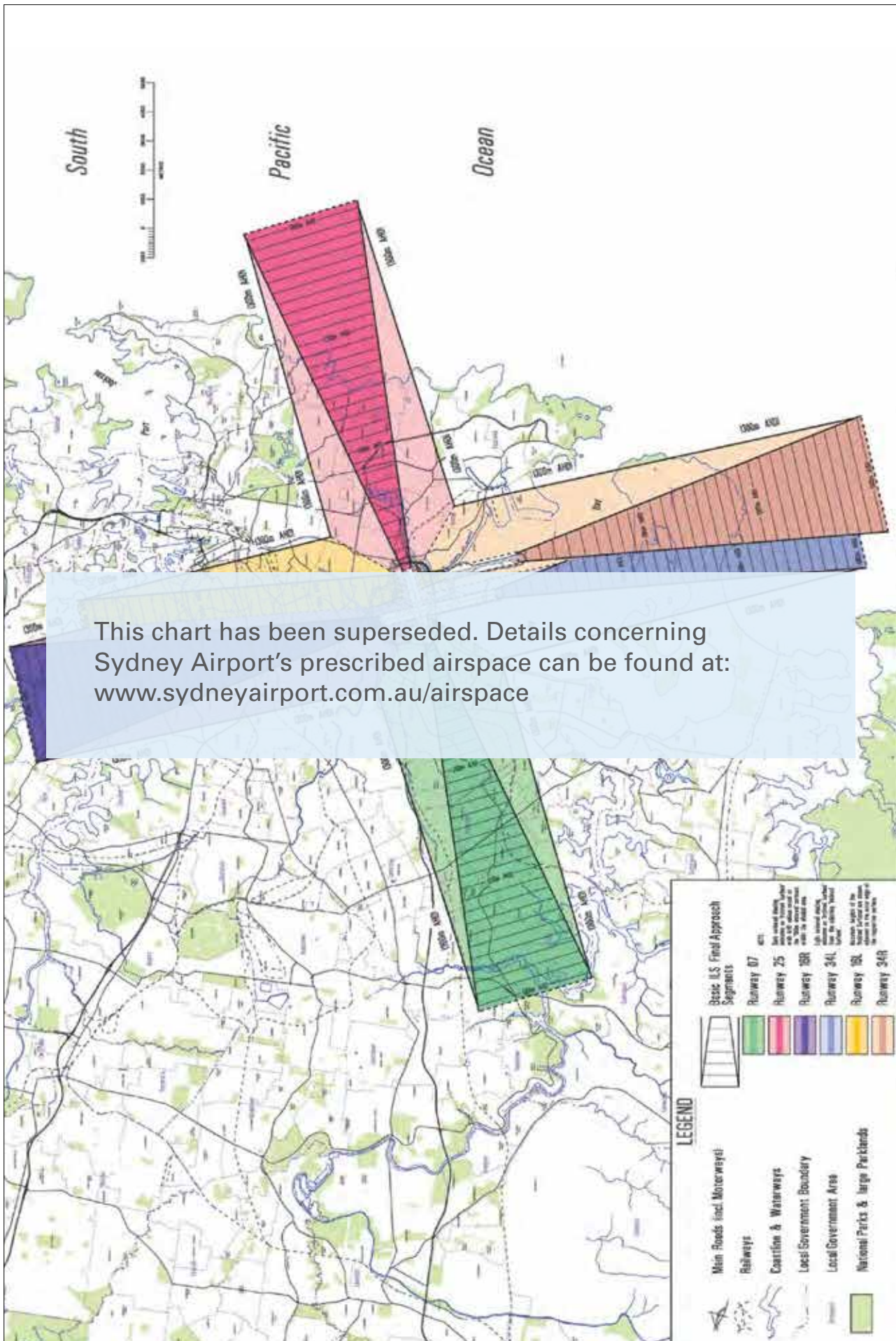


Figure 12.3
Current and Future PANS-OPS Surfaces
LLZ / DME Final Approach Segments

This drawing has been prepared to illustrate the Sydney Airport Master Plan and is not intended to serve any other purpose. The drawing must be read in conjunction with the Master Plan.

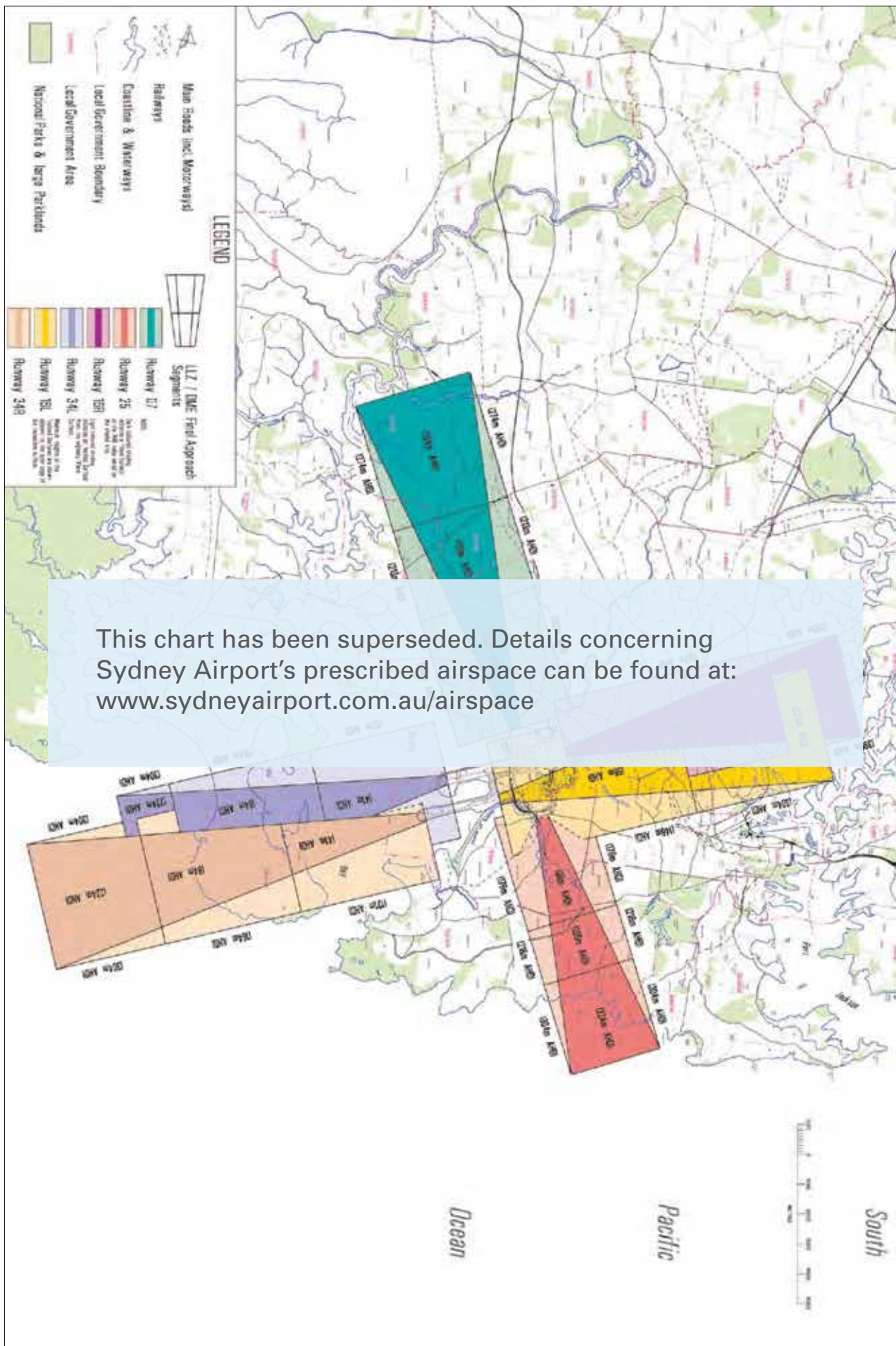


Figure 12.4
Current and Future PANS-OPS
Surfaces Circling Procedures

This drawing has been prepared to illustrate the Sydney Airport Master Plan and is not intended to serve any other purpose. The drawing must be read in conjunction with the Master Plan.

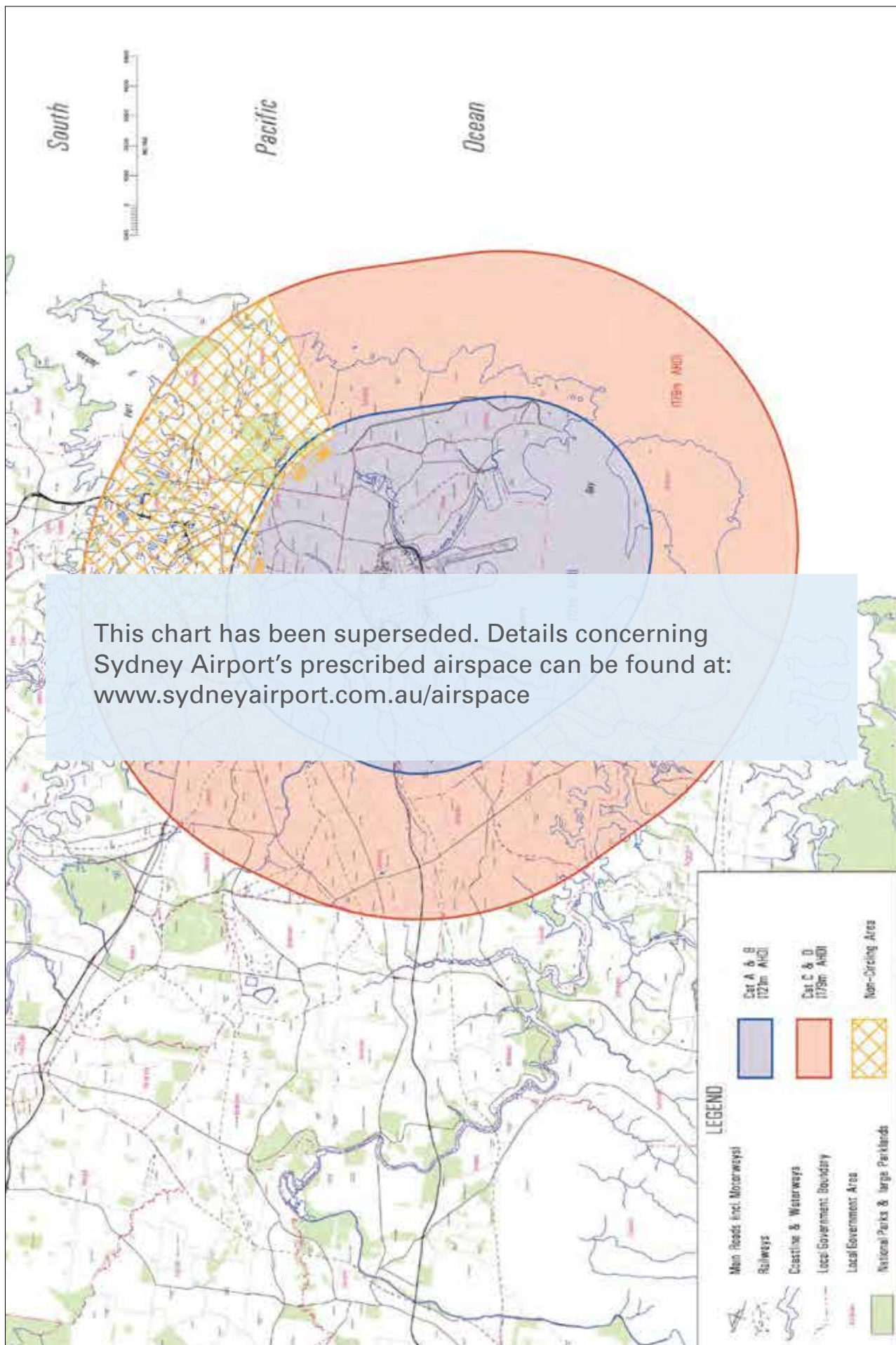


Figure 12.5
Current and Future PANS-OPS Surfaces
VOR / DME Final Approach Segments

This drawing has been prepared to illustrate the Sydney Airport Master Plan and is not intended to serve any other purpose. The drawing must be read in conjunction with the Master Plan.

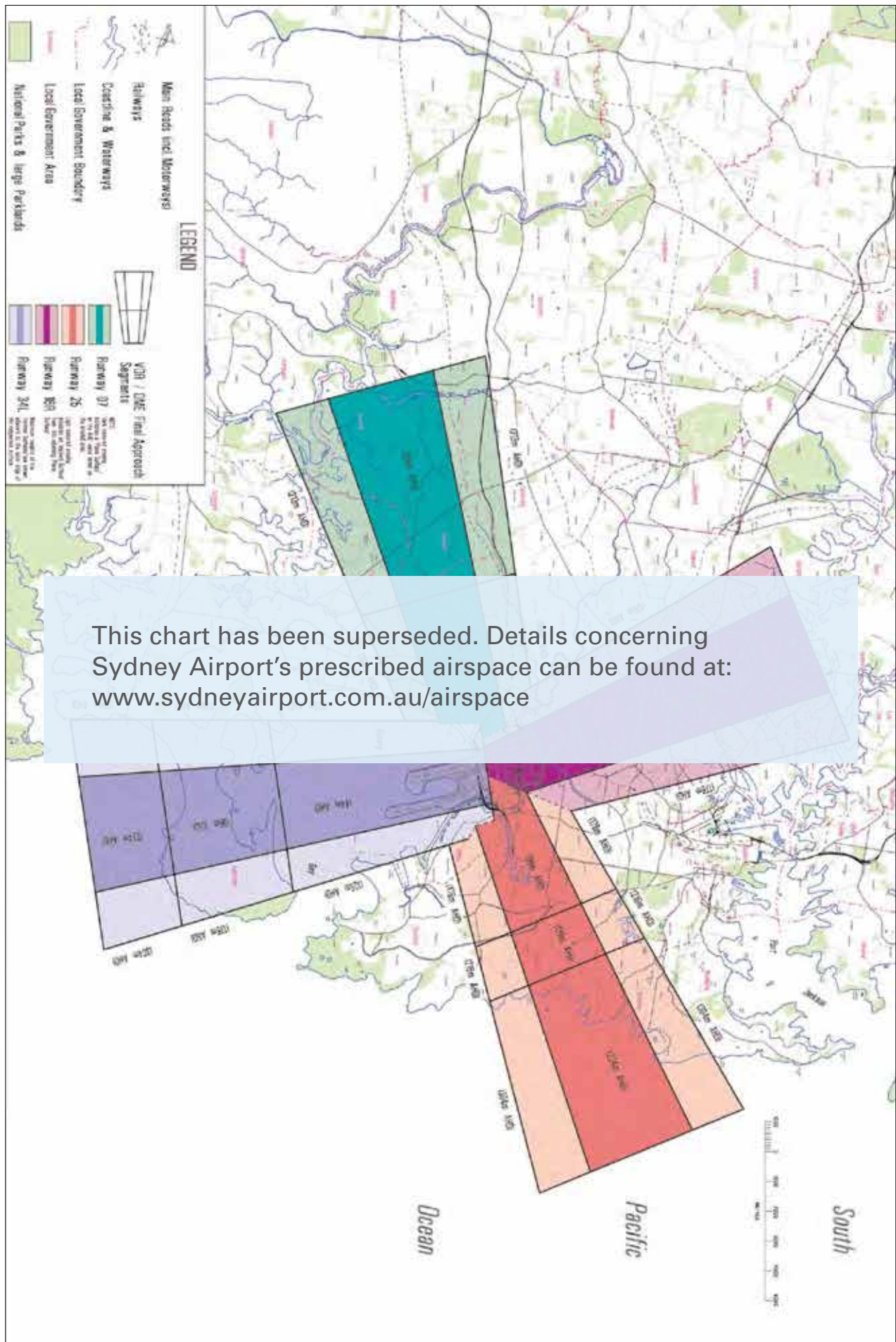
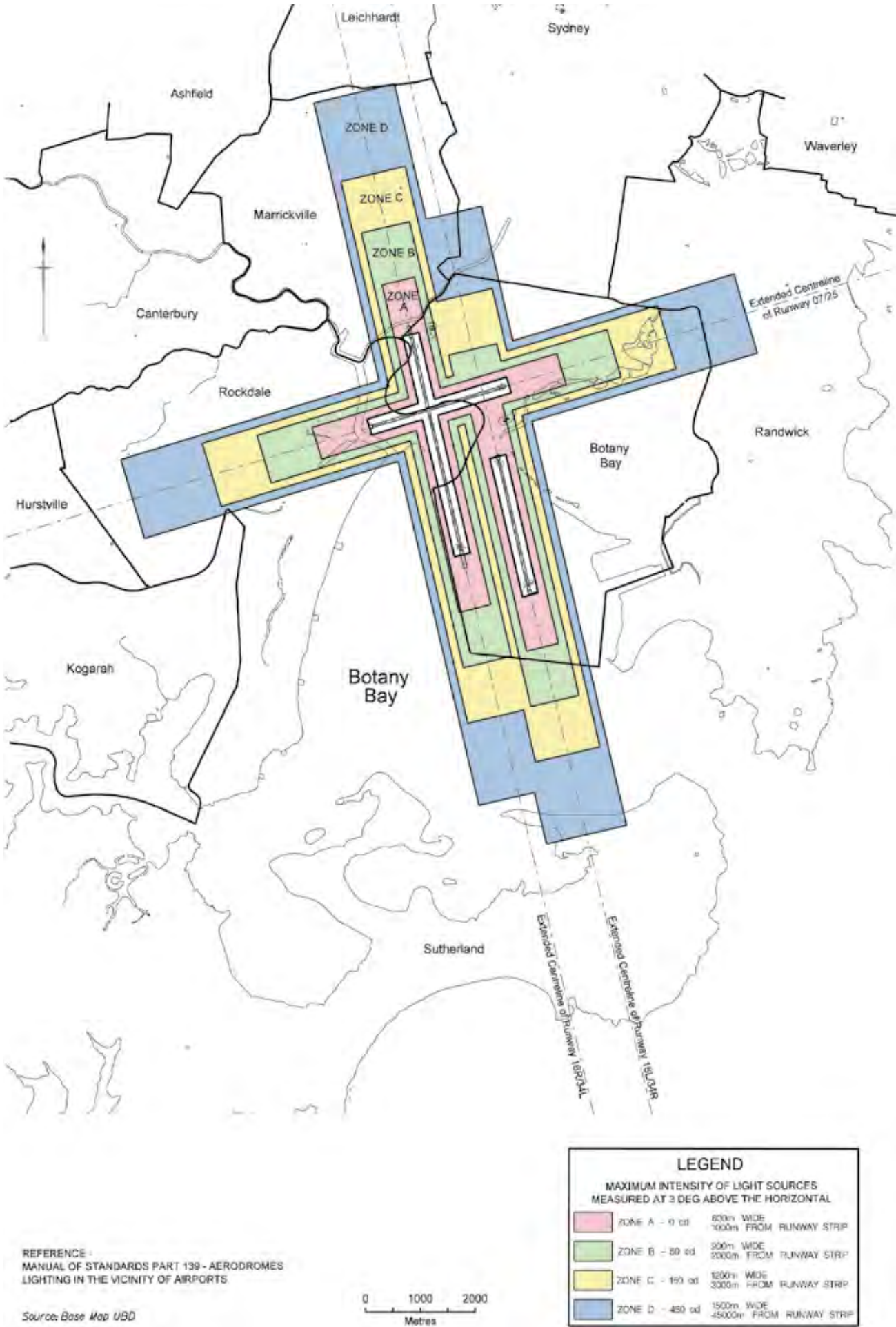


Figure 12.6
Current and Future Restricted Light Zones

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Yellow tubes providing pre-conditioned air to parked aircraft reduces the use of auxiliary power units by parked aircraft and therefore ground-based noise and emissions.

A photograph of an airplane's engine and landing gear on a tarmac. A person in a high-visibility vest is partially visible on the left. The background shows other aircraft and airport infrastructure under a cloudy sky.

13.0

**SUSTAINABILITY,
CLIMATE
CHANGE AND
ENVIRONMENTAL
MANAGEMENT**

13.0 SUSTAINABILITY, CLIMATE CHANGE AND ENVIRONMENTAL MANAGEMENT



Key points

- Sydney Airport and the broader aviation community are working together to reduce environmental impacts:
 - Sydney Airport recognises that its success can be enhanced by conducting business in a way that is environmentally, socially and economically responsible
- This includes meeting voluntary global commitments for reducing carbon emissions and the aviation industry's impact on the environment while continuing to provide the global economy with the benefits of fast, reliable, safe and efficient connectivity:
 - Aviation's contribution to climate change represents only 2% of human induced CO₂ emissions
- Sydney Airport is proactively undertaking initiatives to minimise impacts on the environment (and aims to become a more sustainable business). For example:
 - The new recycled water treatment plant in the Terminal 1 precinct saves an average of 600,000 litres of drinking water every day. The plant has additional capacity and is also planned to be expanded
- A trigeneration plant supplying cleaner energy is being planned for the airport, with possible reductions of up to 50% of greenhouse gases
- Investing in fixed electrical ground power, benefiting noise, air quality and reducing carbon emissions
- Other sustainable energy saving and related initiatives – including the use of solar hot water and LED lighting – are reducing emissions
- A holistic approach will be taken with development envisaged under this Master Plan, integrating innovative sustainable design features that deliver smarter environmental solutions across the airport and enhance passenger experience and comfort
- Sydney Airport is planning to develop an experience centre where members of the community can find out more about the airport – its history, the future, day-to-day operations and environmental initiatives



Sustainability – responsible growth through balancing community and environmental needs with corporate objectives – is a core commitment expressed throughout this Master Plan and the attached Airport Environment Strategy.

All major airports inevitably have some effect on the environment and local communities. Aircraft noise and degraded air quality are a concern for local communities. Airport operations can either directly or indirectly generate carbon emissions and waste, consume water, and can affect local waterways, wildlife and biodiversity values.

Minimising these environmental impacts is essential for Sydney Airport to operate sustainably. Environmental management at the airport focuses on a co-operative, proactive approach with regulatory agencies, airport stakeholders and business partners working together to ensure potential impacts of airport operations are avoided or minimised. Sydney Airport is committed to working with others to ensure that aviation plays its role in protecting the environment.

Aviation's challenge is to retain the many positive economic and social benefits that aviation provides, including providing the global economy with the benefits of fast, reliable, safe and efficient connectivity while reducing or eliminating its negative environmental impacts through the introduction of technological, operational and efficiency advances.

A number of initiatives have been carried out to minimise the airport's effect on the environment and to become a more sustainable business. Further detail on these initiatives can be found in Section 13.4 of this chapter. Sydney Airport is also intending to build on these initiatives over the coming master plan period by pursuing cleaner energy supplies such as trigeneration and sustainable water supplies such as recycled water.

In addition, to ensure that the future development of the airport is undertaken in a manner that is sustainable and sympathetic to the environment, a rigorous development assessment process has been established to enable Sydney Airport to comply with its obligations under legislation and also meet corporate objectives, including sustainability commitments. Further detail on how development at the airport, envisaged in this Master Plan, will be undertaken sustainably can be found in this chapter, see Section 13.5 and 13.6.

13.1 Legislative requirements associated with the Master Plan

Airports Act 1996 requirements

The Airports Act 1996 requires a master plan to specify a range of environmental matters including:

- An environment strategy [Section 71(2)(h)]
- Sydney Airport's assessment of environmental issues that might reasonably be expected to be associated with the implementation of the master plan [Section 71(2)(f)]
- Sydney Airport's plans for dealing with these environmental issues, including plans for ameliorating or preventing environmental impacts [Section 71(2)(g)]

The Airport Environment Strategy (AES) is presented in the attachment and describes the strategic direction for the environmental management of the airport over the first five year period of this Master Plan. After this period, the AES will be reviewed and a new AES developed.

The environmental issues expected to be associated with the implementation of the Master Plan and Sydney Airport's plans for dealing with these issues, including plans for ameliorating or preventing environmental impacts, are described in Sections 13.5 and 13.6 of this Master Plan.

13.2 Environmental management framework

Environmental management at the airport is driven by a number of mechanisms including legislation, international and Australian standards, lease agreements, aviation industry standards and Sydney Airport's vision, values and policies.

The legislative framework controlling environmental management at the airport comprises the following commonwealth laws:

- Airports Act 1996 Part 5 and Part 6 (Airports Act)
- Airports (Environment Protection) Regulations 1997
- Airports Regulations 1997
- Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

The Australian Government is the regulatory authority responsible for administering legislation at the airport. An airport environment officer (AEO) has been appointed by Department of Infrastructure and Regional Development (DIRD) to oversee the airport and the implementation of the abovementioned environmental aspects of the legislation. As the airport lessee company, Sydney Airport also has a role in environmental regulation of airport tenants. All tenants whose activities have the potential to impact on the environment are required to develop an environmental management plan and report to Sydney Airport on their actions annually.

Under the terms of Sydney Airport's lease agreement with the Australian Government, and in accordance with Part 5 of the Airports Act 1996, Sydney Airport is required to prepare and implement an AES. The AES and Sydney Airport's environment policy are key documents for ensuring that the forecast growth and development of the airport envisaged in this Master Plan are undertaken in an environmentally responsible manner.

In accordance with the principles of AS/NZS ISO 14001, Sydney Airport has an environmental management system (EMS). The EMS provides the system by which environmental management can be planned, implemented and reviewed in a cycle of continuous improvement. The cornerstone of the EMS is the AES, which provides strategic policies, objectives and targets for environmental management of the airport within the EMS framework. This includes implementing actions outlined in the AES, monitoring progress and reviewing environmental performance.

13.3 Key environmental matters for Sydney Airport

There are a number of key environmental matters or aspects associated with airport operations. These are discussed in detail within the AES and summarised in this section in the following categories:

- Sustainability and corporate responsibility
- Climate change and energy management
- Air quality
- Water management
- Biodiversity and conservation management
- Heritage
- Waste and resource recovery
- Soil and land management

Noise management is discussed in Sections 13.5 and 13.6 and addressed in detail in Chapter 14. Ground transport is addressed in Chapter 7 and Appendix A of this Master Plan.

13.3.1 Sustainability and corporate responsibility

Sydney Airport's commitment to sustainability

Our vision is to deliver a world-class airport experience and foster the growth of the airport for the benefit of Sydney, NSW and Australia. One of Sydney Airport's core values is sustainability – responsible growth through balancing community and environmental needs with corporate objectives.

Furthermore, as stated in the Sydney Airport Environment Policy (2011), Sydney Airport recognises its responsibility in managing Sydney Airport in a sustainable manner and is:

“committed to... sustainability: by adopting measures to conserve natural resources and energy; reducing impacts on the environment; and considering the ecological, social and economic implications of our actions.”

The policy establishes the principles for sustainable use of the airport from which objectives, targets and action programs are developed. The environment policy commits Sydney Airport to adopting best practice measures to enhance environmental performance and ensure continual improvement. A summary of Sydney Airport’s environmental sustainability initiatives are listed in **Table 13.4**.

Corporate responsibility

Sydney Airport believes it is possible for the airport to grow sustainably, enhancing the economic and social benefits while managing and minimising environmental and community impacts.

An important aspect of our vision and values is corporate responsibility. Sydney Airport has a corporate responsibility framework that focuses on three key areas:

- Community and stakeholder consultation – Sydney Airport is committed to effective and genuine consultation with the community, government, aviation industry, tourism, business and other stakeholders about the operation of, proposed development at, and future planning for the airport
- Community support and collaboration – Sydney Airport partners with and supports local community groups, organisations, charities, sporting groups and the arts, and will continue to pursue opportunities to build these relationships
- Business and tourism – Sydney Airport is a key driver for the economy and tourism and recognises its role in supporting major events that drive tourism growth and showcase Sydney as a global city, Australia’s premier destination as well as the great diversity of NSW. Sydney Airport has formed a partnership with Destination NSW and works closely with it to promote key tourism objectives

Sustainable development

Sydney Airport’s sustainable development policy establishes the principles for sustainable development of the airport’s built environment. The principles ensure that all new development proposals in relation to the airport are planned and operated in accordance with current best practice technologies and guidelines for efficient resource use where feasible. This includes using the most appropriate sustainability rating tool for evaluating and guiding the sustainable design and construction of the airport’s built environment.

As part of the terminal redevelopments envisaged under the development plan, Sydney Airport aims to adopt

forward thinking strategies that translate sustainable development principles and commitments to reality. A holistic approach will be taken, integrating green technologies, design and operations with a focus on sustainable energy, water and materials outcomes.

In addition to initiatives that secure a cleaner energy supply such as trigeneration and sustainable water supply such as recycled water, Sydney Airport will pursue innovative opportunities that deliver smarter environmental and efficiency solutions across the airport which enhance passenger experience and comfort.

In the preparation of this plan, Sydney Airport has had regard to the principles of ecologically sustainable development as outlined in the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

Sydney Airport experience centre

Sydney Airport is planning to develop an experience centre where members of the community can visit to find out more about the airport and the aviation industry. Visitors will be taken on an engaging journey behind the scenes of one of the world’s busiest airports. The experience centre will invite visitors to explore the history, operational challenges, environmental initiatives and future vision for the airport through a series of engaging and informative installations.

The experience centre is planned to focus on the following key themes:

- Noise – a demonstration of the impact of aircraft noise over Sydney’s suburbs through time, reflecting flight paths, technologies and the decreasing noise footprint
- Heritage and history – a combination of interactive media and historical memorabilia will be used to reflect the story of the airport and communicate its heritage values
- The future – displays and other installations will be used to showcase the vision – the airport of the future
- Behind the scenes – a collection of human stories, imagery and displays will reveal behind the scenes operations of the airport

13.3.2 Climate change and energy management

Climate change is now recognised as real and present, though some uncertainty remains around the extent of change and the magnitude of the expected impacts. In responding to climate change, there are two broad response strategies.

The first response is to reduce greenhouse gas concentrations in the atmosphere in an effort to reduce the rate and overall magnitude of future climate change.

The second response is the adaptation to the impacts

of climate change of all sectors of society and the economy. This helps to build the resilience of, and reduce vulnerability within, local communities and economies and involves a combination of risk management and adjustment activities.

To address these response strategies, Sydney Airport, in association with the broader aviation industry, has been working towards reducing its carbon footprint (see information below), monitoring relevant research and actions by governments, and ensuring any relevant adaptation strategies are, where appropriate, factored into future planning. Sydney Airport is also planning to undertake a climate vulnerability assessment.

Global aviation industry commitment to action on climate change

The Intergovernmental Panel on Climate Change estimated in 2007 that aviation accounts for only around 2% of global carbon dioxide emissions, with most of that relating to in-flight emissions from aircraft. As well as emitting carbon dioxide, aircraft contribute to climate change by the formation of condensation trails and emission of nitrogen oxides that form ozone, a greenhouse gas, when emitted at cruise altitudes. The best estimate of aviation's impact on climate change, given by the International Air Transport Association (IATA), is about 3% of the contribution by human activities. However, with airline travel becoming more popular in Australia and around the world, this contribution could possibly reach 5% by 2050.

Aviation's challenge is to retain the many positive economic and social benefits that aviation provides while reducing or eliminating its negative environmental impacts. Signing of the Global Aviation Industry Commitment to Action on Climate Change by aviation industry leaders – including Sydney Airport – in April 2008 is an important demonstration of aviation's worldwide commitment to introducing technological,

operational and efficiency advances that will reduce aviation's contribution to climate change.

Sydney Airport is committed to working with all relevant organisations across the aviation industry to target carbon-neutral growth by 2020, as a step towards a carbon-free future for aviation. As noted in Section 13.4, Sydney Airport has implemented a range of environmental initiatives aimed at improving the airport's environmental performance and reducing its carbon footprint. Sydney Airport will continue to work with major airlines to implement the following four key strategies outlined in the Global Aviation Industry Commitment:

- Encourage the development and implementation of new technologies, including cleaner fuels
- Further optimise the fuel efficiency of fleets and the way aircraft are flown
- Improve air routes, air traffic management and airport infrastructure
- Implement positive economic measures to achieve greenhouse gas reductions wherever they are cost-effective

Managing climate change is a key challenge, not just for Sydney Airport but for all major airports. Technological innovation will drive environmental improvements at the airport. The same can be said for airlines as the global fleet of commercial aircraft undergoes a significant technological transformation. As a result, jet aircraft are now significantly quieter, cleaner and more fuel efficient than ever before. Being larger, the new generation of aircraft also means that more passengers can be transported per flight with less impact on the environment. In the past 12 years, Sydney Airport has already seen a 46% increase in passengers with very little increase in aircraft movements.

Table 13.1 Scope 1 & 2 emissions by source for Sydney Airport, 2010/11

Source and activity data name	Amount	Unit	Scope	Tonnes CO ₂ -e
Commercial air conditioning – HFC stock	0	Tonnes	1	49
Stationary – diesel oil	57	kL	1	152
Stationary – natural gas	68,905	GJ	1	3,537
Transport - diesel oil	302	kL	1	814
Transport – gasoline (other than for use as fuel in aircraft)	59	kL	1	141
Transport – liquefied petroleum gas	2	kL	1	3
Energy commodities – electricity	100,996,110	kWh	2	90,896
TOTAL				95,593

Source: SCACH NGER Report 2010/11

Sydney Airport recognises and supports the research being undertaken around the world to increase the use of renewable jet fuels in aircraft. This includes aviation biofuels, or aviation fuel derived from biomass (non-food parts of crops, plants, trees, algae, waste and other organic matter). A number of airlines flying to Sydney Airport have participated in biofuel trials.

In Australia, the Sustainable Aviation Fuel Road Map was initiated by the Australasian grouping of the Sustainable Aviation Fuel Users Group (SAFUG), including Air New Zealand, Boeing, Qantas and Virgin Australia, together with the Defence Science and Technology Organisation and CSIRO. SAFUG released the Road Map in May 2011, which identified several key challenges and opportunities for sustainable aviation fuels and recommended a number of actions.

Sydney Airport will monitor the aviation industry's progress on implementing the Road Map.

Energy and carbon strategy 2013+

The airport is a relatively large consumer of energy resources. Most of the energy consumed is electricity used in airport terminals predominantly for heating, cooling and lighting.

Electricity and natural gas consumption make up over 98% of the greenhouse gases accounted for in Sydney Airport's carbon footprint. The Scope 1 and 2 carbon footprint was measured by MJM Environmental in 2010/11 to be 95,593 tonnes (see **Table 13.1**). Sydney Airport reports this data annually to the Australian Government. (Note: this does not include Scope 3 emissions, such as those from aircraft and tenant energy use.)

Sydney Airport has developed an energy and carbon strategy 2013+, which sets out targets for responsible energy use and the reduction of carbon emissions. The strategy includes nine strategic elements that form an energy roadmap. These elements structure and guide the way forward for sustainable energy use.

Energy savings and carbon reduction plan

In 2012, Sydney Airport developed an energy savings and carbon reduction plan, which built on an earlier plan. This plan complements the energy and carbon strategy 2013+ and identifies new energy saving, greenhouse gas emission reduction and energy efficiency opportunities.

As electricity and natural gas consumption are the major sources of carbon emissions, accounting for over 98% of total airport usage, they are a major focus in the energy savings and carbon reduction plan.

Sydney Airport is planning for a trigeneration facility within the airport with initial feasibility assessments being considered. Trigeneration is the simultaneous production of three forms of energy: (low carbon) electricity, heating and cooling. Benefits of trigeneration

include a reduction in greenhouse gas emissions, the potential to save on energy costs, back-up electricity supply and partial independence from the electricity grid.

Sydney Airport will continue to develop and research further sustainable, cost effective energy initiatives, including the use of renewable energy such as solar.

13.3.3 Air quality

Sydney Airport's objective for air quality is to minimise air emissions from ground-based airport operations and activities.

The airport is only one of the contributors to overall emissions in the region. Other contributors in close proximity to the airport include the Port Botany Container Terminal (which generates container ship, rail and heavy truck movements) as well as petrochemical and other heavy industries located in the Randwick – Botany Industrial Complex. Major roads and motorways around the airport are also considered a major contributor to emissions in the region.

The types of activity which result in air pollutant emissions at airports are identified in the National Pollutant Inventory Emission Estimation Techniques for Airports (Department of Environment, Water, Heritage and the Arts, July 2008). These activities – which generate emissions through either fuel combustion or evaporation – include:

- Aircraft main engines
- Aircraft auxiliary power units (APUs)
- Aircraft ground support equipment and other airside vehicles
- Tests on aircraft engines and APUs
- Landside road traffic, including parking facilities
- Heat-generating plant
- Emergency power generators
- Fuel storage and distribution
- Solvent use during aircraft maintenance
- Fire training

Air pollutants assessed are carbon monoxide (CO), oxides of nitrogen (NO_x), volatile organic compounds (VOCs), particulate matter (PM₁₀), and oxides of sulphur (SO_x). A summary of predicted emissions to air from the different types of activity at the airport (for the years 2012, 2018 and 2033) is shown in **Table 13.2**.

The Australian national pollutant inventory (NPI) provides information on air pollutant emissions within the Sydney-Wollongong-Newcastle airshed from industrial and mobile sources for 2010/11. As shown in **Table 13.3**, the emissions from the airport in 2012 were compared with the NPI data for the airshed in 2010/11. The emissions from the airport represent less than 1% of total emissions within the airshed.

Table 13.2 Summary of predicted emissions to air from airport operations (2012, 2018 and 2033)

Category	Emissions (tonnes per year)														
	CO			VOC			NO _x			SO _x			PM ₁₀		
	2012	2018	2033	2012	2018	2033	2012	2018	2033	2012	2018	2033	2012	2018	2033
Aircraft operations	1,969.9	2,383.3	3,444.4	372.5	427.9	657.2	2,395.3	3,001.3	4,547.7	197.9	247.0	367.9	13.9	15.2	20.1
Ground support equipment	1,075.9	435.3	274.5	37.6	17.0	13.0	126.7	57.2	27.7	2.7	2.6	2.9	4.8	3.1	1.8
APUs	42.1	30.2	30.6	4.1	3.1	3.4	54.4	75.8	111.2	7.1	8.6	11.6	7.6	6.5	7.6
Road traffic	188.9	177.1	237.5	17.3	14.1	15.9	24.3	15.2	13.2	0.2	0.2	0.3	0.9	0.8	1.1
Engine tests	75.5	75.5	75.5	17.6	17.6	17.6	292.7	292.7	292.7	16.7	16.7	16.7	1.5	1.5	1.5
Boilers and generators	2.8	2.8	2.8	0.4	0.4	0.4	6.1	6.1	6.1	0.3	0.3	0.3	0.4	0.4	0.4
Fuel storage and distribution	-	-	-	23.3	24.4	25.8	-	-	-	-	-	-	-	-	-
Paint and solvent use	-	-	-	35.6	35.6	35.6	-	-	-	-	-	-	-	-	-
Training fires	30.2	30.2	30.2	0.9	0.9	0.9	0.2	0.2	0.2	0.0	0.0	0.0	6.9	6.9	6.9
Total	3,385.3	3,134.3	4,095.5	509.3	541.0	769.8	2,899.6	3,448.4	4,998.8	225.0	275.5	399.8	35.9	34.3	39.4

Source: PAEHolmes 2012

Table 13.3 Sydney airshed emissions compared with airport emissions

Pollutant	Emissions in Sydney, Wollongong and Newcastle (NPI data for 2010/11 ^(a))	Emissions from the airport in 2012 ^(b)	Emissions from the airport in 2012 ^(b)
	(tonnes/year)	(tonnes/year)	% of NPI for airshed
CO	750,000	3,385	0.45%
NO _x	750,000	2,900	0.39%
SO ₂	1,300,000	225	0.02%
PM ₁₀	640,000	36	0.01%
VOC	95,000	509	0.54%

Sources: (a) NPI: <http://www.npi.gov.au> (accessed September 2012). (b) PAEHolmes 2012

Despite being a relatively minor contributor, Sydney Airport has invested significantly to provide fixed electrical ground power at Terminal 1 (T1) and Terminal 2 (T2) and pre-conditioned air at T1. This allows airlines to minimise the use of an aircraft's auxiliary power unit, which in turn, burns less aviation fuel, minimising impacts on local air quality and reducing carbon and noise emissions.

13.3.4 Water management

Water conservation

With more than 36 million passengers using the airport in 2012, the airport is one of NSW's biggest water users.

Major uses for water include:

- Restroom and toilet facilities within the terminals
- Cooling towers (for air conditioning)
- Construction and maintenance activities
- Vehicle washing facilities

Sustainable water use and security of water supply are a priority for Sydney Airport. Sydney Airport is committed to securing alternative non-potable water supplies across the airport where feasible.

Recycled water system

Sydney Airport has invested in a water recycling system

in the T1 precinct. Wastewater is collected, treated using biological and chemical methods, and then recirculated and reused throughout the precinct for toilet flushing and in cooling towers. In 2012, the plant was saving an average of 600,000 litres of drinking water every day. To accommodate future demand, the plant has additional capacity and Sydney Airport will expand this plant in the near future.

Sydney Airport extracts groundwater for irrigation purposes under a licence issued by the NSW Government. This avoids having to use drinking water for landscaping purposes.

Water savings action plan

In 2012, Sydney Airport developed a water savings action plan to build upon an earlier plan produced to meet legislative requirements. The plan identifies opportunities where drinking water can be used more efficiently and where alternative water sources can replace drinking water.

Examples of water savings measures identified in the plan include:

- a) delivering recycled water to additional cooling towers
- b) delivering recycled water to additional toilets and urinals, and replacing residual single-flush cisterns with dual-flush units
- c) installing additional flow restrictors on taps, and/or installing sensor-operated taps where possible
- d) delivering recycled water to irrigation areas, and managing irrigation more efficiently
- e) encouraging tenants to minimise water consumption
- f) improving leak detection and response
- g) reducing potable water use for runway maintenance activities through use of licenced bore water supplies

Sydney Airport has also developed a Services Master Plan which estimates water demand across the airport and investigates water reduction strategies suitable at the airport. As development of the airport continues, Sydney Airport will implement feasible water reduction strategies.

Surface water quality

The airport is almost entirely surrounded by waterways, with Botany Bay to the south, Botany Wetlands (incorporating Mill and Engine Ponds) to the east, Alexandra Canal to the north and Cooks River to the west.

Various activities on the airport have the potential to impact on the water quality of surrounding waterways including:

- Spills from aircraft servicing and maintenance

- Construction and maintenance activities
- Bulk liquids and hazardous materials storage
- Fire training exercises

To minimise the impact of airport operations on surface water quality in adjacent waterways, Sydney Airport conducts stormwater quality monitoring, works closely with airport tenants, operators and contractors to manage activities that have the potential to impact on water quality, and continues to identify opportunities to improve water quality.

In addition, Sydney Airport has a number of mechanisms in place for managing water quality including gross pollutant traps, a dedicated spill response vehicle and provision of spill control kits on all aircraft parking aprons, pollution control flame traps on all aprons where aircraft refuelling or maintenance takes place, and emergency stop gates on stormwater discharge points. Details of incident response practices can be found in Section 4.12 of the AES.

13.3.5 Biodiversity and conservation management

The natural environment and biodiversity of the airport and surroundings have undergone a dramatic change due to historical development of the area.

The main area of natural biodiversity value remaining is the Sydney Airport Wetlands – which are part of the Botany Wetlands – comprising Engine Pond East, Engine Pond West, the Mill Pond and Mill Stream. This important environmental and historical resource is listed in the Directory of Important Wetlands in Australia and is considered an environmentally significant area under the Airports Act 1996.

Wetlands management plan and enhancement program

Sydney Airport has developed a management plan for the Sydney Airport Wetlands. The plan guides how Sydney Airport manages the wetlands to preserve and where possible enhance this area of the airport.

The on-going implementation of Sydney Airport's wetland enhancement program aims to increase the numbers of native fish species and, more generally, improve the quality and ecological function of the wetlands themselves. Initiatives under the program include native fish stocking, pest management, weed management, revegetation works and gross pollutant control.

13.3.6 Heritage

The airport is one of the oldest continually operating airports in the world. Prior to being an airport, the land on which the airport is situated also played host to a number of other significant pieces of industrial and water supply infrastructure.

Sydney Airport acknowledges that there is heritage value associated with the airport and the airport site. The heritage values are associated with the airport as a whole and are embodied in the location, form and function of its individual elements, including the arrangement of streets, buildings, runways and the ways in which these attributes reflect its history of change and growth.

Sydney Airport has developed a heritage management plan to provide guidance with respect to future conservation policies and management strategies to maintain and protect the heritage values, where practicable. This is balanced with the need for the airport to continue to develop to meet the growing needs of airlines and passengers. Where potential impacts to heritage are identified, Sydney Airport undertakes heritage impact assessments and also implements strategies to mitigate impacts, where possible. Details of Sydney Airport's heritage management assessment procedure can be found in Section 4.9 of the AES.

13.3.7 Waste and resource recovery

Operations at the airport generate a range of solid and liquid wastes from various sources. Sydney Airport aims to manage the impacts of this waste through recycling and recovery of beneficial materials, and disposing of waste to landfill as a last resort.

Sydney Airport has continued to reduce the amount of waste sent to landfill through the use of new technologies and by implementing recycling and recovery initiatives. Through its waste and resource recovery strategy, Sydney Airport will continue to pursue opportunities in the future to minimise work and improve resource recovery initiatives.

13.3.8 Soil and land management

Most of the airport's land has been extensively modified, including by landfilling and terrain flattening. Due to this and the long history of aviation and related uses at the airport (including fuel storage and distribution), the airport site contains a number of areas subject to soil and groundwater contamination. To assist in the ongoing management of these sites, Sydney Airport has developed a contaminated sites strategy.

Contaminated sites strategy

The contaminated sites strategy involves a comprehensive risk classification system, contaminated sites register, groundwater monitoring program, pollution prevention programs and measures, and the identification of remediation opportunities.

Sydney Airport will continue to monitor and manage known contaminated sites in consultation with the AEO and DIRD.

Sydney Airport has been actively remediating the former

joint oil storage facility site by extracting hydrocarbons through a purpose-built remediation system. This site has experienced soil contamination resulting from on-site fuel storage from the mid-1950s.

The continuing risk to soil and groundwater – the majority being from spills, fuel storage tanks and fuel pipelines – are managed through our airport tenant management strategy, workplace inspections, standard operating procedures and independent monitoring and testing.

13.4 Environmental achievements and initiatives

Since the Master Plan 2009 was approved by the Australian Government, and in accordance with the Sydney Airport Environment Strategy 2010 - 2015, there have been many environmental achievements and initiatives implemented. **Table 13.4** provides a summary of these achievements and initiatives.

13.5 Environmental issues associated with the Master Plan

To ensure that the future development of the airport is undertaken in a manner that is sustainable and sympathetic to the environment, a rigorous development assessment process has been established to enable Sydney Airport to comply with its obligations under the Airports (Building Control) Regulations 1996.

All development proposals are subject to a planning and environmental impact assessment carried out or overseen by Sydney Airport. This process ensures that the Environment Strategy, the Master Plan, the Airports Act 1996 and the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) are considered prior to granting a development approval.

If the assessment reveals that the proposed development is likely to have a significant environmental or ecological impact or affects an area identified as environmentally significant in the Environment Strategy, a major development plan (MDP) must be prepared. An exposure draft of the MDP is prepared and referred to DIRD and, in turn, to the Commonwealth Department of the Environment for appraisal under the EPBC Act. The Minister for Infrastructure and Regional Development can either approve or refuse a development proposed in an MDP or impose conditions on it to ensure any environmental impacts are avoided or minimised.

Potential environmental issues associated with implementation of the development plan shown in this Master Plan relate to the following environmental matters:

- Resource use
- Air quality
- Stormwater and groundwater
- Ecology and biodiversity

Table 13.4 Summary of environmental achievements and initiatives

Environmental aspect	Initiative/achievement
Sustainability and environmental management	Developed a new Airport Environment Strategy and obtained approval for the strategy from the minister in May 2010.
	Provided support and funding on an annual basis to local schools, charities, sporting groups and the arts.
	Formed a partnership with Destination NSW to promote key tourism objectives.
	In 2011, Sydney Airport's new CEO endorsed the Sydney Airport Environment Policy.
	Launched a new tenant management strategy including an annual tenant environment forum, development of environmental guidance material for tenants and implementation of an environmental auditing program.
Water savings and efficiency	In November 2009 the water treatment plant became operational and by 2012 was saving an average of 600,000 litres of drinking water every day.
	Sydney Airport developed a new water savings action plan in 2012, building on its previous action plan approved by the NSW Government, identifying further water saving and efficiency opportunities.
	Water saving devices installed as part of new developments and/or upgrades where feasible.
Energy savings and efficiency	Sydney Airport developed a strategic roadmap for sustainable energy use – Energy and Carbon Strategy 2013+.
	A new energy savings and carbon reduction plan was developed in 2012, building on the previous action plan approved by the NSW Government, identifying further energy saving and efficiency opportunities.
	Implemented energy saving projects, including LED lighting retrofits and installation of solar hot water at T1.
Ground-based noise management	Completed installation of fixed electrical ground power at all T1 and T2 gates/aerobridges, reducing air and noise emission from aircraft auxiliary power units.
	Completed a review and update of the engine operating procedures (including the ground run rules) in 2012.
Environmentally sustainable design	New head office for Sydney Airport constructed – the Central Terrace Building – which achieved a 5 star Green Star (Office Design v2) rating for the base building and incorporated environmentally sustainable elements in the fit-out.
Ground transport	Established a joint working group with Transport for NSW and NSW Roads and Maritime Services to develop ground transport solutions for the airport, including road upgrades and improved public transport services.
	Advocated to the NSW Government that the station access fee for users of the two on-airport train stations be reformed to encourage increased travel by rail to and from the airport.
	Advocated to the NSW Government that additional bus services be provided to and from the airport.
	Installed new facilities including bike racks, lockers and showers to support Sydney Airport staff cycling to and from work.
Biodiversity	Continued implementation of the Wetland Enhancement Program, including native fish release, aquatic and terrestrial maintenance activities and pest management.
	Completed a comprehensive ecological assessment of the entire airport site.
	Undertook annual surveys for the threatened green and golden bell frog.
Air quality	All emissions associated with Sydney Airport's vehicle fleet were offset each year through Greenfleet.
	Hybrid vehicles continued to be included in Sydney Airport's vehicle fleet.
Heritage	Developed a comprehensive heritage management plan for the airport.
	With aviation partners, celebrated the 100th anniversary of the first flight from the site that would become Sydney Airport.
Waste and resource recovery	Public place recycling program rolled out throughout T2 and foodcourt (landside) of T1.
	Entered into new waste services contract that targets an additional 30% recovery of beneficial materials through increased recycling and composting.
	Developed a waste and resource recovery strategy in 2012.
Soil and land management	A remediation system was installed to extract hydrocarbons from a site contaminated through historical land uses.

- Heritage
- Soil quality and contaminated land
- Waste and resource recovery
- Ground-based noise

Road traffic generation and Sydney Airport's plans to deal with this issue are addressed in Chapter 7 of this Master Plan.

The following section describes the environmental issues that might reasonably be expected to be associated with the implementation of the development plan shown in this Master Plan. It is noted that some of these developments are consistent with the development plan shown in the current Master Plan 2009.

South East Sector

In the South East Sector, Sydney Airport proposes to develop additional aircraft parking positions, maintenance and engineering facilities, Airservices facilities, vehicle parking facilities, and commercial developments.

Sydney Airport is also intending to extend Taxiway B, which would require land reclamation and the construction of a new sea wall in Botany Bay, in between the parallel runways. Sydney Airport proposes to develop a high intensity approach lighting system (HIAL) at the end of runway 34L to enable aircraft to land more safely in adverse weather conditions such as fog and heavy rain.

The environmental issues that might reasonably be expected to be associated with these developments are:

- Impacts to air, soil and water quality
- Increased ground-based noise generation particularly associated with aircraft, ground support equipment (GSE), vehicles and construction
- Increased resource use
- Ecological impacts, including impacts on the marine environment in Botany Bay (for example, sea grasses)
- Increased generation of waste
- Impacts on airport elements with heritage value
- Impacts on the Sydney Airport Wetlands

South West Sector

Sydney Airport intends to develop additional aircraft parking positions (work commenced in 2012) and commercial developments in the South West Sector.

The environmental issues that might reasonably be expected to be associated with these developments are:

- Increased ground-based noise generation particularly associated with aircraft, GSE and construction
- Impacts on air quality mainly from aircraft and GSE emissions
- Increased resource use

- Impacts on airport elements with heritage value
- Impacts on water quality
- Increased generation of waste

North West Sector

In the North West Sector, development envisaged by Sydney Airport includes expansion of the T1 terminal, upgrade to existing gates and aprons, new gates and aprons, road and ramp widening to airport exits and entries, installation of additional fuel storage within the JUHI facility, expansion of the recycled water treatment facility, installation of a trigeneration facility, vehicle parking facilities and commercial developments.

The environmental issues that might reasonably be expected to be associated with these developments are:

- Increased ground-based noise generation particularly associated with aircraft, GSE and construction
- Impacts on air quality mainly from aircraft and GSE emissions
- Increased resource use
- Impacts on water quality
- Increased generation of waste
- Impacts on soil quality
- Disturbance of a known contaminated site

Northern lands

Development envisaged in the northern lands precinct includes commercial developments, vehicle storage facilities, freight/logistics facilities and bridges to connect parcels of land within the precinct and to the airside of the airport.

The environmental issues that might reasonably be expected to be associated with these developments are:

- Disturbance of a known contaminated site
- Increased ground-based noise generation
- Increased resource use
- Impacts to air and water quality mainly associated with construction
- Increased generation of waste
- Impacts on airport elements with heritage value

North East Sector

In the North East Sector, Sydney Airport intends to develop a new international terminal, extend and reconfigure the existing T2 and T3 terminals, upgrade and reconfigure existing aprons and gates, reconfigure maintenance and engineering facilities, develop new taxiways, aprons and gates, realign taxiways, install a water treatment facility, develop a public transport interchange and pedestrian linkages, reconfigure the road network including road widening, develop vehicle parking facilities and commercial facilities.

The environmental issues that might reasonably be expected to be associated with these developments are:

- Impacts on airport elements with heritage value, including complete removal of a number of elements
- Disturbance of known contaminated sites
- Increased ground-based noise generation particularly associated with aircraft, GSE and construction
- Impacts to air quality mainly from aircraft and GSE emissions
- Increased resource use
- Impacts on water quality
- Increased generation of waste

13.6 Management of environmental issues associated with implementing the Master Plan

The Master Plan must include Sydney Airport's plans for dealing with the environmental issues mentioned in Section 13.5, including plans for ameliorating or preventing environmental impacts.

For each development undertaken to ultimately implement the development plan, Sydney Airport will undertake appropriate environmental assessments to ameliorate or prevent the potential environmental impacts associated with development of the airport. The assessments will ensure that the existing environment is assessed and documented, potential impacts are assessed and appropriate measures are put in place so that impacts can be prevented, minimised and/or ameliorated. Sydney Airport will ensure that all environmental regulatory requirements are met in respect of each development.

The following section provides an overview of Sydney Airport's plans for dealing with potential environmental issues associated with implementing the Master Plan. Implementation of the specific actions included in the Airport Environment Strategy will also contribute to management of these potential environmental issues, especially within the first five years of the Master Plan planning period.

Resource use

Construction and operation of the developments proposed within this Master Plan will require resources including energy (electricity, gas, fuel) and water. Natural resources will also be required for construction materials. The consumption of resources can lead to both local and off-site impacts such as the emission of greenhouse gases and depletion of finite resources.

To limit the impacts associated with resource use, the following strategies will be implemented:

- A trigeneration plant supplying cleaner energy is being considered for the T1 precinct
- Energy saving and efficiency initiatives will be implemented in accordance with the energy saving and carbon reduction plan
- The recycled water treatment plant currently servicing the T1 precinct is planned to be expanded to accommodate future demand, replacing the need for drinking water to be used for toilet flushing and cooling towers
- Water saving and efficiency initiatives will be implemented in accordance with the water savings action plan.
- Implementation of the sustainable development policy
- Selection of building materials will consider products with recycled content and lower embodied energy

Air quality

Impacts on local air quality may occur as a result of the proposed new developments, particularly the developments that facilitate new and additional aircraft operating areas such as hangars, gates and aprons. The impacts are associated with emissions from aircraft auxiliary power units, ground support equipment, vehicles and industrial point source emissions.

To manage and reduce potential impacts on local air quality, the following strategies will be implemented:

- Where potential air quality impacts are identified, assessments will be conducted to inform appropriate management and mitigation for both the construction and operational phase of developments
- Fixed electrical ground power will be installed to new gates to reduce the use of aircraft auxiliary power units which generate emissions
- Continue to work with and encourage airlines to increase the use of fixed electrical ground power and decrease the use of auxiliary power units
- Investigate and adopt practicable air pollutant reduction measures such as the inclusion of hybrid vehicles in the Sydney Airport vehicle fleet
- Work with and lobby the NSW Government and its transport agencies to provide additional public transport services to and from the airport

Stormwater and groundwater

Impacts on stormwater and groundwater may occur as a result of the proposed new developments proposed in the Master Plan, including additional hardstand areas for aircraft infrastructure, expansion of fuel infrastructure within the JUHI facility and construction activities. Water quality of surrounding waterways may also be impacted

by proposals such as land reclamation. The main impacts are associated with changes to drainage patterns, additional aircraft operating areas and fuel infrastructure where most spills and accidental fuel and chemical releases occur, sedimentation and nutrient loading.

To manage and reduce potential impacts on stormwater, groundwater and the water quality of surrounding waterways, the following strategies will be implemented:

- Stormwater and groundwater will continue to be monitored to assist in the planning for new developments
- Where potential impacts on stormwater, groundwater and/or water quality of surrounding waterways are identified, assessments will be conducted to inform appropriate management and mitigation for both the construction and operational phase of developments
- Design features will be incorporated to reduce contaminant loads in stormwater such as gross pollutant traps and interceptors
- Implementation of a stormwater quality management plan
- Implementation of a management plan for the Sydney Airport Wetlands
- Appropriate flood and water inundation mitigation will be incorporated into the design phase of new developments where required

Ecology and biodiversity

Master Plan proposals, particularly within the South East Sector, present the potential for impacts to occur to the ecology and biodiversity of the area including the marine environment of Botany Bay. The main impacts are associated with land reclamation, the placement of structures in Botany Bay to support the proposed HIALs, and the proximity of development to the Sydney Airport Wetlands.

Sydney Airport intends to manage and reduce potential impacts to the ecology and biodiversity of the airport and its surrounds by implementing the following:

- Ecological impact assessments will be undertaken for all major developments, in particular where potential impacts may occur to the Sydney Airport Wetlands, Botany Bay, listed flora and fauna species, and communities
- Marine surveys (including sea grass) will be carried out to establish baseline conditions prior to Taxiway B extension
- Identification and implementation of appropriate management measures and mitigation for both the construction and operational phase of developments to limit the ecological and biodiversity impacts
- Development of a management plan for the fig trees located in the South East Sector

- Development of a management plan for the Sydney Airport Wetlands

Heritage

Master Plan proposals, particularly within the North East Sector, will have substantial adverse impacts on airport elements with heritage value. Staged removal of the Qantas Jet Base, the Wimbles ink factory and other structures such as Hangar 3 and Hangar 13 are required to facilitate growth of the airport to meet the needs of passengers and airlines.

Potential heritage impacts have been identified through the development of a heritage impact assessment (HIA). The HIA also identifies mitigation strategies that will reduce the impacts to heritage values.

The following strategies will be implemented to manage and reduce the potential impacts to heritage values associated with the airport:

- Sydney Airport plans to develop an experience centre that will include a section dedicated to the history and heritage of the airport. Among other features, visitors will be given the opportunity to explore the history and evolution of the airport and aviation through a combination of interactive media and historical memorabilia. See Section 13.3.1 for further detail
- Preparation and implementation of a heritage interpretation strategy
- Where possible, conservation of remaining elements of heritage value, in particular those elements considered to have exceptional value including the Sydney Airport Wetlands, the main north-south and east-west runways, and Keith Smith Avenue
- Full archival recording of elements with heritage value that will be removed. The archival recordings will include oral histories, video, photographic recording and measured drawings
- Development of a management plan for the fig trees located in the South East Sector
- Development of a management plan for the Sydney Airport Wetlands
- Liaison with relevant stakeholders, regulatory agencies and subject matter specialists as required
- Impacts to heritage will be considered and assessed for all major developments and also addressed within construction environmental management plans

Soil quality and contaminated land

New developments at the airport have the potential to impact on soil conditions through vegetation clearing, excavation, installation of fuel infrastructure, erosion and sedimentation, and disturbance of potential or actual acid sulfate soils and contaminated land.

To manage the potential impacts to soil quality and the impacts associated with developing contaminated land, the following strategies will be implemented:

- An assessment of soil quality impacts will be conducted to inform appropriate management and mitigation for both the construction and operational phase of developments, including for the new fuel infrastructure within the JUHI facility
- Infrastructure will be designed to minimise potential impacts on soil where possible
- Opportunities will be pursued to remediate known contaminated sites. Sydney Airport plans to expand the existing JOSF remediation system and install a hydrocarbon extraction system within the T2 taxi holding area
- Work with and lobby the NSW Government and its transport agencies to provide additional public transport services to and from the airport

Waste and resource recovery

Increasing volumes of waste are associated with increasing passenger and aircraft numbers, retail developments and commercial developments such as office buildings and hotels. Over the Master Plan planning period, a substantial amount of construction and demolition waste will also be generated.

Sydney Airport intends to manage the impacts associated with the increased generation of waste by:

- Implementing the waste and resource recovery strategy, developed in 2012 to inform this Master Plan and the Airport Environment Strategy
- Ensuring public place recycling systems are included in terminal expansions (where quarantine restrictions do not apply)
- Ensuring the expansion of docks, waste collection areas and locations, to accommodate demand, are considered at the planning and design phase
- Identifying opportunities for resource recovery and sustainable procurement on a continual basis

- Encouraging tenants and airlines to reduce waste generated, recover beneficial materials and manage waste sustainably

Ground-based noise

New developments have the potential to increase the level of ground-based noise at the airport, particularly developments that facilitate new aircraft operating areas such as hangars, gates and aprons. Ground transport and construction noise may also result in impacts beyond the boundary of the airport.

To limit noise impacts the following strategies will be implemented:

- Sydney Airport has planned for an engine run facility adjacent to new or reconfigured maintenance and engineering facilities. The facility will have acoustic properties that reduce the noise associated with aircraft engine runs, which are considered an essential component of aircraft maintenance and safety
- Where potential noise impacts are identified, noise modelling will be conducted to inform appropriate management and mitigation and to enable noise criteria to be met both for the construction and operational phase of developments
- Noise reduction strategies will be considered at the building/development design phase
- Fixed electrical ground power will be installed to new gates to reduce the use of aircraft auxiliary power units which generate noise
- Sydney Airport will continue to work with and encourage airlines to increase the use of fixed electrical ground power and decrease the use of auxiliary power units
- Implementation of the engine operating procedures and ground running rules to ensure engine runs are carried out at acceptable times and in appropriate locations





**Sydney
Airport**

The right future.
Starting now.



New generation aircraft like the A380 and Boeing 787 Dreamliner are facilitating aviation growth at Sydney Airport with improved noise and environmental outcomes for the community. The noise footprint of the Dreamliner is 60% smaller than similarly sized aircraft and it consumes 20% less fuel.

An aerial photograph of an airport tarmac. In the upper center, a group of eight ground crew members wearing high-visibility yellow vests and light blue shirts are walking in a loose formation. To their right, a white service truck is partially visible. In the lower left, the nose and tail fin of a white aircraft with blue accents are visible. The tail fin has the registration 'ZA001' written on it. Two more ground crew members are standing near the aircraft. The tarmac is paved with light gray concrete and has yellow and red painted lines. The large number '14.0' is superimposed in white over the center of the image.

14.0

NOISE MANAGEMENT

14.0 NOISE MANAGEMENT



Key points

- For most of the world's major airports – including Sydney – aircraft noise has been a longstanding issue. Sydney Airport acknowledges noise impacts and is committed to working with the community, governments and the aviation industry to manage and mitigate them, especially in areas close to the airport and under flight paths
- Aircraft and engine manufacturers invest billions of dollars every year into research and development of new technologies to improve the noise performance of aircraft. As a result, the International Civil Aviation Organisation has said that aircraft coming off the production line today are about 75% quieter than they were 40 years ago. The aviation industry is working to reduce aircraft noise even more
- Domestic and international aircraft in Australian skies are some of the most modern in the world, and this investment benefits the community living around Sydney Airport. With new generation quieter, cleaner and more fuel efficient aircraft continuing to replace older noisier aircraft, noise impacts from individual flights to and from Sydney Airport will continue to improve during the planning period, helping to offset the increased frequency of aircraft movements
- The Long Term Operating Plan's noise sharing modes of runway operation can continue to be used throughout the planning period. This has been demonstrated by expert noise consultants on behalf of Sydney Airport in materials submitted to Airservices Australia to support the preparation of the Australian Noise Exposure Forecast (ANEF) 2033
- New flight procedures and technologies, which are already being used at Brisbane Airport, could be used at Sydney Airport to further mitigate aircraft noise impacts. For example, smart tracking and continuous descent approaches could be used to reduce noise in areas around the airport or under flight paths
- This Master Plan assumes there will be no change to operating restrictions like the curfew, movement cap or noise sharing arrangements and no new flight paths or runways. However, modernising some of these restrictions to recognise and take advantage of the benefits of new generation quieter aircraft could increase the potential for noise sharing and create more predictable periods of respite
- The increasing use of new generation, quieter aircraft means the forecast ANEF (noise) contours for 2033 cover an area significantly less than the area in 1976, despite the increase in air traffic over that period:
 - The area of land within the 25 ANEF contour has decreased by 1,150 hectares or 36% since 1976
 - Sydney Airport recognises that aircraft noise can be an issue of concern to people living in areas outside the ANEF contours and, as such, noise management needs to occur in affected areas close to and further away from the airport



Aircraft and engine manufacturers invest billions of dollars every year into research and development of new technologies to improve the noise performance of aircraft. As a result, the International Civil Aviation Organisation has said that the new generation quieter aircraft coming off the production line today are about 75% quieter than they were 40 years ago. As the aviation industry works to reduce aircraft noise even more, the aircraft of the future will be even quieter than they are today.

Sydney Airport acknowledges the impacts of aircraft noise and continues to work with the community, governments and the aviation industry to manage and mitigate them, especially in areas close to the airport and under flight paths.

As well as Sydney Airport itself, the International Civil Aviation Organisation (ICAO), the Australian, NSW and local governments, airlines, aircraft and engine manufacturers, and regulators all play important roles. Together, they work to balance the economic and social benefits our society derives from aviation and aviation safety with the need to minimise noise impacts.

This chapter includes the plans, actions and strategies Sydney Airport and other organisations use to mitigate the impacts of aircraft noise. For Sydney Airport, these include:

- Facilitating noise sharing
- Investing in airport infrastructure to support new generation quieter aircraft

- Working closely with the Australian, NSW and local governments
- Consulting and engaging with the local community
- Consulting with the airlines that use the airport

This Master Plan assumes there will be no change to operating restrictions like the curfew, movement cap or noise sharing arrangements and no new flight paths or runways. However, modernising some of these restrictions to recognise and take advantage of the benefits of new generation quieter aircraft could increase the potential for noise sharing and create more predictable periods of respite.

Table 14.1 Sound levels of common events

	dB(A)
Threshold of pain	140+
Pneumatic drill (unsilenced at 7m distance)	95
Heavy diesel lorry (40km/h at 7m distance)	83
Modern twin-engine jet (taking off at 152m distance)	81
B737-800 jet: arriving at Sydney Airport (flying over Leichhardt)	75.4
B737-800 jet: departing from Sydney Airport (flying over Croydon) ²	70.9
Passenger car (60km/h at 7m distance)	70
Office environment	60
Ordinary conversation	50
Library reading room	40
Quiet bedroom	35
Threshold of hearing	0

The Long Term Operating Plan's noise sharing modes of runway operation can continue to be used throughout the planning period, as demonstrated by expert noise consultants on behalf of Sydney Airport in materials submitted to Airservices Australia to support the preparation of Australian Noise Exposure Forecast (ANEF) 2033

Sydney Airport's past, present and future investment in on-airport infrastructure to accommodate larger, quieter aircraft will ensure residents living close to the airport and under flight paths continue to benefit from their use.

Noise from ground-based activities at Sydney Airport is managed separately to noise from in-flight aircraft operations. Engine ground running, which is an essential part of aircraft operations and maintenance, is regulated by a comprehensive set of operational rules designed to maintain safety, comply with relevant standards and practice, and minimise noise. This Master Plan also allows for an engine run facility, in which ground running would take place.

14.1 Background

Statutory requirements

The Airports Act requires a master plan to specify the following noise-related matters:

- An ANEF for the areas surrounding Sydney Airport
- Flight paths at Sydney Airport
- Sydney Airport's plans – developed following consultation with the airlines that use the airport and local government bodies in the vicinity of the airport – for managing aircraft noise intrusion in

areas forecast to be subject to exposure above the significant ANEF levels (i.e. 30 ANEF levels)

Specifying only these matters does not adequately inform the public about the strategies being implemented by Sydney Airport, governments and others to manage and mitigate aircraft noise intrusion in areas around the airport and under flight paths. As well as addressing the minimum requirements of the Airports Act, this chapter provides additional information to ensure the community is fully informed about noise management issues.

Understanding noise

Environmental or community noise includes noise in urban areas generated by transport (road, rail and air), industry, construction activity and, more generally, across neighbourhoods.

Aircraft noise is an inevitable by-product of aviation activity. While the amount of noise generated by an aircraft varies according to its type, altitude and size, it generally comes from the engines (particularly when taking off and climbing) and air moving over the body of the aircraft (particularly when landing).

Sound is measured in units called decibels, represented on a logarithmic scale. This means that a 10-decibel increase is defined as a 10-fold increase in noise energy.

Table 14.1 illustrates the sound levels of a range of common events.¹

The effects of aircraft noise on human health and well-being have been extensively studied in Australia and around the world. Relationships between exposure to excessive aircraft noise, annoyance and, in some cases, health impacts, have been documented.³

¹ National Airports Safeguarding Framework (Guideline A)

² The 737-800 is one of the most common jet aircraft at Sydney Airport. These noise levels are sourced from information published by Airservices Australia.

³ For example, see: enHealth Council, The Health Effects of Environmental Noise – Other Than Hearing Loss, Australian Environmental Health Council, Canberra (2004); and Night Noise Guidelines for Europe, World Health Organisation (2009).

Table 14.2 Roles and responsibilities for managing aircraft noise

Organisation	Summary of responsibilities concerning the management of aircraft noise
International Civil Aviation Organisation (ICAO) ICAO, a United Nations specialised agency, is the global forum for civil aviation.	<ul style="list-style-type: none"> Aeroplanes and helicopters built today are required to meet the ICAO's strict aircraft noise standards As an ICAO member state, Australia has adopted laws and regulations to reflect these international standards at Australia's airports
Australian Government: Department of Infrastructure and Regional Development (DIRD) DIRD advises the Minister for Infrastructure and Regional Development on the policy and regulatory framework for airports and the aviation industry and administers the Airports Act.	<ul style="list-style-type: none"> Enforces Sydney Airport's aircraft movement cap and curfew and the granting of curfew dispensations Administers the noise insulation program Supports the Sydney Airport Community Forum
Australian Government: Airservices Australia Airservices Australia is responsible for managing aircraft movements at Sydney Airport.	<ul style="list-style-type: none"> Provides air traffic control management and related airside services to the aviation industry Prepares and publishes jet noise abatement procedures Determines aircraft flight paths at Sydney Airport Implements noise sharing at Sydney through the Long Term Operating Plan (the LTOP) Publishes information on aircraft movements, runway and track usage and noise impacts using a range of noise descriptors Handles aircraft noise complaints and inquiries (other than ground-based noise complaints which are handled by Sydney Airport Corporation Limited) Operates noise monitoring equipment in suburbs around Sydney Airport and publishes results Reviews and endorses for technical accuracy the draft ANEF developed by Sydney Airport
Australian Government: Aircraft Noise Ombudsman Conducts independent administrative reviews of Airservices Australia's management of aircraft noise-related activities.	<ul style="list-style-type: none"> Reviews the handling of complaints or inquiries made to Airservices Australia about aircraft noise Reviews community consultation processes related to aircraft noise Reviews the presentation and distribution of aircraft noise-related information
Sydney Airport Corporation Limited This company is the airport lessee and the operator of Sydney Airport.	<ul style="list-style-type: none"> Manages operations at the airport and ensures the effective delivery and coordination of airport-related services and facilities Provides and maintains on-airport infrastructure to facilitate noise sharing Provides and maintains infrastructure to support the use of quieter new generation aircraft Publishes an ANEF, other noise descriptors, and plans to manage noise impacts Ensures guidelines are in place to control noise generated by engine ground running Engages with the SACF and broader community Handles ground-based noise complaints at Sydney Airport
Airlines and aircraft operators In 2012, there were 39 airlines flying to Sydney Airport.	<ul style="list-style-type: none"> Maintain aircraft fleets and engines that meet the required ICAO and Australian Government noise-related regulations Implement noise-abatement principles for flight operations Develop flight schedules
NSW Government and local councils The NSW Government and local councils regulate land use planning and development in the vicinity of Sydney Airport.	<ul style="list-style-type: none"> The NSW Government has issued a ministerial direction to local councils to guide land use planning and development decisions near Sydney Airport. The direction aims, in part, to ensure that development for residential purposes or human occupation, where appropriate, incorporates building features so that residents or building occupants are not adversely affected by aircraft noise
Sydney Airport Community Forum (SACF) The Australian Government established the SACF in 1996 as part of its commitment to addressing the noise impacts from Sydney Airport in consultation with affected residents.	<ul style="list-style-type: none"> The role of the SACF is to act as a forum for providing advice to the Minister for Infrastructure and Regional Development, Sydney Airport and aviation authorities on the abatement of aircraft noise and related environmental issues at Sydney Airport; in particular it is the main body for consultation on the LTOP

For this reason, Sydney Airport is committed to working with the community, governments and the aviation industry to manage and mitigate noise impacts, especially in areas close to the airport and under flight paths.

Who's responsible for managing aircraft noise?

As **Table 14.2** shows, managing noise impacts at Sydney Airport is shared by many organisations. As well as Sydney Airport itself, ICAO, the Australian, NSW and local governments, airlines, aircraft and engine manufacturers, and regulators all play important roles. Together, they work to balance the economic and social benefits our society derives from aviation and aviation safety with the need to minimise noise impacts.

Ground-based noise complaints are handled by Sydney Airport and noise complaints relating to aircraft in flight are handled by Airservices Australia.

14.2 Plans, actions and strategies for managing aircraft noise

For most of the world's major airports – including Sydney – aircraft noise has been a longstanding issue.

As with these other airports, Sydney Airport and the people who live around it and under flight paths have benefitted from the use of new generation quieter aircraft. The International Civil Aviation Organisation has said that the new generation quieter aircraft coming off the production line today are about 75% quieter than they were 40 years ago. As the aviation industry is working to reduce aircraft noise even more, the aircraft of the future will be even quieter than they are today.

While the Airports Act requires only Sydney Airport's plans for managing aircraft noise intrusion in areas forecast to be subject to exposure above the ANEF 30 contour levels to be specified, experience shows that noise does not stop at this or any other contour. Sydney Airport recognises that aircraft noise can be an issue of concern to people living in areas outside the ANEF contours and, as such, noise management needs to occur in affected areas close to and further away from the airport.

The following plans, actions and strategies for managing aircraft noise intrusion therefore apply to all areas – including those within the ANEF 30 contour – and are undertaken by:

- Sydney Airport (Section 14.2.1); or
- Governments, the broader aviation industry and others (see Section 14.2.2)

14.2.1 Plans, actions and strategies undertaken by Sydney Airport

Sydney Airport is committed to working with the organisations shown in **Table 14.2** to effectively manage and mitigate the impacts of aircraft noise,

especially in the vicinity of the airport or under flight paths, where these impacts can be greater than in other parts of Sydney.

Facilitating noise sharing

Sydney Airport supports noise sharing, which Airservices Australia achieves by implementing the Long Term Operating Plan (LTOP)⁴ for Sydney Airport. This Master Plan has been developed on the basis that the LTOP will remain in force during the planning period. To facilitate noise sharing, Sydney Airport will continue to provide and maintain the necessary on-airport infrastructure during the planning period.

The LTOP has been implemented by Airservices Australia since 1998 and was developed following extensive consultation. It describes 10 ways in which Sydney Airport's runways are used, each of which results in a different combination of flight paths affecting different parts of Sydney. These runway modes of operation (or modes) are shown in **Figure 14.1**. The LTOP takes advantage of Sydney Airport's coastal location and is implemented in a way that maximises the number of flights that occur over water.

The noise sharing modes are Modes 5, 7 and 14a. It should be noted, however, that the use of Modes 9, 12 and 13 and Sodprops can also, to varying degrees, produce noise sharing outcomes.

In 2009, Sydney Airport demonstrated its support for the LTOP by investing close to \$100 million to enlarge runway end safety areas on the east-west runway. With this investment, all requirements set by the Civil Aviation Safety Authority (CASA) were fulfilled.

When deciding which mode to use and when, Airservices Australia must ensure that, subject to safety and weather conditions:

- As many flights as practical come and go using flight paths over water (i.e. Botany Bay) or non-residential areas
- The rest of the air traffic is shared over surrounding communities as fairly as possible
- Runway noise sharing modes change throughout the day so individual areas have some respite from aircraft noise on most days

The LTOP aims to achieve the following runway end movement targets:

- 55% of flights to the south of the airport (over water)
- 17% of flights to the north of the airport
- 15% of flights to the west of the airport
- 13% of flights to the east of the airport

Airservices Australia compares the actual outcomes against these targets and publishes on its website the results in monthly Sydney Airport Operational Statistics.

4 A summary of the LTOP can be found at: http://sacf.infrastructure.gov.au/LTOP/files/LTOP_general_information_fact_sheet.pdf

Figure 14.1 Runway modes of operation

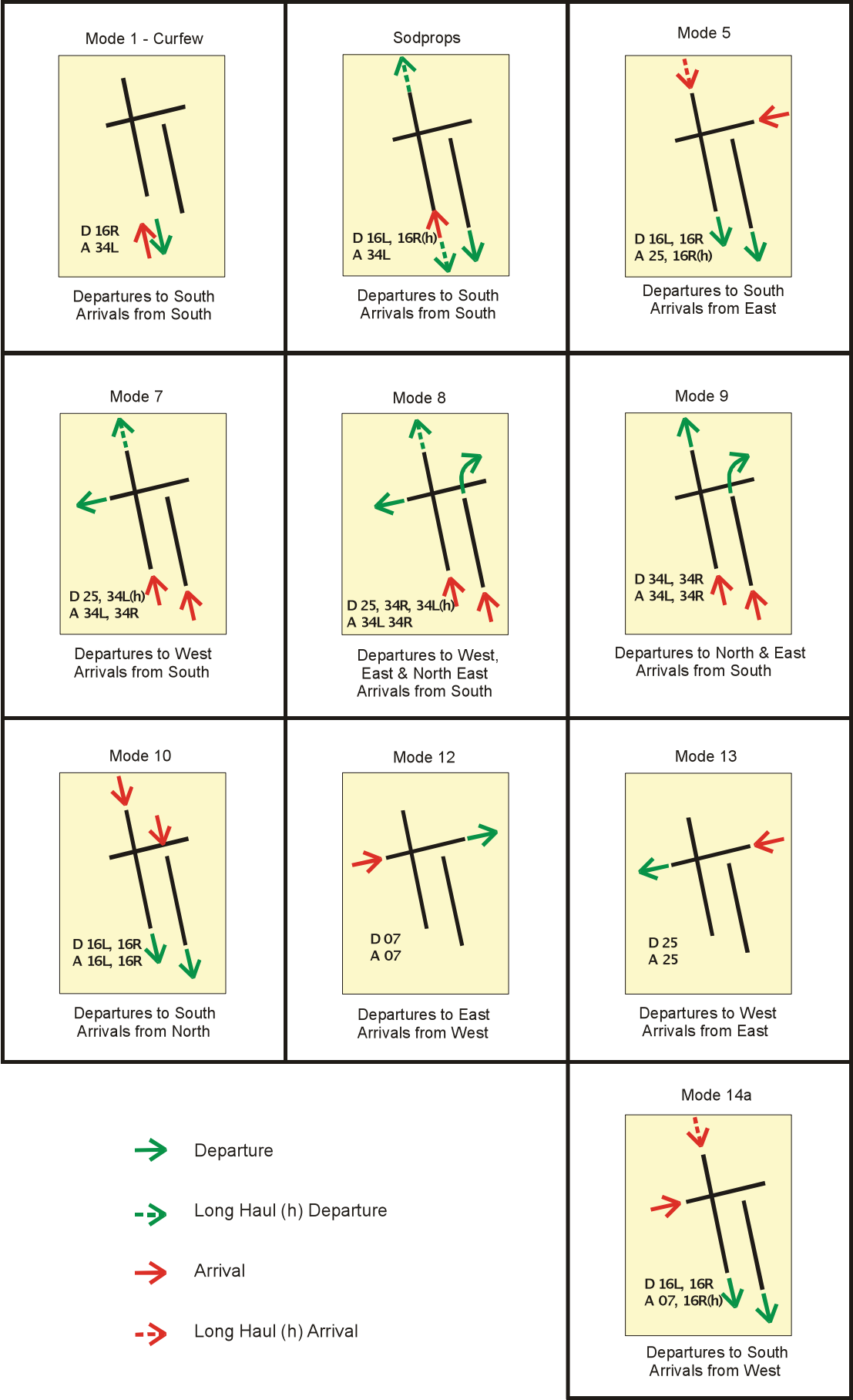


Table 14.3 Runway end impacts since 1998 compared to 2033 forecast

Year	North	South (over water)	East	West
1998 (target)	17.0%	55.0%	13.0%	15.0%
1998 (actual)	28.4%	51.8%	11.4%	8.4%
2002 (actual)	27.1%	49.4%	14.0%	9.5%
2004 (actual)	28.3%	50.0%	12.8%	8.9%
2006 (actual)	28.3%	50.3%	13.8%	7.6%
2008 (actual)	31.1%	51.0%	14.2%	3.8%
2012 (most recent full year available)	31.2%	51.8%	14.5%	2.5%
2029 (as forecast in 2009 Master Plan)	32.6%	50.6%	12.8%	5.9%
2033 (as forecast in this Master Plan)*	32.7%	49.2%	13.8%	4.3%

*The runway end impact percentages here are calculated using the same methodology used by Airservices Australia in its published monthly Sydney Airport Operational Statistics.

When these targets were originally set, the Australian Government indicated they were "... necessarily based on computer modelling of runway capacities and an analysis of historical meteorological information. The capacities of the new [LTOP] arrangements have yet to be proven in practice." Subsequent experience has proved that, while the targets are generally met in areas to the east and south of the airport, they are not in areas to the north or west of the airport.

A significant amount of work has been undertaken to understand the reasons why the LTOP runway end movement targets have not been met in areas to the north and west of the airport. Reasons are weather and demand-related. Most recently, in response to a recommendation from the Aircraft Noise Ombudsman, Airservices Australia published a fact sheet which addresses this issue in detail.⁵

A 2005 independent analysis of LTOP performance by Airways International (prepared for the Sydney Airport Community Forum) found that the implementation has been 'reasonable considering the complexity of LTOP in all its aspects'.

Table 14.3 shows the extent to which targets have been achieved historically and predictions for the future.

The Australian Government's direction to Airservices Australia to implement the LTOP states that the modes of operation should be changed throughout each day, when traffic and weather conditions permit, to provide respite from noise affecting residents in different areas. While noise sharing modes will still be used throughout the planning period, the growth in air travel means they will be used less often than occurs today.

The noise sharing modes can continue to be used throughout the planning period. This has been demonstrated by expert noise consultants on behalf of Sydney Airport in materials submitted to Airservices Australia to support preparation of the ANEF 2033. For example, the estimated times of the day during which

noise sharing modes would be available in 2033 on the projected representative busy day (subject to weather) are shown in **Table 14.4**.

Table 14.4 Estimated times during which noise sharing would be available in 2033

Runway mode of operation	Time periods
Runway mode of operation	Time periods
Mode 5	2:30pm – 4:00pm
	9:00pm – 11:00pm
Mode 7	6:00am – 6:45am
	2:00pm – 3:00pm
	8:00pm – 9:00pm
	10:15pm – 11:00pm
Mode 14a	2:30pm – 4:00pm
	9:00pm – 11:00pm

On days that are less busy than the representative busy day, it would be expected that the times during which noise sharing modes could be used throughout the planning period would be greater than shown here.

Consistent with the LTOP, and as shown in **Table 14.3**, approximately half of all aircraft movements are forecast, throughout the planning period, to continue to occur over water (i.e. Botany Bay).

Sydney Airport supports the periodic review of mode selection rules used by Airservices Australia air traffic control to ensure that any increases in the use of noise sharing modes made possible by advances in technology are achieved (subject to the overriding need to maintain safety).

⁵ Airservices Australia, <http://www.airservicesaustralia.com/aircraftnoise/airport-information/sydney>

The independent steering committee which oversaw the preparation of the *Joint Study on Aviation Capacity in the Sydney Region* (2012) recommended to the Australian Government that the LTOP be reviewed with the aim of determining new, more effective measures of aircraft noise impacts and respite than the current runway end movement targets.

Sydney Airport, as a member of Sydney Airport Community Forum (SACF) and the LTOP Implementation and Monitoring Committee, will continue to support the sharing of aircraft noise in areas around Sydney Airport as equitably as possible.

Investing to support new generation quieter aircraft

Sydney Airport welcomes the introduction of the new generation of quieter aircraft like the Airbus A380, Boeing B777, B787 Dreamliner and B747-8F. It is expected that other new generation quieter aircraft like the A350XWB, B737 MAX and A320neo will be introduced within the planning period of this Master Plan.

Sydney Airport's past, present and future investment in infrastructure to accommodate these new generation aircraft is designed to ensure residents living close to the airport or under flight paths will continue to benefit from their introduction. For example, to accommodate the A380, which is both larger and much quieter than the older aircraft type it is replacing, Sydney Airport has invested significantly to upgrade infrastructure. To date, projects that have been, or are being, planned or implemented to facilitate new generation quieter aircraft include:

Airfield works:

- Widening pavement shoulders, fillets and flanks for various runways and taxiways
- Strengthening the airport tunnel over General Holmes Drive
- Relocating Taxiway G east of Taxiway D to accommodate the clearances necessary for the A380's larger wingspan. Work included demolishing two existing hangars and relocating the airport perimeter road
- Relocating airfield navigational and visual aid equipment including taxiway lighting and signage and the installation of new inset taxiway lights
- Providing additional apron capacity in the South West and South East Sectors for A380s
- Planning for new aircraft maintenance and engineering facilities, including new hangars, to accommodate new generation aircraft like the A380

Terminal works:

- Providing new contact and non-contact bays in T1 suitable for the larger A380 aircraft

- Relocating fuel points and fuel lines in the Terminal 1 (T1) precinct as necessary
- Installing new flood lighting, strengthening apron pavements in the T1 precinct to take the heavier aircraft, new pavement markings, new nose-in guidance systems and signage
- Reconfiguring adjacent bays at T1 impacted by the new larger aircraft
- Expanding Pier A at T2 to provide additional capacity for Virgin Australia's fleet of new generation A330-200 aircraft

This Master Plan indicates that other essential infrastructure upgrades to accommodate additional quieter new generation aircraft are planned to occur during the planning period. These include:

- Upgrades to taxiways and other airfield infrastructure to accommodate growth in A380 movements, as well as other new generation quieter aircraft like the B787, B777 and A350XWB
- New gates, aerobridges and other essential terminal infrastructure to be provided in the Terminal 2/ Terminal 3 (T2/T3) precinct to accommodate use by new generation quieter aircraft such as the A380 and B787
- Additional apron parking capacity for A380 aircraft
- Additional rapid exit and other taxiways to further minimise delays and facilitate use of runways more efficiently

Working closely with the NSW Government and local government

The most effective way to manage aircraft noise intrusion in areas forecast to be subject to exposure above the 30 (or any other) ANEF contour is to implement effective and appropriate land use and planning controls and acoustic standards for these areas.

Sydney Airport helps to achieve this outcome by preparing the ANEF, a process that involves engagement with the NSW and local governments (see Section 14.4). The ANEF, which is designed to create a land use planning tool to manage noise sensitive land uses around the airport, provides guidance for the NSW Department of Planning and Infrastructure (NSWDPI) and councils to make informed planning and development decisions. The system underpins Australian Standard AS2021-2000 Acoustics – Aircraft Noise Intrusion – Building Siting And Construction.⁶ The standard defines areas where construction of certain building types is "acceptable", "conditionally acceptable" and "unacceptable".

Table 14.5 shows the land use planning criteria applied within Australia and building site acceptability based on ANEF zones.

6 AS2021-2000 is currently being reviewed

Table 14.5 Building site acceptability based on ANEF zones

Building type	ANEF zone site		
	Acceptable	Conditional	Unacceptable
House, home unit, flat, caravan park	Less than 20 ANEF (Note 1)	20 to 25 ANEF (Note 2)	Greater than 25 ANEF
Hotel, motel, hostel	Less than 25 ANEF	25 to 30 ANEF	Greater than 30 ANEF
Hostel, school, university	Less than 20 ANEF (Note 1)	20 to 25 ANEF (Note 2)	Greater than 25 ANEF
Hospital, nursing home	Less than 20 ANEF (Note 1)	20 to 25 ANEF	Greater than 25 ANEF
Public building	Less than 20 ANEF (Note 1)	20 to 30 ANEF	Greater than 30 ANEF
Commercial building	Less than 25 ANEF	25 to 35 ANEF	Greater than 35 ANEF
Light industrial	Less than 30 ANEF	30 to 40 ANEF	Greater than 40 ANEF
Other industrial	Acceptable in all ANEF zones		

NOTES:

1. The actual location of the 20 ANEF contour is difficult to define accurately, mainly because of variation in aircraft flight paths. Because of this, the procedure of Clause 2.3.2 of AS2021-2000 may be followed for building sites outside but near to the 20 ANEF.
2. Within 20 ANEF to 25 ANEF, some people may find that the land is not compatible with residential or educational uses. Land use authorities may consider that the incorporation of noise control features in the construction of residences or schools is appropriate.
3. There will be cases where a building of a particular type will contain spaces used for activities which would generally be found in a different type of building (e.g. an office in an industrial building). In these cases Table 2.1 of AS 2021-2000 should be used to determine site acceptability but internal design noise levels within the specific spaces should be determined by Table 3.3 of AS2021-2000.
4. This standard does not recommend development in unacceptable areas. However, where the relevant planning authority determines that any development may be necessary within existing built-up areas designated as unacceptable, it is recommended that such development should achieve the required ANR determined according to Clause 3.2 of AS2021-2000. For residences, schools, etc, the effect of aircraft noise on outdoor areas associated with the buildings should be considered.
5. In no case should new development take place in greenfield sites deemed unacceptable because such development may impact airport operations.

Source: AS2021-2000.

Sydney Airport will continue to advocate to the NSW DPI and councils in the vicinity of Sydney Airport that relevant environmental planning instruments incorporate provisions that are consistent with AS2021-2000.

At the end of May 2013, Standards Australia announced it would proceed with a review of AS2021-2000. The approved scope of the review consists of updating aircraft fleet details, reviewing the applicability of the standard to small airports and explaining the procedures to develop an ANEF.

Sydney Airport will also monitor and provide feedback on development or rezoning proposals in other areas that are affected by inappropriate levels of aircraft noise. In one development example, Sydney Airport successfully advocated that a noise disclosure clause be included in NSW planning certificates issued under Section 149 of the Environmental Planning and Assessment Act 1979 so prospective purchasers are made aware of likely noise impacts.

Consulting and engaging with the local community and airlines which use the airport

Sydney Airport engages directly with the SACF, the broader community, airlines which use the airport, and other stakeholders about relevant airport-related matters – including noise management issues – and will continue to do so during the planning period. Chapter 1 outlines the various consultation and engagement activities that are undertaken by Sydney Airport when preparing

master plans, major development plans or when other development proposals are being considered.

As outlined in Chapter 13, this Master Plan includes a proposal to establish an experience centre at Sydney Airport. The centre is planned to provide the local community and visitors alike with a wealth of information about Sydney Airport's history, environmental initiatives, aircraft noise and flight path information as well as existing and planned future airport operations.

14.2.2 Plans, actions and strategies undertaken by others

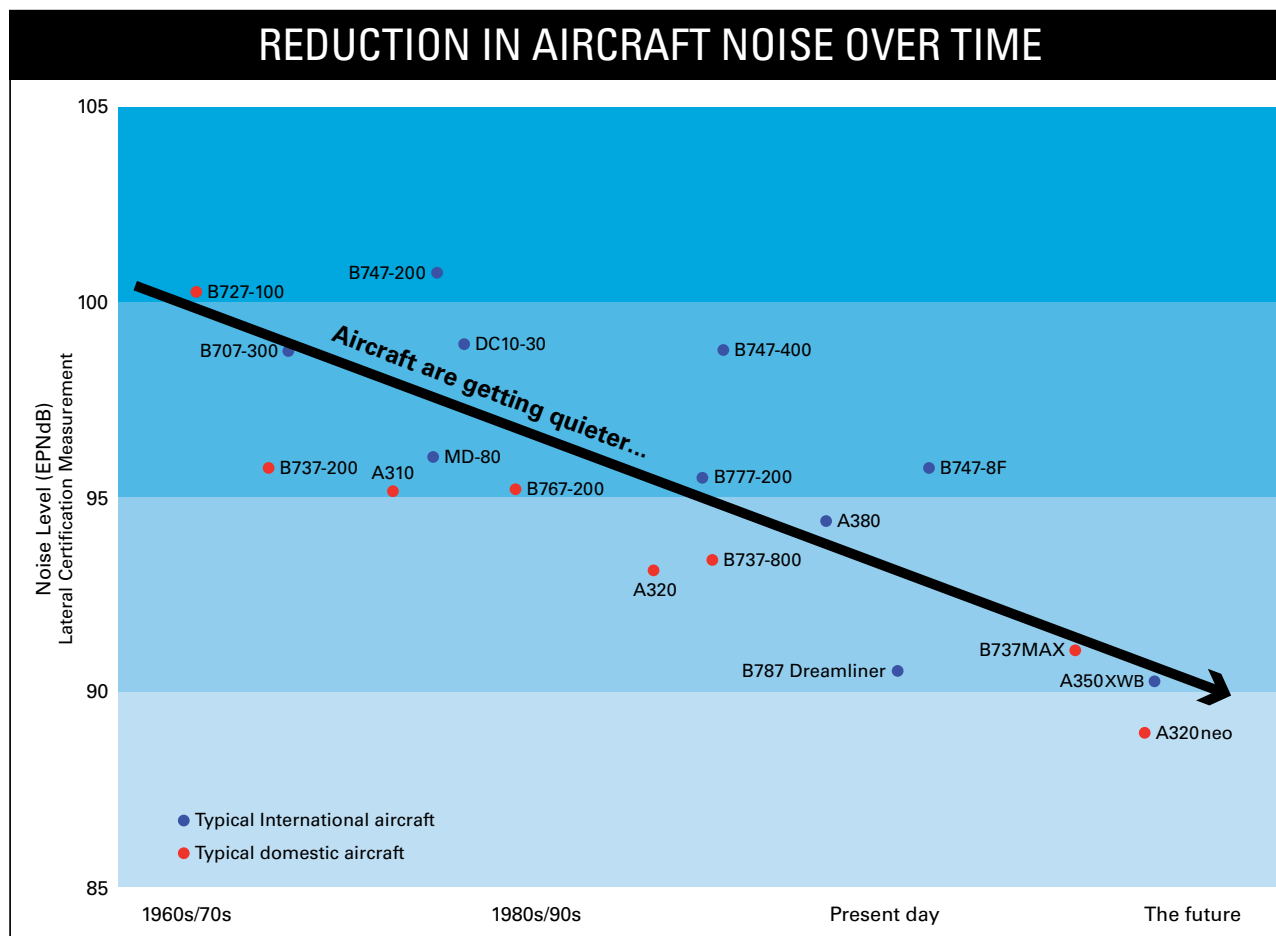
As already noted, many organisations other than Sydney Airport have responsibility for managing aircraft noise intrusion in areas forecast to be subject to exposure above the 30 or any other ANEF level. This section describes what these organisations are doing.

Aircraft are getting quieter

Aircraft and engine manufacturers invest billions of dollars every year into research and development of new technologies to improve the noise performance of aircraft.

Domestic and international aircraft in Australian skies are some of the most modern in the world so this investment benefits the community living around Sydney Airport. With new generation quieter, cleaner and more fuel efficient aircraft continuing to replace

Figure 14.2 Reduction in aircraft noise over time



Source: ICAO and FAA

older noisier aircraft, noise impacts from individual flights to and from Sydney Airport will continue to improve during the planning period, helping to offset the increased frequency of aircraft movements.

In the years following 1958, when Sydney Airport's curfew was introduced, the most common jet aircraft were the noisy and polluting B707 and B727. Improved technology means today's aircraft are significantly quieter than these older models (see **Figure 14.2**). In fact, ICAO said in 2012 that aircraft coming off the production line today are about 75% quieter than they were 40 years ago. The aviation industry is working to reduce this even more.

ICAO has developed standards relating to aircraft noise. As Australia is a member of ICAO, airports in Australia and the aircraft permitted to operate at those airports are affected by these standards, which are reflected in Australian Government laws such as the Air Navigation (Aircraft Noise) Regulations 1984. Over time, these regulations have become stricter as technology (relating to jet engine, airframe and navigation technologies) has improved.

Only aircraft meeting stringent noise requirements (known as Chapter 3 aircraft) are permitted to operate at Sydney Airport. The last 'marginally compliant' Chapter

3 aircraft to operate at Sydney stopped flying in 2010. In 2001, ICAO adopted a more stringent 'Chapter 4' noise standard. In the 2009 National Aviation Policy White Paper, the Australian Government indicated its strong belief that the time has come for industry to move away from the use of aircraft which fail to meet Chapter 4 noise standards.

In February 2013, ICAO's Committee on Aviation Environmental Protection (CAEP) reached agreement on a new noise standard. The agreed noise standard will be 7dB(A) below the existing Chapter 4 standard. This new and more stringent noise standard will be presented for final review and approval by the ICAO Council later in 2013. If approved, it will be applicable to new-design aircraft entering into service from 2017 and, from 2020, for the lower weight aircraft.

Table 14.6 Noise monitoring results around Sydney Airport

Location of NMT	Aircraft type	Arriving or departing	Average LA max [dB(A)]	Reduction in decibels	Reduction in noise energy
Sydenham	A380	Departing	87.7	- 4.4	- 64%
	B747-400	Departing	92.1		
	A380	Arriving	93.9	- 2.6	- 45%
	B747-400	Arriving	96.5		
Leichhardt	A380	Departing	81.7	- 3.9	- 59%
	B747-400	Departing	85.6		
	A380	Arriving	84.4	- 2.1	- 38%
	B747-400	Arriving	86.5		
Annandale	A380	Departing	71.5	- 5.5	- 72%
	B747-400	Departing	77.0		
St Peters	A380	Departing	73.6	- 6.7	- 79%
	B747-400	Departing	80.3		
Croydon	A380	Departing	76.7	- 2.3	- 41%
	B747-400	Departing	79.0		

Source: Airservices Australia

New generation Airbus aircraft: A380, A350 XWB and A320neo

In 2008, Airservices Australia released a report showing that an Airbus A380 departing from or arriving at Sydney Airport is between 2.1 and 6.7 decibels quieter than the 747-400, the older aircraft type it typically replaces.

Airservices Australia indicates in its report that “a three decibel reduction is regarded as a halving of an aircraft’s noise energy.”

Table 14.6 provides results that were measured at noise monitoring terminals (NMTs) located around

Sydney Airport. This shows that the A380’s smaller noise footprint on take-off and landing reduces the impact of aircraft noise on airport neighbourhoods.

In August 2011, Qantas announced it would acquire up to 78 A320 neo aircraft. Airbus indicates that compared to the A320s flying today, these new generation aircraft are significantly quieter, at 15dB(A) below ICAO’s strict Chapter 4 noise standard.

Emirates has on order 70 of the new generation quieter A350 aircraft, which Airbus has said emits noise levels significantly below ICAO Chapter 4 requirements.

New generation Boeing aircraft: B737 MAX, B787 Dreamliner and B747-8F

In July 2012, Virgin Australia announced an agreement with Boeing to order 23 of its new generation 737 MAX aircraft, the first airline in Australia to do so. Boeing has said that the noise footprint of this aircraft is 40% smaller than today’s B737s.

The B787 Dreamliner began flying to Sydney in August 2013. Qantas has selected the B787 Dreamliner as the cornerstone of its domestic and international fleet renewal program. Under the fleet plan, the Qantas Group has orders for 15 Boeing 787 aircraft, with the

first aircraft having arrived in the second half of 2013. Qantas has options and purchase rights for a further 50, available for delivery from 2016. Powered by General Electric’s GEnx engines, Qantas indicates that it has a 50% smaller noise footprint. The B787 will, over time, replace older aircraft like the B767-300. A comparison of the noise footprints of the B787 is shown in **Figure 14.3**.

Cathay Pacific already flies the new generation B747-8F freighter to Sydney and has said that its noise footprint is 30% smaller than the older freight aircraft type it replaced.

Figure 14.3 Comparing the noise footprint of the B787 Dreamliner and the B767



Jet noise abatement

Jet noise abatement procedures enable noise during aircraft operations in the vicinity of an airport to be minimised. ICAO has identified several methods, including preferential runways and routes, and low noise procedures to be used by pilots during take-off, approach and landing. Airservices Australia has published jet noise abatement procedures to minimise noise impacts in areas around Sydney Airport or under flight paths.⁷

Aircraft noise insulation program

The aircraft noise insulation program provided a mechanism to insulate homes and public buildings (such as schools, pre-schools, churches and health care facilities) and purchase the most seriously affected properties. The program was administered by the Australian Government with funds raised from a levy applied to passenger tickets for jet aircraft operating at Sydney Airport. All eligible properties under the program have now been insulated. This involved insulating 4,083 homes and 99 public buildings. In addition, 147 residences were voluntarily acquired and the land turned into a park.

The Australian Government has indicated that it will continue to monitor the noise contours in Sydney for any changes.

Operations allowed during the curfew period

The Australian Government's rules for the operation of the curfew are in the Commonwealth's Sydney Airport Curfew Act 1995 and Sydney Airport Curfew Regulations 1995.

The curfew operates from 11pm until 6am. To mitigate noise impacts during this period, take-offs and landings at the airport are restricted to specific types of aircraft and operations. The principal categories of permitted operations are as follows:

- Small (less than 34,000kg) noise certificated propeller driven aircraft and low noise jets – mostly business and small freight jets (these are specified on a list which has been approved by the Minister) – are allowed to operate without a quota on the number of their movements
- Australian air Express, National Jet Systems and Toll Transport have specific approval to operate a limited number of freight movements per week in medium size freight aircraft

The Curfew Act and Regulations provide for international passenger aircraft movements between 11pm and midnight and between 5am and 6am (known as the curfew shoulder periods) subject to jet aircraft meeting the strictest ICAO noise standards (Chapter 3):

- While the Curfew Act would permit up to 35 aircraft movements per week (and no more than 7 on any one day), the Curfew Regulations prescribe lower limits, being no more than 24 movements per week (and no more than 5 on any one day) between 5am and 6am, which may only be landings
- While the Curfew Act would permit up to 14 aircraft movements per week (and no more than 4 on any one day), the Curfew Regulations prescribe zero movements between 11pm and midnight

During the curfew, aircraft must operate over Botany Bay, that is take-offs to the south and landings to the north:

- On Saturdays and Sundays aircraft must also operate over Botany Bay in the hour before and after the curfew, provided the weather and traffic conditions allow this to take place safely
- Aircraft are not permitted to take off over the suburbs after 10.45pm

The curfew restrictions do not apply in cases of emergency.

In exceptional circumstances, the minister may grant dispensations for aircraft to operate when they would not otherwise be allowed to do so. These must be issued in accordance with guidelines which define what exceptional circumstances are. When a dispensation is granted, a report giving the reasons for the dispensation must be tabled in both houses of the Australian Parliament. The Curfew Act provides for fines up to \$550,000 for a body corporate whose aircraft breaches the curfew.

New flight procedures could further mitigate noise impacts

New flight procedures, which are being used by Airservices Australia at Brisbane Airport, could be considered for use at Sydney Airport to help to further mitigate the impacts of aircraft noise. Subject to Australian Government approval, the following text boxes describe examples of what could occur during the planning period.⁸

Aircraft manufacturer Airbus also recently unveiled its 2050 vision for Smarter Skies, which looks beyond aircraft design to how the aircraft is operated both on the ground and in the air in order to meet the expected growth in air travel in a sustainable way and in a way that reduces aircraft noise impacts.⁹

⁷ See <http://www.airservicesaustralia.com/aip/current/dap/AeroProcChartsTOC.htm> (accessed March 2013)

⁸ Information sourced from Brisbane Airport's and Airservices Australia's websites

⁹ More information can be found at <http://www.airbus.com/innovation/future-by-airbus/smarter-skies/> (accessed March 2013)

Continuous descent approach

To land at an airport, traditional landing procedures involve an aircraft descending in successive steps from cruising altitudes to the runway. In a continuous descent approach (or CDA), the aircraft flies from cruise altitude all the way down to the runway in one smooth and uninterrupted descent. Under ideal circumstances, a plane can practically glide into the airport with engines idling, though its use during busier periods is limited.

Brisbane Airport claims that research shows CDA can cut noise during landing by about 4dB(A) to 6dB(A), reducing the noise energy by approximately 60–75%.

Smart tracking

A growing number of modern aircraft are fitted with navigation systems that use satellite-assisted guidance. These systems allow aircraft to use GPS information to fly with a high degree of accuracy. This technology is known as required navigation performance – meaning the aircraft can perform in accordance with a strict set of navigation parameters.

Airservices Australia refers to these routes as smart tracking. Several features of smart tracking allow for better noise management in communities around airports. For example, in certain circumstances, smart tracking flight paths can be designed to curve around obstacles (high terrain or buildings), follow existing noise corridors (highways) or to avoid noise sensitive areas in favour of overflying industrial land or other non-residential areas. This technology has already been successfully implemented at some of the busiest and most geographically challenging airports in the world.

The independent steering committee which prepared the joint study recommended that plans for the implementation of advanced technologies and air traffic management practices – including satellite based systems at Sydney Airport – should be accelerated. Sydney Airport agrees that, as noted in the joint study, new performance based navigation (PBN) technologies offer advantages over sensor-based navigation, including reduced environmental impact through more efficient use of airspace route placement, fuel efficiency and noise abatement.

14.3 Aircraft flight paths

The Airports Act requires this Master Plan to specify flight paths at Sydney Airport. The flight paths used by aircraft arriving at or departing from Sydney Airport are determined by the Australian Government.¹⁰

This Master Plan assumes that the existing flight paths will remain throughout the planning period. **Figures 14.4 and 14.5** show these flight paths used by jet and non-jet aircraft respectively. The flight paths shown are those used by aircraft in the very early stages of flight (immediately after take-off) or in the very late stages of flight (immediately before landing). Flight paths used by aircraft at other stages of flight – which affect areas further away from Sydney Airport – are regularly published by Airservices Australia on its website.

14.4 Measuring, mapping and communicating about aircraft noise

The Australian noise exposure forecast (ANEF) system was developed through an extensive socio-acoustic survey carried out in the vicinity of a number of Australian airports – including Sydney – in the 1980s. The ANEF chart is a computer developed aircraft noise forecast and is based on:

- Operating schedules for aircraft, including the forecast numbers, types and times that these aircraft would be operating in future years
- The selection of runway operating modes, as influenced by forecast meteorological conditions and relevant air traffic management rules and procedures (in Sydney Airport's case, the LTOP)
- Aircraft flight paths
- Aircraft noise levels which are forecast to be produced by the various types of aircraft on arrival and departure.

This Master Plan includes two types of contour maps that are recognised under this system.¹¹

As noted in Section 14.2, the ANEF is primarily designed to create a land use planning tool to manage noise sensitive land uses around airports.

ANEF 2033

As noted in Section 14.1, the Airports Act requires only one noise descriptor to be included in a master plan – the ANEF. The ANEF 2033 for Sydney Airport is shown in **Figure 14.6** and is based on the air traffic forecasts shown in Chapter 3. In accordance with the Airports Act and other requirements, Sydney Airport provided the NSW DPI and the 15 councils in the vicinity of Sydney Airport with an opportunity to comment on the draft ANEF 2033 and paid due regard to all issues raised. It was endorsed by Airservices Australia for technical accuracy on 3 December 2012 before being included in this Master Plan.

10 See Air Navigation (Aerodrome Flight Corridors) Regulations 1994.

11 Adapted from Discussion Paper: Expanding ways to Describe and Assess Aircraft Noise, Australian Government, 2000.

Figure 14.4 Flight paths at Sydney Airport (jet aircraft)

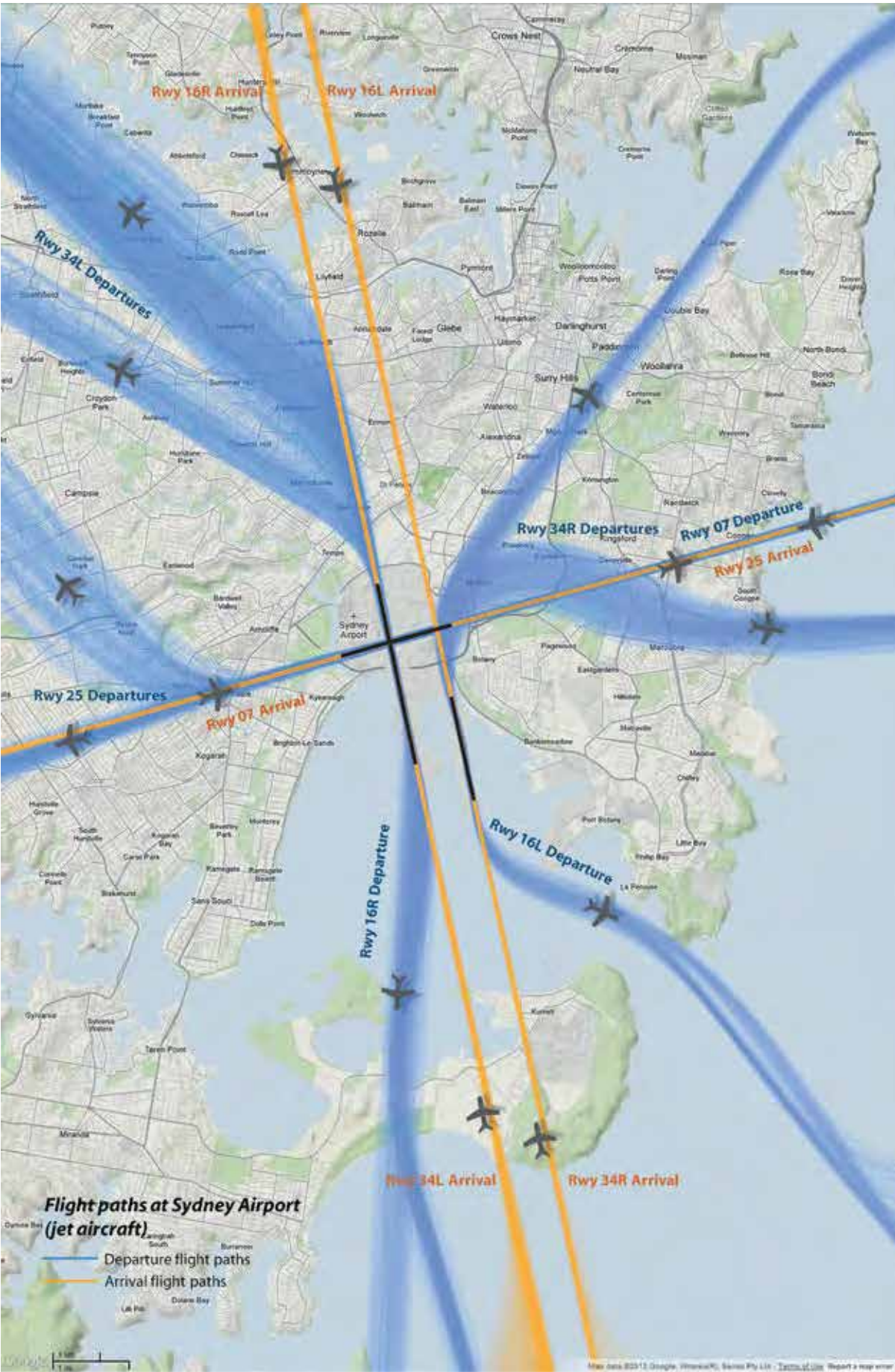


Figure 14.5 Flight paths at Sydney Airport (non-jet aircraft)

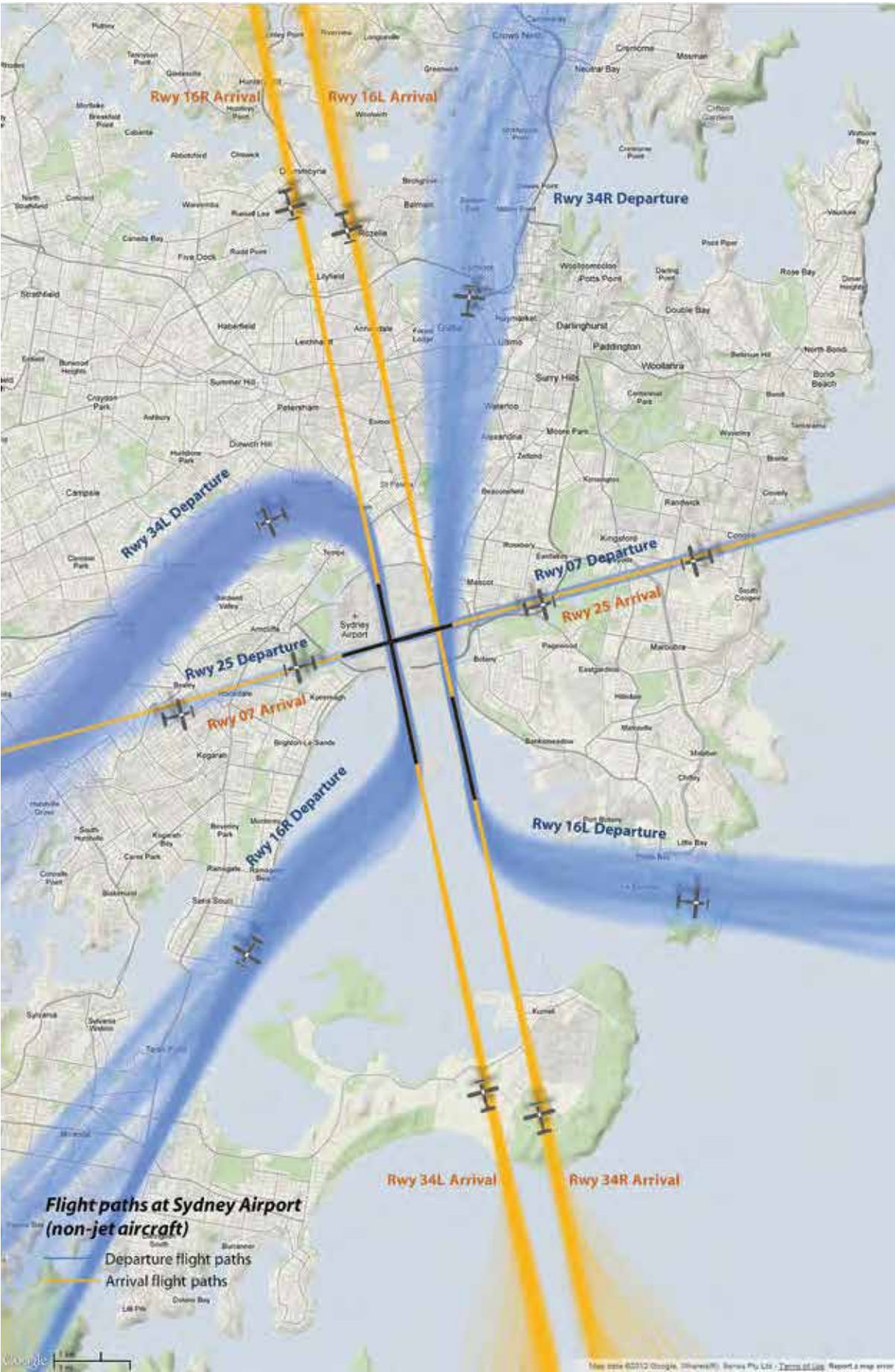


Table 14.7 Different contour maps

Australian Noise Exposure Forecast (ANEF)	These are the official forecasts of future noise exposure patterns around an airport and they constitute the contours on which land use planning authorities (i.e. local councils) base their controls.
Australian Noise Exposure Index (ANEI)	These are contours showing historic noise exposure patterns and are used in environmental reporting and benchmarking. Before 1980, this was known as the Noise Exposure Index (NEI)

Figure 14.7 compares the endorsed ANEF 2033 with the now superseded ANEF 2029 from the 2009 Master Plan. It can be seen that the area forecast to be affected by noise contours in 2033 relative to that forecast to be affected in 2029 has generally reduced and, in some local government areas to the north-west of the airport, significantly reduced. This is because:

- In this Master Plan, the forecast number of aircraft movements in 2033 is lower than was forecast for 2029 in the 2009 Master Plan
- The version of the integrated noise model (INM) used to prepare the ANEF 2033 allows quieter A380 aircraft to be modelled, whereas the earlier INM version used to prepare the ANEF 2029 did not

While the INM version allowed A380 aircraft to be modelled, it still didn't recognise other quieter aircraft types listed in Section 14.2.2. When Sydney Airport next prepares an ANEF, the most recent version of the INM will be used.

Comparison with present day

To compare the forecast noise contours with those of the present day, **Figure 14.8** shows a comparison of the ANEI 2011 with the ANEF 2033.

Comparison with 1976

To illustrate the extent to which the area affected by noise contours around Sydney Airport has reduced over many decades, **Figure 14.9** compares the NEI 1976, the ANEI 2011 and the ANEF 2033. It can be seen that the forecast ANEF 25 contour for 2033 covers an area significantly less than the area in 1976¹², despite the more than 10-fold increase in passengers over that period and the opening of Runway 16L/34R in 1994. The area of land within the ANEF 25 contour has decreased by 1,150 hectares or 36% since 1976.

Noise and flight path monitoring system

The management of flight paths and the monitoring of aircraft noise at Sydney Airport is undertaken by Airservices Australia.

Airservices Australia operates the noise and flight path monitoring system (NFPMS), which collects Sydney Airport-related noise and flight path data 24 hours a day, seven days a week. Noise is permanently monitored at 12 noise monitoring terminals (NMTs) located at Sydney Airport (runway 34L threshold), Kurnell, Coogee, Eastlakes, Penshurst, Bexley, Sydenham, St Peters, Annandale, Croydon, Leichhardt and Hunters Hill. There are also portable NMTs that can be used in temporary locations.

NMTs record:

- The identity, flight path and altitude of each aircraft operating to and from the airport
- The noise levels produced by individual aircraft
- Weather data
- General background noise

The information collected is used to:

- Determine the contribution of aircraft to overall noise exposure
- Detect occurrences of excessive noise levels from aircraft operations
- Assess the effects of operational and administrative procedures for noise control and compliance with these procedures
- Assist in planning of airspace usage
- Validate noise forecasts and forecasting techniques
- Assist relevant authorities in land use planning for developments in areas in the vicinity of an airport
- Generate reports and provide responses to questions from government, industry organisations, community groups and individuals

The monthly NFPMS reports can be found on the Airservices Australia website.¹³

WebTrak

Airservices Australia operates WebTrak, which provides the community with detailed information about aircraft noise and flight paths.

Using information from air traffic control secondary surveillance radars, WebTrak allows anyone to get information about where and how high aircraft fly over the Sydney metropolitan area. It displays a map of surrounding suburbs within 55km of Sydney Airport. Information can be viewed about arriving and departing aircraft, from three months earlier to just 40 minutes before real time. WebTrak can also:

- Locate a particular street address so it appears on the map
- Reveal noise levels of individual aircraft
- Provide information about the aircraft including aircraft type, height, origin and destination
- Display an aircraft's flight path and point of closest approach to a particular street address

¹² The NEI 1976 was prepared as part of the Major Airport Needs of Sydney Study

¹³ <http://www.airservicesaustralia.com/publications/reports-and-statistics/noise-reports/> (accessed March 2013)

Figure 14.6 ANEF 2033

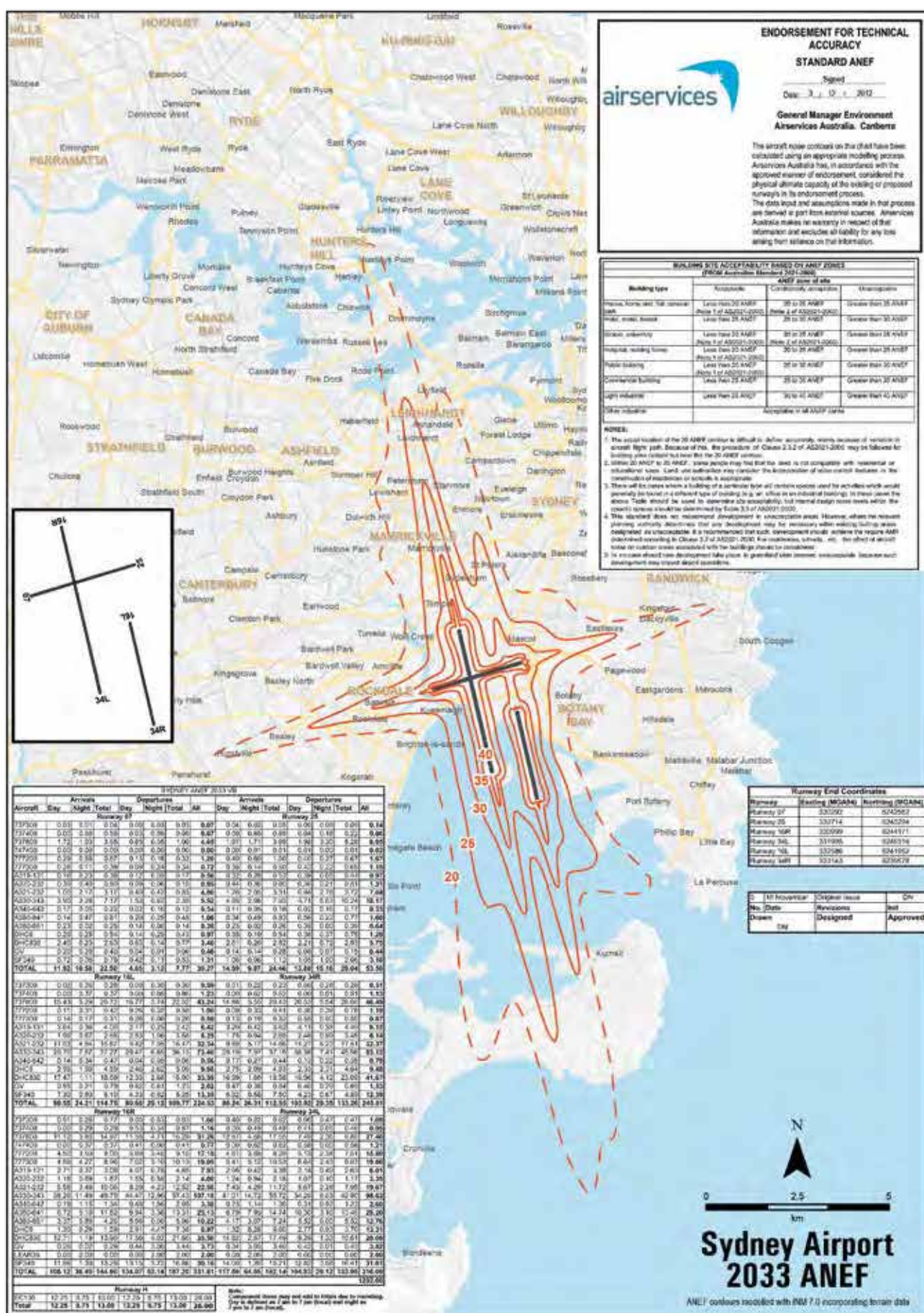
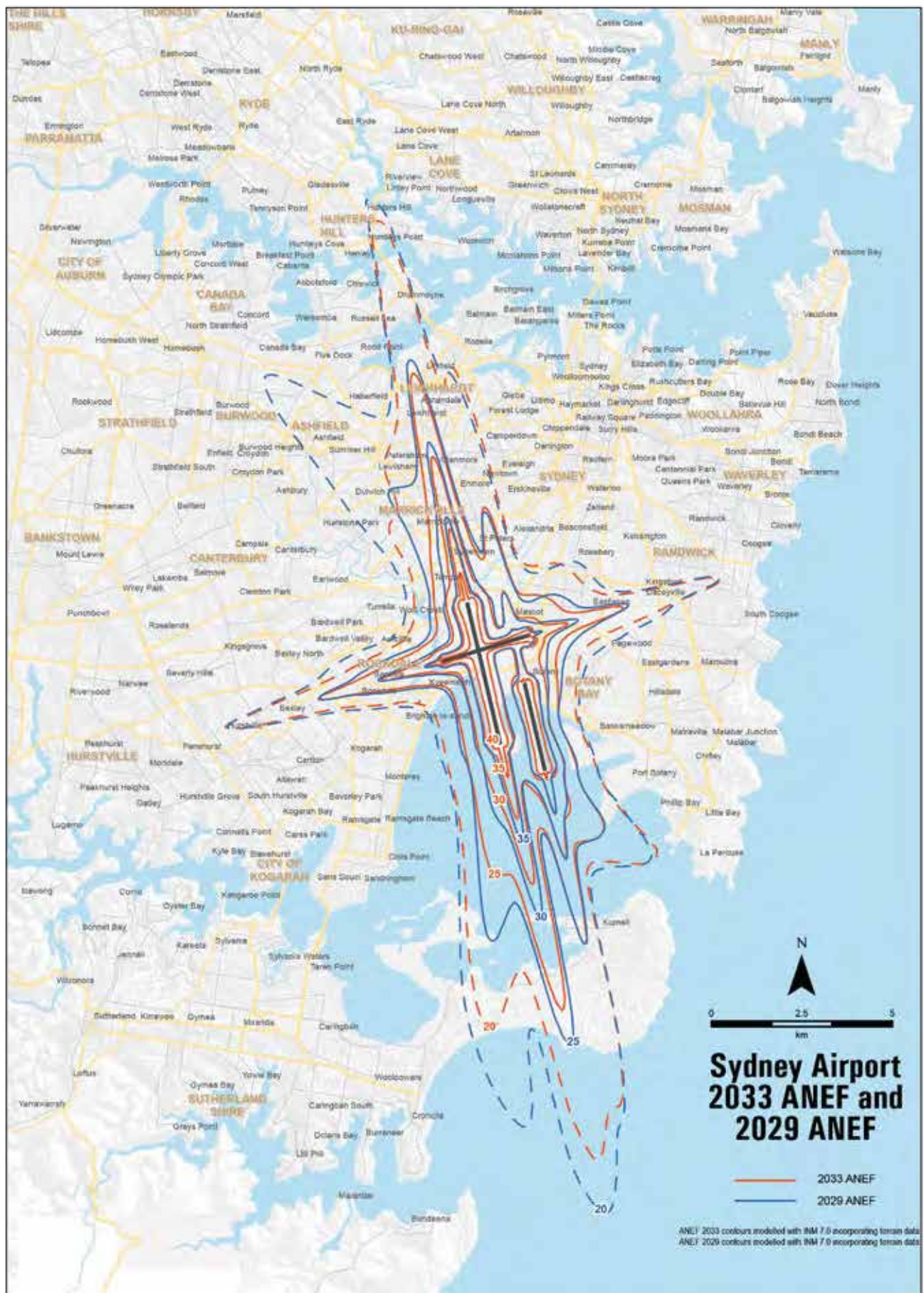


Figure 14.7 ANEF 2033 and ANEF 2029



**Sydney Airport
2033 ANEF and
2011 ANEI and
1976 NEI**

— 2033 ANEF
— 2011 ANEI
— 1976 NEI

ANEF 2033 contours modelled with INM 7.0 incorporating terrain data
ANEI 2011 contours modelled with INM 7.0 incorporating terrain data

Figure 14.9 ANEF 2033 and ANEI 2011 and NEI 1976



WebTrak can be found on the Airservices Australia website.¹⁴

Other ways to map noise at Sydney Airport

Sydney Airport is committed to providing the community with relevant and accurate information about noise impacts in a way that can be easily understood.

In the years since ANEFs started to be used in the 1980s, it has become apparent that, while they can be a useful noise disclosure tool, they do not describe all relevant information about aircraft noise impacts to residents.

For this reason, as well as the ANEF, noise impacts are mapped in other ways to disclose what the impact is today, and what it is forecast to be in the future, for residents living in a particular area.

Noise descriptors are the tools used to illustrate these impacts. In addition to the ANEF, other noise descriptors are provided here which clearly set out the predicted aircraft noise exposure patterns in all areas around Sydney Airport in a way that allows individuals to assess on an objective basis how they might be affected by the forecast level of aviation activity. These descriptors take into account:

- Anticipated aircraft movement numbers
- Anticipated respite hours
- Anticipated noise exposure levels (which includes whether the movement is an aircraft arrival or departure, the size of the aircraft and the level of noise it generates)
- The flight path in use

Flight path movement charts

Flight path movement charts have been in use for around 15 years and are widely accepted as a simple tool for reporting Sydney Airport's noise exposure pattern. Airservices Australia publishes these charts in Sydney Airport Operational Statistics reports.¹⁵ In the previous 03/04 Master Plan and 2009 Master Plan, Sydney Airport published charts showing forecast movements for 2024 and 2029 respectively.

Figure 14.10 shows the predicted average daily jet flight path movements for 2033 and shows where those aircraft will fly, how many overflights are forecast (including the average daily movements and daily range), the percentage of Sydney Airport's overall movements these overflights represent and the percentage of days when there will be no aircraft movements.

Respite charts

Providing people with a break or respite from aircraft noise is an important noise sharing principle. The LTOP requires the modes of runway operation to be changed throughout each day, when traffic and weather conditions permit, to

provide respite from noise affecting residents living in different areas around Sydney.

Airservices Australia publishes respite charts in Sydney Airport Operational Statistics reports.¹⁶ In the previous 03/04 Master Plan and 2009 Master Plan, Sydney Airport published charts showing forecast respite for 2024 and 2029 respectively.

Figure 14.11 shows the predicted average daily jet aircraft respite periods in 2033 based on the number of whole clock hours (eg. 9am to 10am) when there are no aircraft movements on the particular flight path, and reporting these as a percentage of the sum of all the clock hours in the period in question. The figure shows respite during three discrete periods, morning (6am to 7am), daytime (7am to 8pm) and evening (8pm to 11pm).

Frequency-based aircraft noise charts

For the community, knowing the number of noise events that occur in an area that will exceed a particular noise level is important. For this reason, frequency-based measures of aircraft noise are used. Contour maps showing the number of events louder than 70 dB(A) have been typically used. These are known as N70 contours. This level is chosen because it is equivalent to the single event level of 60 dB(A) specified in AS 2021-2000 as the indoor design sound level for normal domestic areas in dwellings. An external single noise event will be attenuated by approximately 10 dB(A) by the fabric of a house with open windows. An internal noise level of 60 dB(A) is the sound pressure level of a noise event that is likely to interfere with conversation or with listening to radio or television. Airservices Australia publishes N70 charts for Sydney Airport in quarterly Australian Noise Exposure Index reports.¹⁷ In the previous 03/04 Master Plan and 2009 Master Plan, Sydney Airport published charts showing forecast respite for 2024 and 2029 respectively.

Figure 14.12 shows the forecast N70 chart for Sydney Airport in 2033 and, for comparison, the equivalent contours in 2011.

From the community's perspective, it is also important to know the number of noise events that are forecast to occur during sleeping hours. AS 2021-2000 identifies 50 dB(A) as the inside noise level above which aircraft noise can be considered intrusive during sleeping hours. This inside noise level would generally be experienced by a 60 dB(A) outside noise event. A contour map showing the number of events louder than 60 dB(A) – known as N60 contours – is therefore an effective way of conveying this information to the community. Given its purpose, the noise events shown are limited to those occurring between 11pm and 6am.

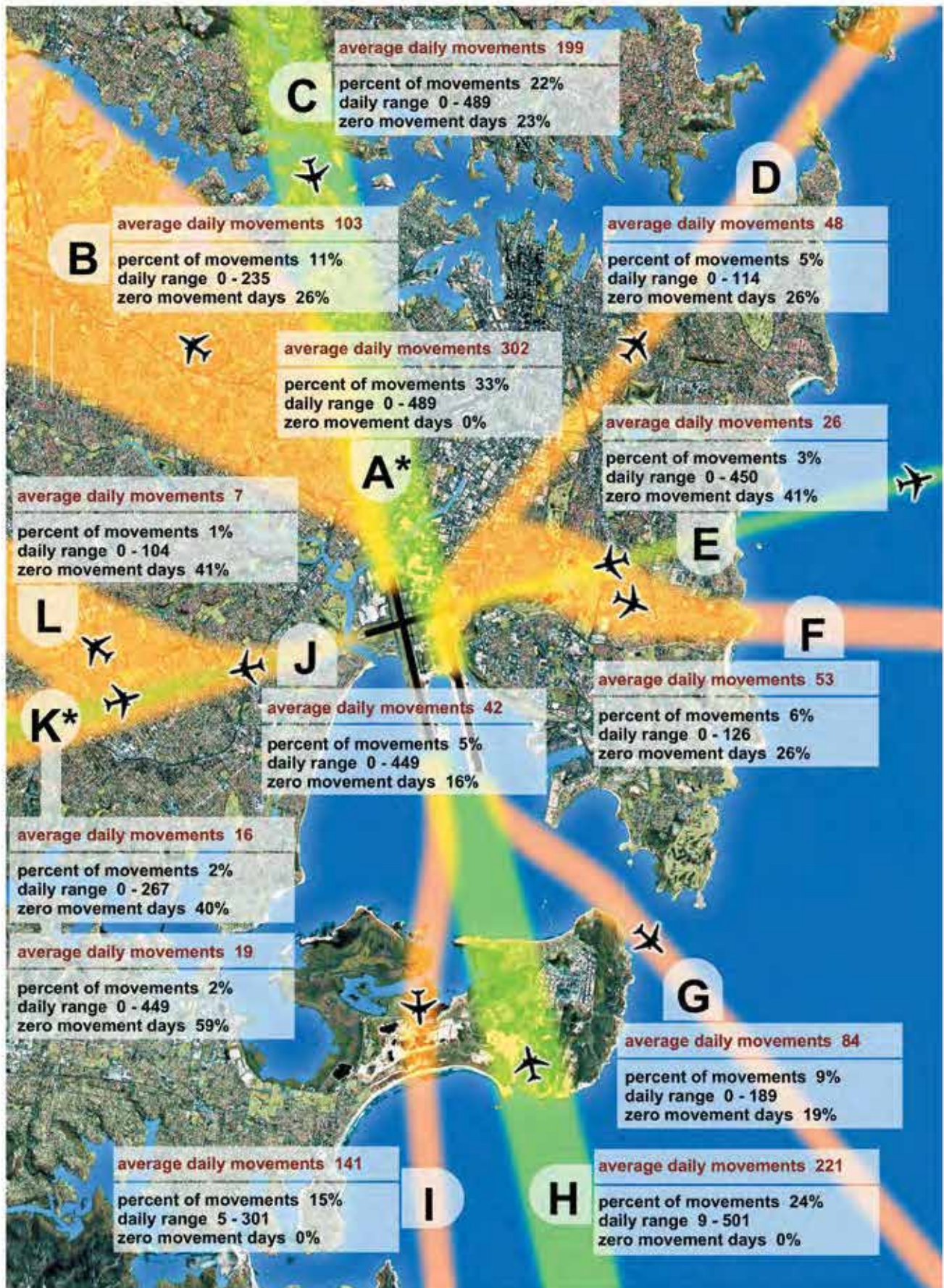
14 <http://www.airservicesaustralia.com/aircraftnoise/webtrak/> (accessed March 2013)

15 <http://www.airservicesaustralia.com/publications/reports-and-statistics/sydney-airport-operational-statistics/> (accessed March 2013)

16 *ibid*

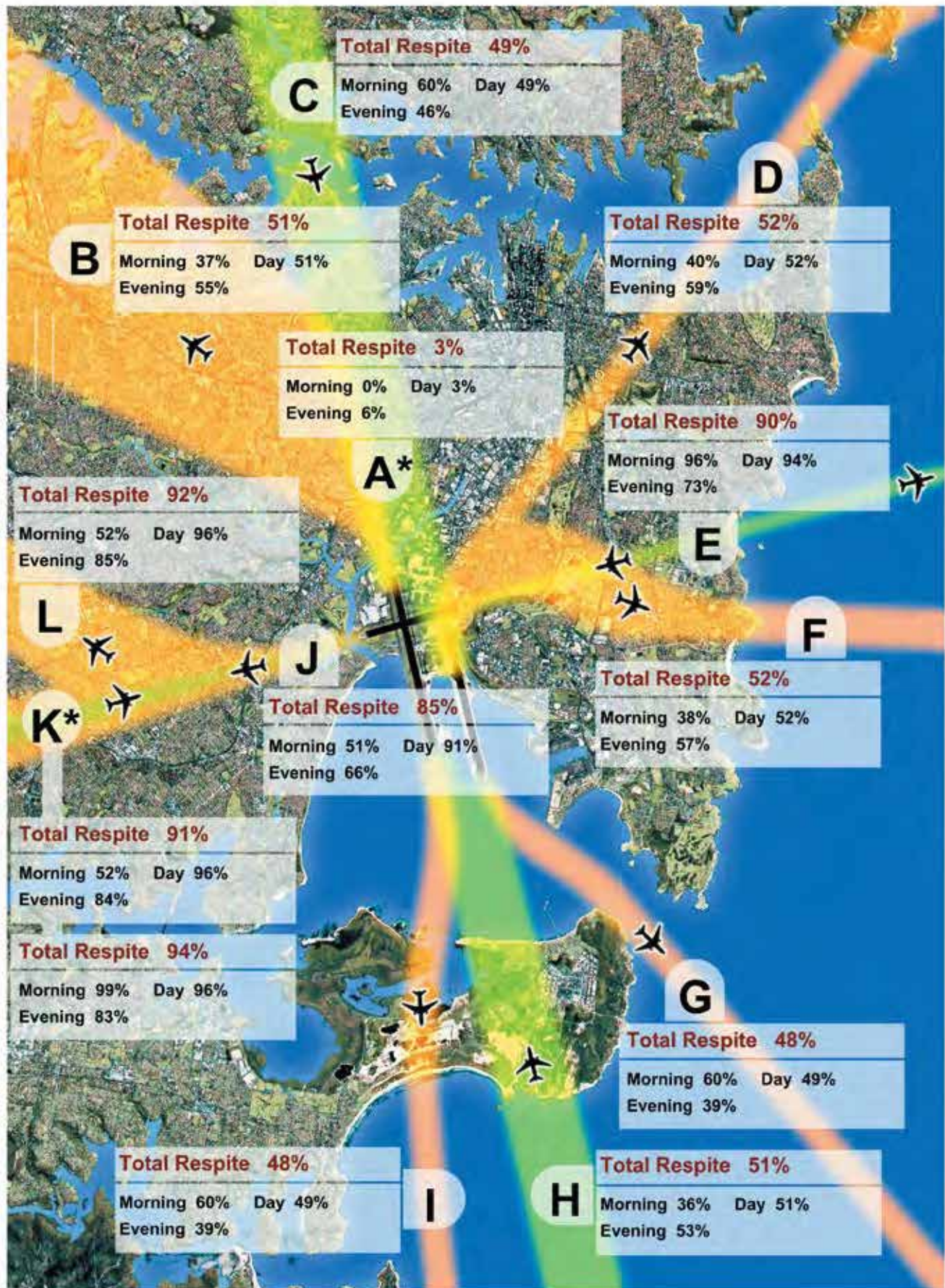
17 <http://www.airservicesaustralia.com/publications/reports-and-statistics/australian-noise-exposure-index-reports/> (accessed March 2013)

Figure 14.10 Average daily jet aircraft movements 2033



Note: Track A* is Tracks B and C combined. Track L* shows departures (top box) and arrivals (bottom box).

Figure 14.11 Average daily jet aircraft respite periods 2033



Note: Track A* is Tracks B and C combined. Track L* shows departures (top box) and arrivals (bottom box).

A respite interval is a 60 minute period when there are no jet movements (R60).

Morning: 06:00 to 07:00 Day: 07:00 to 20:00 Evening: 20:00 to 23:00 Total Respite: 06:00 to 23:00

Figure 14.13 shows the forecast N60 chart for Sydney Airport in 2033 (operations between 11pm and 6am only).

14.5 Ground-based noise

Noise from ground-based activities at Sydney Airport is managed separately to noise from in-flight aircraft operations. Ground-based noise is generated from a number of sources on the airport including:

- Road traffic
- Construction and development activities
- Operation of audible alarm and warning systems
- Operation of plant and equipment
- Taxiing aircraft
- Aircraft engine ground running
- Operation of aircraft auxiliary power units (APUs)

Over the past three years, Sydney Airport has received an average of just over 14 complaints annually from the community in relation to ground-based noise. The majority of these complaints relate to aircraft engine ground running. Ground runs at the airport are carried out at the Qantas run-up bays on the northern edge of the airport and, with permission from Sydney Airport, at other designated locations by other airlines operating from the airport.

Sydney Airport has a ground based noise management strategy. Engine ground running, which is an essential part of aircraft operations and maintenance, is regulated by a policy that includes a comprehensive set of operational rules designed to maintain safety levels, comply with relevant standards and practices, and minimise noise. The Airport Environment Strategy (see attachment) provides detailed information regarding management of ground-based noise. These management practices will be maintained and improved as appropriate for the future airport operations.

The increasing number of new generation quieter aircraft flying to Sydney over the planning period is expected to reduce the need for high power engine ground runs. It is considered that this will reduce ground-based noise impacts in areas around Sydney Airport.

Noise impacts associated with construction activities are assessed during the development approval process (see Appendix E). Noise monitoring of individual projects is undertaken where necessary.

Sydney Airport is replacing APU usage (a known source of ground-based aircraft noise) with ground power and

preconditioned air at all aerobridge gates at T1 as well as retrofitting any remaining gates at T2 not already fitted with ground power.

Sydney Airport is also committed to the engine ground running rules and achieving minimal complaints regarding ground-based noise. This Master Plan also allows for the planned development of an engine run facility in which ground running would take place.

Figure 14.12 N70 contours 2033 and N70 contours 2011

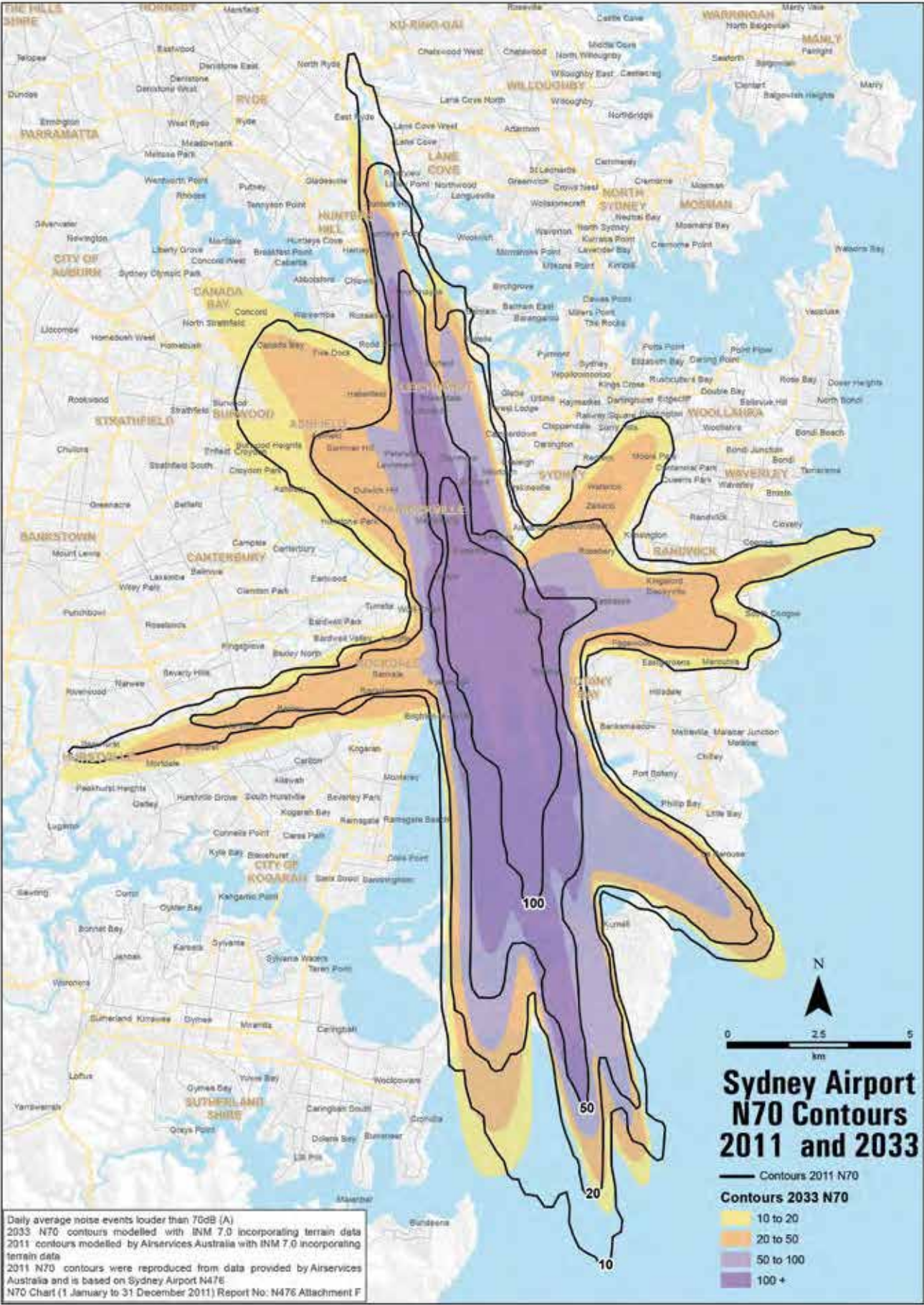
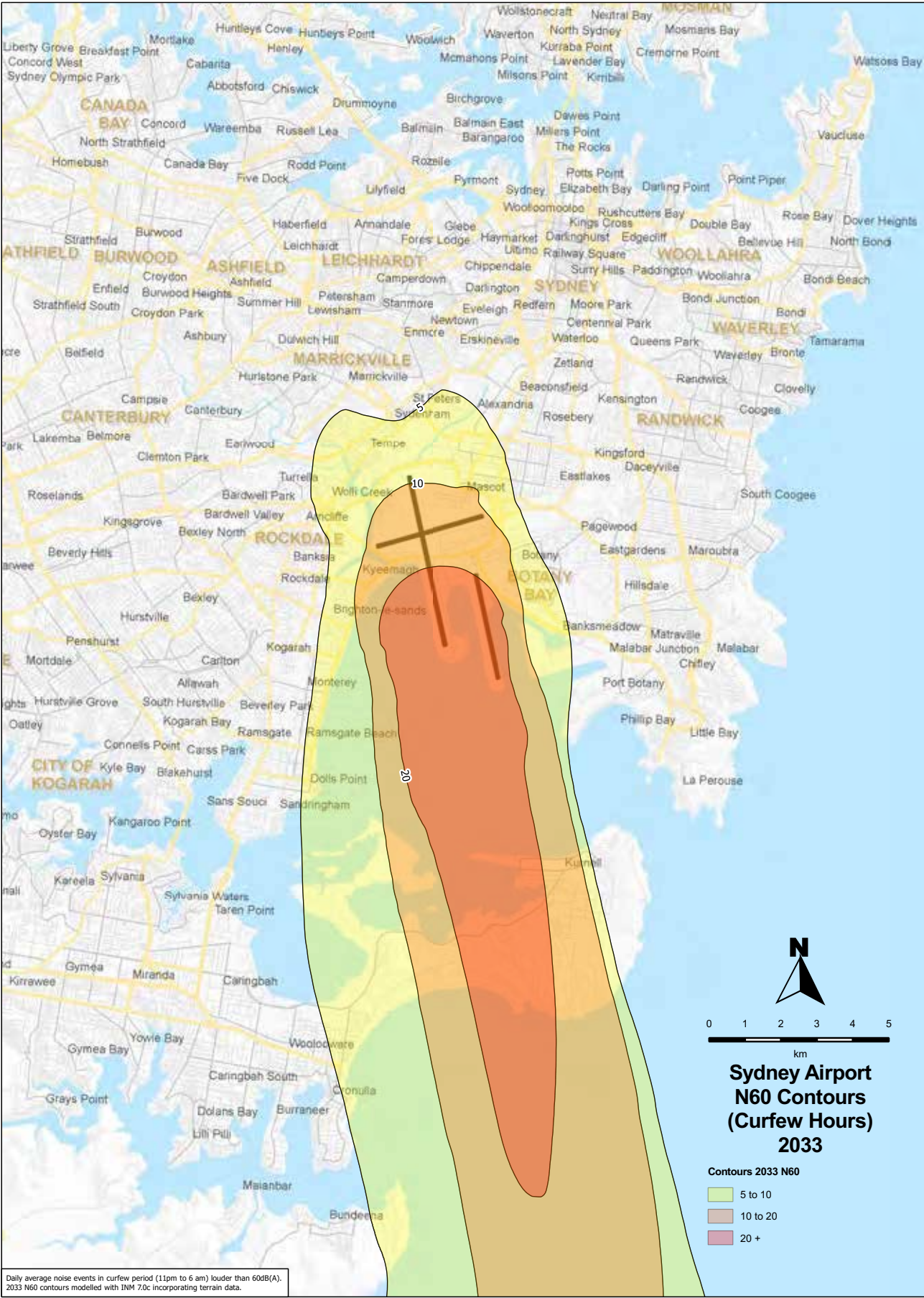


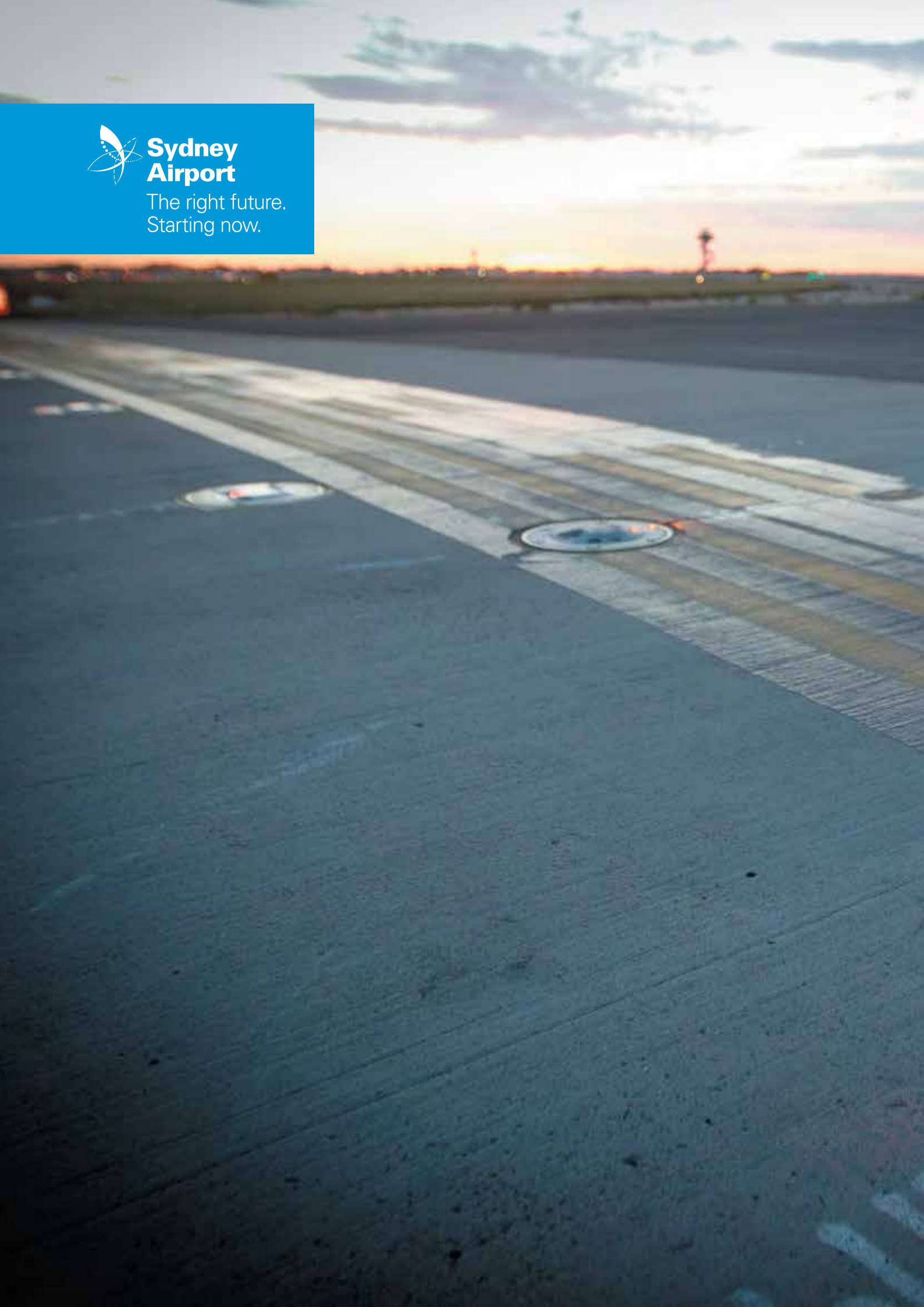
Figure 14.13 N60 contours 2033 (curfew hours only)





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The background image shows an airport runway at dusk. In the foreground, a circular, flush-mounted light fixture is embedded in the pavement, with a bright yellow light glowing from its center. The runway has yellow painted lines. In the distance, an airplane is visible on the tarmac under a twilight sky with soft clouds.

15.0

IMPLEMENTATION

15.0 IMPLEMENTATION



Key points

- This chapter provides an indicative staging and implementation framework for the Master Plan
- Sydney Airport works closely with airlines and other stakeholders to discuss the timing and priority of investments
- Major development plans are then required for designated major developments. Such development proposals are the subject of further community consultation, environmental assessment and ministerial approval
- Implementation of the development plan is expected to be realised in a staged manner taking into account:
 - Actual and forecast passenger and aircraft demand
 - Compliance with safety standards
 - Airline/stakeholder needs and investment consultation
 - Staging of infrastructure delivery
 - Continuity of airport operations during construction
 - Asset life and utilisation
 - Regulatory planning approvals

The Master Plan outlines Sydney Airport's development plan for the staged development of Sydney Airport for the period to 2033.

15.1 Indicative staging and implementation framework

This Master Plan provides a 20 year strategic planning framework for the future development of Sydney Airport. It demonstrates the necessary flexibility to ensure that future aviation industry trends, changing customer needs and demands are appropriately met through the provision of new or enhanced infrastructure in a timely manner.

The development plan outlined in this Master Plan represents the proposed development program, which is expected to be realised in a staged manner. These developments are largely triggered as a result of increased passenger and aircraft demand, airline customer needs and the proposed development of the two integrated international, domestic and regional terminal precincts.

Major development plans are also required for

designated major airport developments, the triggers for which are set out in the Airports Act. Such development proposals are the subject of further airline and community consultation, environmental assessment and ministerial approval. The development of the airport will continue to be refined and prioritised in response to changing market conditions and customer priorities which may impact timing.

The following implementation plan is a high level indicative summary of the potential phasing associated with this Master Plan. The actual timing of each of the proposed developments will depend on the realisation of the demand triggers, Sydney Airport's assessment of forecast market conditions, commercial discussions with stakeholders, the carrying out of any necessary environmental assessments, internal and external approval processes, and the outcome of stakeholder consultation processes.

The proposed implementation plan is not a commitment that any particular project will be undertaken. The developments listed in this section may take place before or after the time periods indicated, consistent with this Master Plan.

Some of these projects are also consistent with the current approved Master Plan 2009. As such, planning for them commenced in 2012 and it is anticipated that preliminary draft major development plans will be released for public comment in due course.

First five year period

It is anticipated that the following projects or works may commence in the first five year period:

Ground transport

- Development of a landside bridge across Alexandra Canal to access the Northern Airport precinct. Redevelopment of part of the northern precinct for uses such as vehicle storage, logistics and aviation support
- Staged development of Terminal 1 (T1) precinct road augmentation, car parking and ground transport facilities
- Staged development of Terminal 1/Terminal 2 (T2/T3) precinct road augmentation and ground transport works. Including reconfiguration and widening of existing roads and development of new roads and intersections at entries/exits to the precinct
- Public bus facilities and additional multi-storey car parking capacity within the T2/T3 precinct
- Staged development of sections of the airside transfer corridor and facilities to improve connectivity between the T1 and T2/T3 terminal precincts

Aprons and airfield

- Development of a high intensity approach lighting systems and associated infrastructure for Runways 16R and 34L to support low visibility CATII operations
- Apron expansion and associated taxiway works for aircraft parking in the South West, South East and North West Sectors of the airport to meet aircraft parking demand and provide contingency/staging parking to implement development works throughout the airport
- Extension and reconfiguration of taxiway sections in the South East Sectors to facilitate improved aircraft operation to T2 and turboprop aircraft intersection departures
- Staged demolition of the current aircraft maintenance and engineering facilities in the existing Jet Base and the staged development of taxiways, aprons and associated infrastructure to facilitate international operations in the North East Sector north of T3
- Reconfiguration of the T2 apron to facilitate additional contact gates
- Staged reconfiguration of the T1 Pier C apron to facilitate the introduction of domestic and regional operations

Terminals

- Development of additional Code F aircraft contact gates and expansion of the terminal to accommodate additional gate lounge capacity at T1
- Augmentation of T1 for passenger processing facilities and amenities to improve capacity, efficiency and customer service. This includes implementation of passenger self-service technology and may include augmentation of facilities such as check-in, security screening, baggage reclaims, secondary line and primary line reconfiguration and expansion of the outbound baggage handling system
- Augmentation of T2 for passenger processing facilities and amenities to improve capacity, efficiency and customer service. This may include such items such as check-in, security screening, outbound baggage handling, bus gates, baggage reclaim and retail
- Development of additional gate lounges to complement the additional T2 contact gates
- Staged development of a western terminal link terminals T2 and T3
- Staged development of T1 Pier C to integrate processing of domestic and regional aircraft and passengers in the North West Sector. Includes reconfiguration of aircraft gates, apron,

development of dual taxilanes and terminal processing and amenities

- Staged development of the new international terminal and associated pier north of T3 to integrate processing of international aircraft and passengers in the North East Sector. Includes additional aircraft contact gates, apron, dual taxilanes and terminal processing facilities and amenities

Other

- Development of new Qantas maintenance and engineering hangars and engine run facility on the northern perimeter of the North East Sector
- Staged relocation of some general and corporate aviation facilities to the South East Sector
- A mix of aviation support and commercial developments such as aircraft maintenance and engineering facilities, freight, fuel, multi-storey car parking modules, hotel accommodation, office developments and other commercial facilities are proposed in various sectors of the airport. These developments include developments by Sydney Airport and other stakeholders

Second five year period

The timing of development beyond the initial five year period is of course more indicative and subject to specific demand triggers being reached and a range of other factors including commercial agreements and changes in the airline industry. Further, the Airports Act provides for the final Master Plan to remain in force for five years. Consequently, the Master Plan will again be reviewed and updated in 2019. The following projects are anticipated to commence within the second five year period:

Ground transport

- Continued T2/T3 precinct augmentation of road, ground access and car parking facilities
- Continued T1 precinct augmentation of road, ground access and car park facilities
- Augmentation of pedestrian paths to facilitate improved access between the ground transport facilities and terminals and complement the ground transport developments
- Staged development of sections of the airside transfer corridor and facilities to improve connectivity between the T1 and T2/T3 terminal precincts

Aprons and airfield

- Staged modification of Taxiways B & C to the east of Runway 16R/34L to facilitate larger aircraft operations, including the staged modification in the South East Sector of taxiway bridges and the southern extension of Taxiway B to the end of Runway 16R/34L

- Apron expansion and associated taxiway works for aircraft parking in the North East, North West and South East Sector of the airport to facilitate international Code E and F aircraft operations in the North East Sector and meet apron demand

Terminals

- Completion of proposed development of T1 to facilitate and integrate processing of domestic and regional aircraft and passengers. Continued augmentation of T1 for passenger processing facilities and amenities to improve capacity, efficiency and customer service
- Completion of the new international terminal and pier expansion and modification of T3 to facilitate processing of international aircraft and passengers
- Completion of a western terminal link between terminals T2 and T3 to facilitate passengers and aircraft contact gates

Other

- A mix of aviation support and commercial developments such as aircraft maintenance and engineering facilities, freight, fuel, multi-storey car parking modules, hotel accommodation, office developments and other commercial facilities are proposed in various sectors of the airport
- Staged replacement of any displaced vehicle storage, rental car and aviation support facilities in the South East Sector
- Continued staged relocation of business and general aviation facilities to the South East Sector

Third five year period

The following projects are anticipated to commence within the third five year period, dependent on the realisation of traffic demand and other factors:

Ground transport

- Staged development of ground access in the T1 and T2/T3 terminal precincts to improve the level of service and capacity. This includes development of multi-storey car parks to minimise at-grade traffic circulation and further airside transfer corridor improvements
- Development of road and ground transport improvements to the North East and South East Sectors of the airport, including improved entry and exits as well as landside connections between the South East Sectors

Aprons and airfield

- Staged development and reconfiguration of aprons east of T2 to facilitate future terminal and pier development in the T2/T3 precinct

- Additional expansion of the South East Sector aircraft parking positions to meet aircraft parking demand, provide staging areas for other works, contingency bays and parking for business and general aviation users
- Development of new taxiways to improve airport operations and improved connectivity to remote aircraft parking positions

Terminals

- Augmentation of T1 and T2/T3 terminal facilities to improve passenger processing and amenity
- Augmentation of T2 to provide additional passenger facilities and provide additional Code E aircraft operations

Other

- Development of associated infrastructure to support the new Airservices Australia facilities
- Continued relocation of business and general aviation facilities to the South East Sector
- A mix of aviation support and commercial developments including such things as maintenance and engineering facilities, freight, fuel, multi-storey car parking modules, hotel accommodation, office developments and other commercial facilities in various sectors of the airport

Fourth five year period

Indicative projects for the final five year period include the following:

Ground transport

- Continued staged development of ground access projects in the T1 and T2/T3 terminal precincts to improve level of service and capacity. This includes staged development of multi-storey car parks to minimise at-grade traffic circulation
- Staged development of improved passenger circulation paths within the T1 and T2/T3 precincts to complement ground transport improvements/developments

Aprons and airfield

- Development of new taxiways to support terminal and apron developments and improve airport operations, including improved connectivity to aircraft parking positions
- Development of new rapid exit taxiways
- Development of parallel taxiways in the North East Sector to support operations of the T2 terminal expansion and facilitate improved airfield efficiency
- New taxiways to support Runway 16L/34R to facilitate improved aircraft circulation and efficiency for smaller aircraft operations

Terminals

- Staged development of T1 Pier D to the south of existing Pier C to facilitate increased passenger and aircraft contact gate growth in domestic and regional operations
- Staged development of the T2 expansion to the east including the proposed development of Piers C and D with swing gate capability to facilitate additional common use aircraft contact parking for international, domestic and regional aircraft
- Development of an eastern terminal link between the new international terminal and T2 Pier C to facilitate passengers and baggage

Other

- Staged development of the South East Sector facilities
- A mix of aviation support and commercial developments including such things as aircraft maintenance and engineering facilities, freight, fuel, multi-storey car parking modules, hotel accommodation, office developments and other commercial facilities in various sectors of the airport



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16.0

LONG TERM DEVELOPMENT OF AVIATION IN THE SYDNEY REGION



16.0 LONG TERM DEVELOPMENT OF AVIATION IN THE SYDNEY REGION

Key points

- Sydney Airport supports the three core elements of the joint study:
 - Optimise the use of Sydney Airport as the primary airport for Sydney and NSW for international, domestic and regional passengers and related freight by ensuring that it operates efficiently and can grow to its maximum practical operational capacity
 - Protect and optimise the use of other existing airports serving the Sydney Basin
 - Select a site for a supplementary airport and ensure operations commence at the appropriate time in the future in line with demand
- Sydney Airport will continue to be the most important airport for the Sydney region and for Australia, both for passengers and related freight activities
- Sydney Airport's new development plan has been designed to ensure that the airport can continue to enable the forecast growth of air travel for tourism and trade well beyond the planning period
- Beyond the planning period of the Master Plan, there is substantial further potential to grow traffic at Sydney Airport to meet demand:
 - Independent experts have performed sensitivity analysis to demonstrate that Sydney Airport could accommodate the 2033 traffic forecast in the Master Plan, the 2029 traffic forecast in the 2009 Master Plan and the 2035 traffic forecast published in the *Joint Study on Aviation Capacity for the Sydney Region* (the joint study)
 - The forecast schedule for 2033 in the Master Plan does not use all of the runway slots available within the existing regulations. In addition, the infrastructure capacity of Sydney Airport comfortably exceeds the operational regulations
 - There are opportunities for further apron and terminal development beyond those expected to be developed by 2033 to the north of Terminal 1, east of Terminal 2, west of the new international facility in the existing Qantas Jet Base and in the South East Sector of the airport
 - Given the commitment by the federal and state governments to progress WestConnex together with projects to improve ground access in and around the airport, significant capacity exists to meet ground transport demands
- Reviewing and modernising a number of the regulations in consultation with the community to reflect the significant environmental benefits of existing and future quieter, new generation aircraft could further improve airport efficiency and productivity while maintaining or improving the airport's overall noise impact. Sydney Airport could also operate more efficiently with:
 - Increased focus at Sydney Airport on core passenger activities, with development of non-core civilian use such as supplementary business and general aviation, helicopter and specialised freight capacity at RAAF Base Richmond operating on an integrated basis with Sydney Airport
 - Enhanced land transport options for passengers, staff and other users
- The development of other existing airports and, in time, a supplementary airport needs to be demanded, incremental and flexible to changing market demand. Further, any additional aviation capacity must be developed as one system to maximise planning and investment



Sydney is Australia's international, commercial and financial centre, and its foremost tourist destination. Access to an efficient Sydney Airport for passenger and freight operations will be as important in the future as it is today.

While Sydney Airport's development plan ensures the continued ability to meet forecast growth under a range of scenarios beyond the planning horizon of the Master Plan, there are a number of opportunities to further enhance productivity and efficiency at one of Australia's largest infrastructure assets and the primary international gateway.

In particular, Sydney Airport, in keeping with the findings of the joint study, could generate significant benefits for passengers and the economy with:

- Increased focus at Sydney Airport on core passenger and related freight operations, with the development of non-core civilian use such as supplementary business and general aviation and specialised freight capacity at RAAF Base Richmond operating on an integrated basis with Sydney Airport
- Enhanced land transport options for passengers, staff and other users

The development of other existing airports and, in time, a supplementary airport needs to be demand-

led, incremental, flexible to changing market demand, and treated as one system to maximise planning and investment. The most successful international examples of secondary airports are where these airports operate as a system.

16.1 Optimising the use of Sydney Airport

To support the social and economic growth of Sydney, NSW and Australia, it is important to maximise the potential of Sydney Airport, which is:

- Ideally located within 8km of the CBD and 10km of major tourist destinations, as well as the closest airport to the secondary business districts in Parramatta, North Sydney and Macquarie Park, and the vast majority of resident travellers
- Well supported by existing infrastructure, including passenger terminals, fuel supply infrastructure, freight terminals, surrounding logistics and airline support infrastructure, air traffic management facilities, and ground transport connections
- Currently facilitating the introduction of new generation quieter aircraft, which have smaller noise footprints than the older aircraft they are replacing, through the collaborative development of new technology standards and procedures with Airservices Australia and a number of airlines

The importance of investment in the capacity of Sydney Airport is supported by international experience with multi-airport systems. A draft policy guide developed for the US Federal Aviation Administration in April 2000¹ recommended that:

"when additional capacity is required in a region, it is most reasonable to site the immediate addition at the primary airport when it serves as a major hub for some airlines".

¹ Planning Multi-Airport Systems in Metropolitan Regions in the 1990s

Sydney Airport welcomes the joint study recommendations to maximise the efficient operational productivity at one of Australia's largest infrastructure assets. As identified by the joint study and numerous reports generated over the last 15 years, Sydney Airport currently operates with a number of inflexible and, in some cases, out-dated restrictions designed to deliver positive environmental benefits to the community. However, the inflexible and outdated nature of the existing operational restrictions deliver suboptimal outcomes for the community than could be achieved by more modern regulations that reflect and incorporate technology improvements.

While some residents and councils support maintaining the existing operational regulations at Sydney Airport in their current form, there was significant support from other residents, airlines, tourism and trade groups, and the NSW Government to explore reform and modernisation of the operating environment. The larger key stakeholders generally support both the enhancement of operational regulations at Sydney Airport and the staged development of a commercially viable second Sydney airport in line with demand.

While Sydney Airport's infrastructure development plans, including the ground transport plans, will help to achieve the joint study's recommendations, the ability to fully maximise efficient operation and productivity is significantly reduced by the inflexibility of current operating restrictions.

Enhancements to reflect technological and industry improvements that have occurred over the past decades, such as the development of quieter, new generation aircraft and precision air traffic management technologies, would improve the ability to promote the sound development of civil aviation in Australia at almost zero economic cost.

In particular, consideration should be given to a more flexible application and progressive increase in the hourly cap (Joint Study Recommendation 5), and a more flexible interpretation of the curfew legislation and adhering to the provisions of the Sydney Airport Curfew Act 1995 (Cth) (NSW Visitor Economy Taskforce).

In December 2012, the NSW Government supported key recommendations made by the Visitor Economy Taskforce to reform current operational restrictions. Specifically, the NSW Government has said that current regulations restricting curfew shoulder movements should be increased to the level allowed by the Sydney Airport Curfew Act. This would allow a further 11 morning landing slots and 14 take-off/landing slots every week. Consistent with the recommendations of the joint study, the NSW Government has also said that it supports the better utilisation of existing airport infrastructure through increasing the aircraft movement cap from 80 to 85 movements per hour during peak periods.

Additionally, given the interconnected nature of the national aviation network, delays created at any major airport in Australia can significantly disrupt daily operations. Introducing greater flexibility in the application of operating restrictions can help reduce delays and clear backlogs in a more timely manner at all eastern seaboard airports in the network.

This could potentially:

- Through alignment of the regulations with the legislation allow new flights for quieter, next generation aircraft that could inject more than \$1 billion each year in to the economy
- Improve on-time performance and reduce the impact of weather delays across Australia
- Increase the potential for noise sharing and create more predictable periods of respite
- Reduce circling in holding patterns, reducing both emissions and aircraft noise

While Sydney Airport welcomes the recommendations of both the joint study and the Visitor Economy Taskforce, any reform to the current operational restrictions must be accompanied by a comprehensive stakeholder engagement process to ensure the views of the community and industry are incorporated.

16.1.1 Focus on core activities

To support tourism, trade and economic growth for Sydney, NSW and Australia, the priorities for Sydney Airport are to facilitate international, domestic and regional passenger and related freight operations.

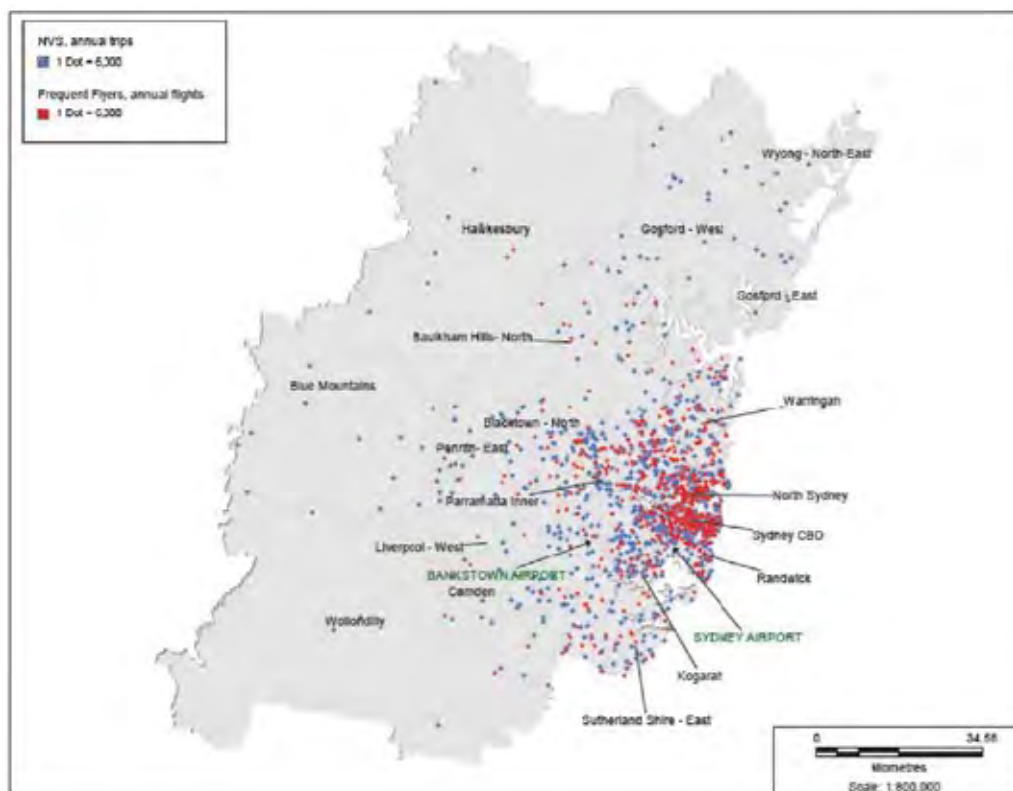
Both passenger and related freight operations are vital economic activities that contribute significantly to global business and to the Sydney, NSW and Australian economies. Sydney Airport is Australia's largest transport and logistics hub. Some 34 international, six domestic and six regional airlines operate to 97 destinations, including 11 international and eight regional destinations not served by any other Australian airport. Many passengers and large volumes of freight transfer between these flights.

International passengers are particularly valuable to Australia, with every additional daily A380 service from China contributing an estimated \$388 million per annum to the Australian economy and 5,000 jobs.

Sydney Airport also handles approximately 48% of Australian air freight. It is estimated that around 80% of this freight is carried in passenger aircraft, and is important to the economics of the passenger services. These passenger and related freight operations are the core activities of Sydney Airport, and are interdependent.

While Sydney Airport will continue to accommodate other activities where they do not interfere with the core tourism, trade and economic priorities, it is important

Figure 16.1 Air trips by statistical local area of residence, Sydney



Source: Joint study on aviation capacity in the Sydney Region, Australian and NSW governments, 2012

the focus remains on maximising the ability to facilitate international, domestic and regional passenger traffic, and related freight operations.

16.1.2 Infrastructure development

Sydney Airport's development plan has been designed to ensure the airport can continue to meet forecast growth of air travel for tourism and trade well beyond the planning horizon of the Master Plan. Beyond the scope of this Master Plan, there is substantial further potential to grow passenger traffic at the airport to meet demand:

- The forecast schedule for 2033 in the Master Plan does not use all available slots within the existing regulations.
- The potential physical capacity of the airport, including terminals, aprons, parking bays, taxiways and runways, could comfortably accommodate higher traffic than is allowed under the current operational regulations
- There are opportunities for further apron and terminal development beyond those included in the Master Plan to the north of T1 and in the South East Sector of the airport
- There are opportunities to increase road and car parking capacity in the long term, particularly with

the commitment by the federal and state government to fund WestConnex.

In addition to these on-airport investments, it will be important in the long term for continued development of the broader Sydney road, bus and rail networks, including appropriate connections to Sydney Airport. The need to enhance the road network and public transport in the Sydney Airport/Port Botany precinct has been recognised in the Joint Study, the State Infrastructure Strategy (SIS), the TfNSW Transport Master Plan, and the NSW Visitor Economy Taskforce (VET).

The NSW Government has committed to delivery of several initiatives identified in the SIS including WestConnex and associated enabling works. Throughout 2012 and this year, Sydney Airport has worked extensively with the NSW Government to develop a number of road and ground transport upgrades both on and off-airport, supported by the Australian and NSW Government's commitment to construct the WestConnex Motorway by 2022 as well as the priority development of WestConnex enabling works in the airport vicinity. This will significantly improve the experience for passengers and others travelling to and from the airport and reduce the impact of non-airport traffic in the area by increasing 'green traffic light' time, creating additional lane capacity and reducing traffic congestion at key intersections.

16.2 Protect and optimise the use of other existing airports serving the Sydney Basin

Over recent years, the importance of Sydney Airport for all aviation activities has increased as a result of the closure of other aviation capacity in the Sydney region. Unusually for a major capital city airport, Sydney Airport is not just Australia's primary airport for passenger and related freight operations but is also Sydney's primary airport for specialised freight, business aviation and helicopters.

As the core passenger and related freight activities increase at Sydney Airport, there will be an increased need for alternative aviation facilities for other aviation activities. In particular, there will be increased demand for specialised freight, business aviation and helicopter activities at other airports and heliports. There will also be increased demand for emergency services at airports proximate to the growing population in Sydney's west, north west and south west, and for training flights to meet the growing demand for pilots.

The joint study identifies several existing airports that could be further developed to meet this demand, including RAAF Base Richmond, Bankstown, Camden, Illawarra, Newcastle and Canberra airports. Of the airports within Sydney, only RAAF Base Richmond was assessed as being able to accommodate jet aircraft.

Having reviewed the Australian Government's recent feasibility study of Wilton and RAAF Base Richmond for civil aviation operations, Sydney Airport agrees that RAAF Base Richmond could, with the cooperation of the Department of Defence, be used for non-civilian operations such as limited business and general aviation, specialised freight and helicopter operations. Sydney Airport is prepared to work with the government on how to best run any future specialised operations at RAAF Base Richmond on an integrated basis with Sydney Airport. This could further release capacity at Sydney Airport while longer term consideration is given to a second airport for Sydney.

In the longer term, there is also the potential for Canberra and Newcastle airports to attract some traffic from the south-western and northern extremes of the Sydney region. This may be assisted through the development of a high speed rail link along the Newcastle-Sydney-Canberra-Melbourne corridor as demand for travel increases over time.

While helicopters have not been given prominence in the joint study, it is important for a helicopter strategy to be developed for the Sydney market. Sydney Airport's understanding is that the demand for helicopters is tightly centred on the CBD, and that most helicopter operators have a strong desire to be able to operate from the CBD.

16.3 Select a site for a supplementary airport to open at the appropriate time

In time, there will be a need to develop a supplementary airport both to serve the growing demand of western Sydney and provide a focus for new jobs in the region. It is appropriate to identify and protect an appropriate site. While the joint study and others have identified Badgerys Creek as the best site from an economic and planning perspective, it is appropriate for the Australian and NSW governments to balance the economic, social and environmental factors in selecting the best site overall. It is also appropriate to protect the airspace to ensure the safe operation of the airport in compliance with international standards. Future noise impacts should also be considered, although the ongoing improvements in aircraft noise could result in the major noise impacts being contained within the airport boundary.

Whichever site is reserved, it is important that the airport is developed to promote tourism and trade for Sydney, NSW and Australia as part of the system of airports serving Sydney. To facilitate this, any future airport must be developed without any operating restrictions including a curfew or movement cap to maximise its potential for growth and attract high demand for overnight international services. To do so, it will be vital that the airport is able to support profitable airline route development. International operations will become more viable once the airport has established a fully developed domestic network, which will help to overcome the material costs of split operations.



APPENDIX A

APPENDIX A FIVE YEAR GROUND TRANSPORT PLAN

1.0 Airports Act 1996 S71(2)(ga) requirements

This appendix provides details of the five year ground transport plan that is summarised in Chapter 7. **Table A1** outlines where the requirements of Section 71(2)(ga) of the Airports Act regarding the contents of five year ground transport plans are addressed within this appendix.

Table A1 Master Plan compliance for five year ground transport plan

Airports Act 1996 S71(2)(ga) requirements		Section
a.	A road network plan	2
b.	The facilities for moving people (employees, passengers and other airport users) and freight at the airport	3
c.	The linkages between those facilities, the road network and public transport system at the airport, and the road network and public transport system outside the airport	4
d.	The arrangements for working with the state or local authorities or other bodies responsible for the road network and the public transport system	5
e.	The capacity of the ground transport system at the airport to support operations and other activities at the airport	6
f.	The likely effect of the proposed developments in the master plan on the ground transport system and traffic flows at, and surrounding, the airport	7

2.0 Road network plans

Airport/Qantas Drive is used as a major arterial road on the Sydney road network. Studies have concluded that up to 52% of the traffic on Airport Drive in the AM and PM peaks is non-airport traffic. General commuters and Port Botany traffic place a significant additional load on the roads surrounding the airport.

Sydney Airport has identified ground transport solutions that improve the performance of the roads and intersections in and around Sydney Airport. The forecast ground transport traffic demand can be met in 2018 and beyond the 2033 horizon of the Master Plan.

Completion of the WestConnex motorway within the 20 year horizon of the Master Plan will allow some non-airport traffic to bypass the airport and will provide the opportunity for journey times to and from the CBD to either precinct to be more reliable.

This ground transport plan has been developed in consultation with Transport for NSW (TfNSW) and NSW Roads and Maritime Services (RMS).

Figure A1 provides a layout of the airport precinct identifying where each of the road network plan diagrams is located.

2.1 Terminal 1

The reconfiguration at Terminal 1 (T1) to create a centre road is designed to deliver a free flowing traffic corridor for the expected volume of traffic through the car park with faster exits. Relocating the boom gates away from the perimeter of the current car park to the entries and exits of the multi-storey car parks (MSCP) and the open-air car park area increases the available queuing space for vehicles. In turn this minimises the possibility of queues in peak periods interfering with the flow of traffic on the road network in the precinct. The open-air area would be configured to provide a convenient location for those vehicles seeking to drop-off or pick up quickly.

In addition, it is proposed that the existing Cooks River entrance gates would be converted into an east-bound exit to the city and eastern suburbs. Providing this additional exit point will help spread the exiting traffic and lower the demand on the main exit point providing the opportunity for smoother merging onto Airport Drive. The current entry ramp from Airport Drive and exit ramp to Marsh Street are planned to be widened to two lanes each, with the exit ramp optimised by a tidal lane configuration to provide capacity for exiting traffic onto Giovanni Brunetti Bridge.

By separating traffic heading towards the car parks and the departures kerb, the construction of new access roads will

Figure A1 Airport precinct map



significantly reduce existing congestion points for traffic merging from Marsh Street and Airport Drive, This will improve efficiency and reliability for all road users entering the T1 precinct (see images below).

The works comprise six projects. Project 1 involves minor civil works which are already under way on the Airport Drive intersection with Link Road and a development application for Projects 2 to 6 has been lodged for the planned reconfiguration of traffic flow through the car park. The development application identifies the components of each project as follows:

Project 2A

- Widening of the Departures Road up ramp to two lanes
- Relocation of entry plazas to all car park entry points
- Relocation of exit plazas to all car park exit points
- Reconfiguration of open air west parking including public pick-up and drop-off (new line-marking and passenger waiting facilities)
- Provision of a 3m wide shared path for pedestrians and cyclists from Cooks River through the open air west parking area to the terminal
- Provision of additional bicycle racks on the ground floor of the Central MSCP
- Provision of a new city express exit from open air west parking area
- Cooks River Avenue to Centre Road circulation road and reconfigured parking area for the Customs office building
- Enlargement of taxi holding bay (new line marking)
- New connection to taxi holding bay from Arrivals Court for vacant taxis

Project 2B

- Construction of ramp from Marsh Street to Centre Road
- Reconfiguration of Centre Road with traffic and pedestrian management measures
- Installation of traffic furniture and pedestrian crossing facilities on Centre Road

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- Enlargement of limousine pick-up area (new line-marking)
- New pre-booked taxi area between taxi holding bay and limousine parking area
- New signalised intersection of Centre Road and Cooks River Avenue

Project 3

- Construction of Airport Drive exit to Arrivals Court for rental cars, bus operations, loading dock, hotel, office and fresh taxi access and staff parking
- Delineation of Departures Road weaving section to significantly reduce weaving movements

Project 4

- Construction of exit (down) ramp from Northern MSCP to Centre Road

Project 5

- Widening of Airport Drive to Centre Road to two lanes
- Widening of inbound Marsh Street off ramp to Departures Road

Project 6

- Tidal lane configuration for eastbound Marsh Street to Airport Drive, westbound Airport Drive to Marsh Street, and Cooks River Avenue to Marsh Street
- Widening of Cooks River Avenue ramp to Marsh Street

Figure A2 presents a plan of the road layout proposed at Terminal 1.

BEFORE: Existing view southwards from Airport Drive



AFTER: View of access improvements looking southwards from Airport Drive



2.2 Terminals 2 and 3

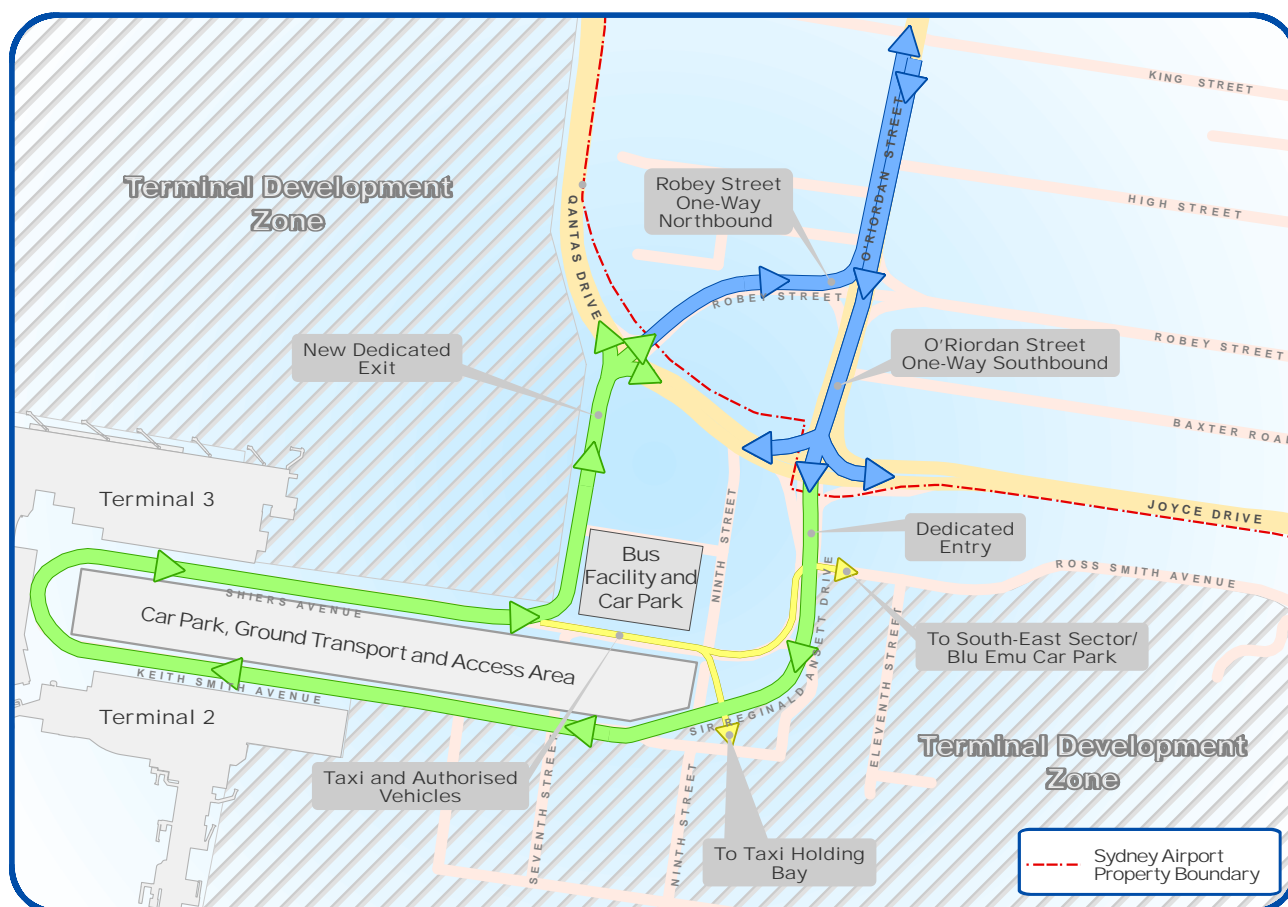
The primary challenge in the vicinity of Terminal 2/Terminal 3 (T2/T3) is the large volume of non-airport through traffic using the intersection at the entrance to the T2/T3 precinct competing with airport traffic using this intersection as the main ingress and egress point.

Sydney Airport has consulted with TfNSW and RMS in developing this plan and will continue to work closely with them to ensure the transport network is consistent with the road network proposals identified in the NSW Long Term Transport Master Plan (LTTMP).

Sydney Airport sees the key development proposals of this integrated network including:

- a) Inside Sydney Airport boundary
 - Extension of Seventh Street between Shiers Avenue and Qantas Drive to create a one-way system with vehicles entering the precinct via Sir Reginald Ansett Drive, and exiting via the new extension of Seventh Street
 - Optimisation of the Sir Reginald Ansett Drive/Ross Smith Avenue intersection to ensure that vehicles entering the precinct receive the most 'green time'. A low volume of authorised vehicles requiring access from the terminal precinct to the South East Sector will be permitted to access Ross Smith Avenue from this point
 - Widening of Qantas Drive between Robey Street and O'Riordan Street to six lanes
 - Other localised changes to the precinct roadway system

Figure A3 Access strategy and proposed infrastructure for Terminals 2 and 3



b) Outside Sydney Airport boundary

- Robey Street becoming one-way northbound from Qantas Drive to the intersection of O'Riordan Street and O'Riordan Street becoming one-way southbound between Robey Street and Joyance Drive with associated intersection improvements at Joyance Drive and O'Riordan Street
- The widening of Joyance Drive and General Holmes Drive to six lanes between Mill Pond Road and O'Riordan Street to provide consistent traffic access to the airport. The broad precinct strategy is presented in **Figure A3**.

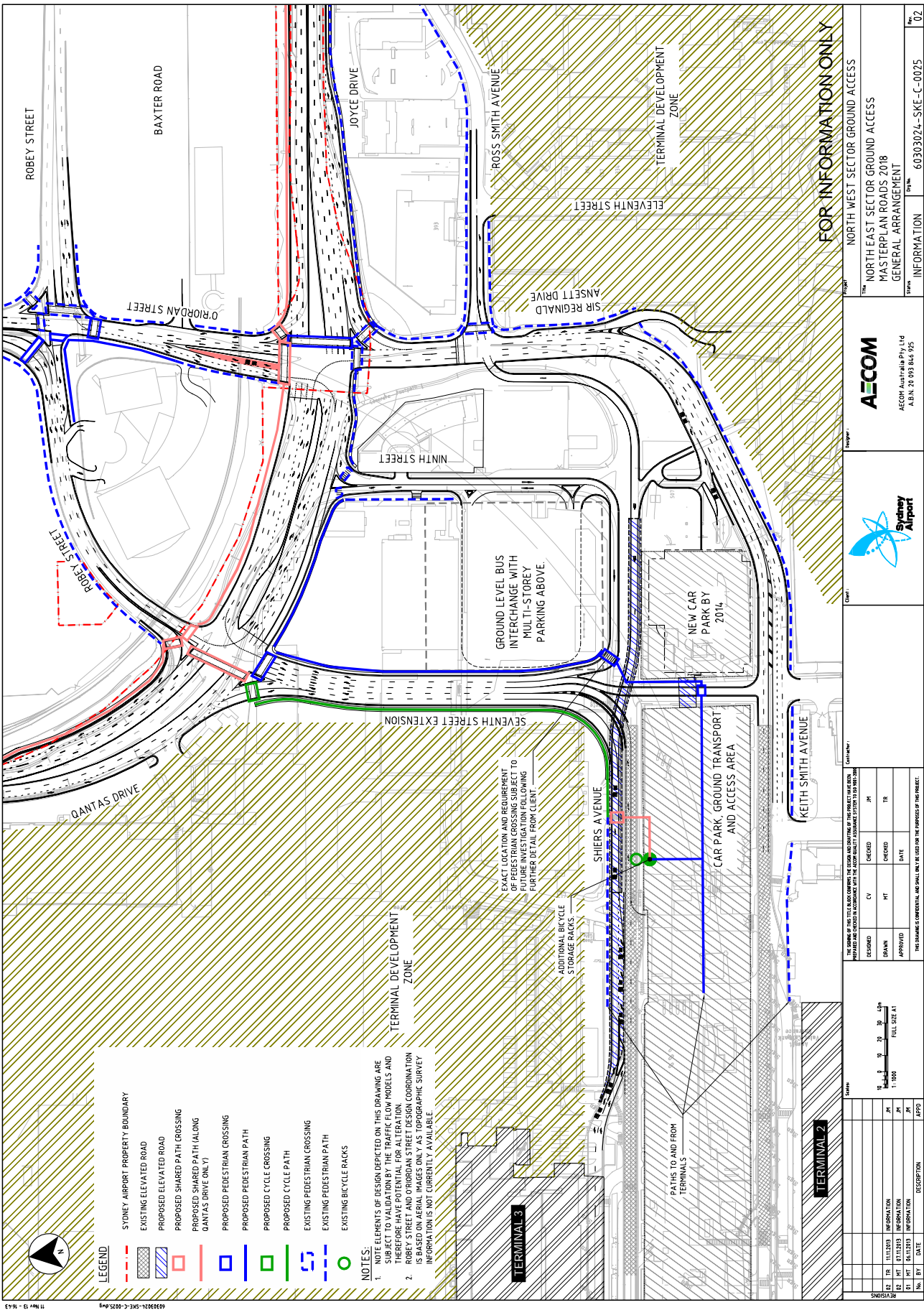
The proposed one-way system is a step-change from the previous Master Plan proposals and one which enables a demonstrably effective solution to the road transport network. The many benefits of this system, which have been verified through detailed traffic modelling (refer Section 6) include:

- Reducing conflicting movements at existing intersections and thereby greatly increasing capacity
- Enhancing traffic signal coordination and efficiency. With the proposed infrastructure in place, average vehicle delays will reduce from levels currently observed
- Increased throughput into, within and out of the precinct with improved traffic distribution and clearer way-finding
- An at-grade solution that is implementable with manageable disruption to existing movements
- The ability for public buses to enter and exit the precinct efficiently via Ninth Street and without significant delay due to otherwise circuitous routing.

Internally, the addition of a flyover across Seventh Street would allow taxis to access the taxi holding bay and for other authorised vehicles to access to the South East Sector via Ross Smith Avenue. This flyover would separate the traffic and ensure that vehicles exiting the car parks on Seventh Street are able to leave the precinct quickly.

Figure A4 presents an integrated concept plan of the road layout proposed for 2018 at Terminals 2 and 3 and the roads immediately adjacent to the airport boundary.

Figure A4 Terminals 2 and 3 road network plan 2018



2.3 Northern and South East Sectors

To facilitate access to the planned airport logistics development area, a new signalised intersection on Airport Drive and a landside bridge over Alexandra Canal is planned. This plan is shown in **Figure A5**.

The existing landside bridge to the Qantas Jet Base provides another circulation option for access to aviation service-related functions to the north of the airport.

The planned maintenance and engineering precinct in the South East Sector would require improved airside links including upgraded airside roads and new bridges over General Holmes Drive. Landside access upgrades to these new facilities may be required and may include new intersection, road and bridge works. A plan for the proposed new intersection on Foreshore Drive is shown in **Figure A6**. The development plan preserves the opportunity for a landside bridge link across General Holmes Drive to facilitate access and connectivity for airport operations.

The proposed construction of a new deck by 2018 above the existing Blu Emu Car Park would replace the 2,000 parking spaces that will be displaced due to the new aprons in the south-east. By maintaining the number of parking spaces in this area, it is not expected that there will be any impact on the ground transport access requirements.

The construction of a northbound slip lane on Ross Smith Avenue at the intersection with Lords Road has recently been completed and is facilitating improved access for service vehicles from the South East Sector to T2/T3. This plan is shown in **Figure A7**.

[illegible]

Figure A6 South East Sector precinct access on Foreshore Drive

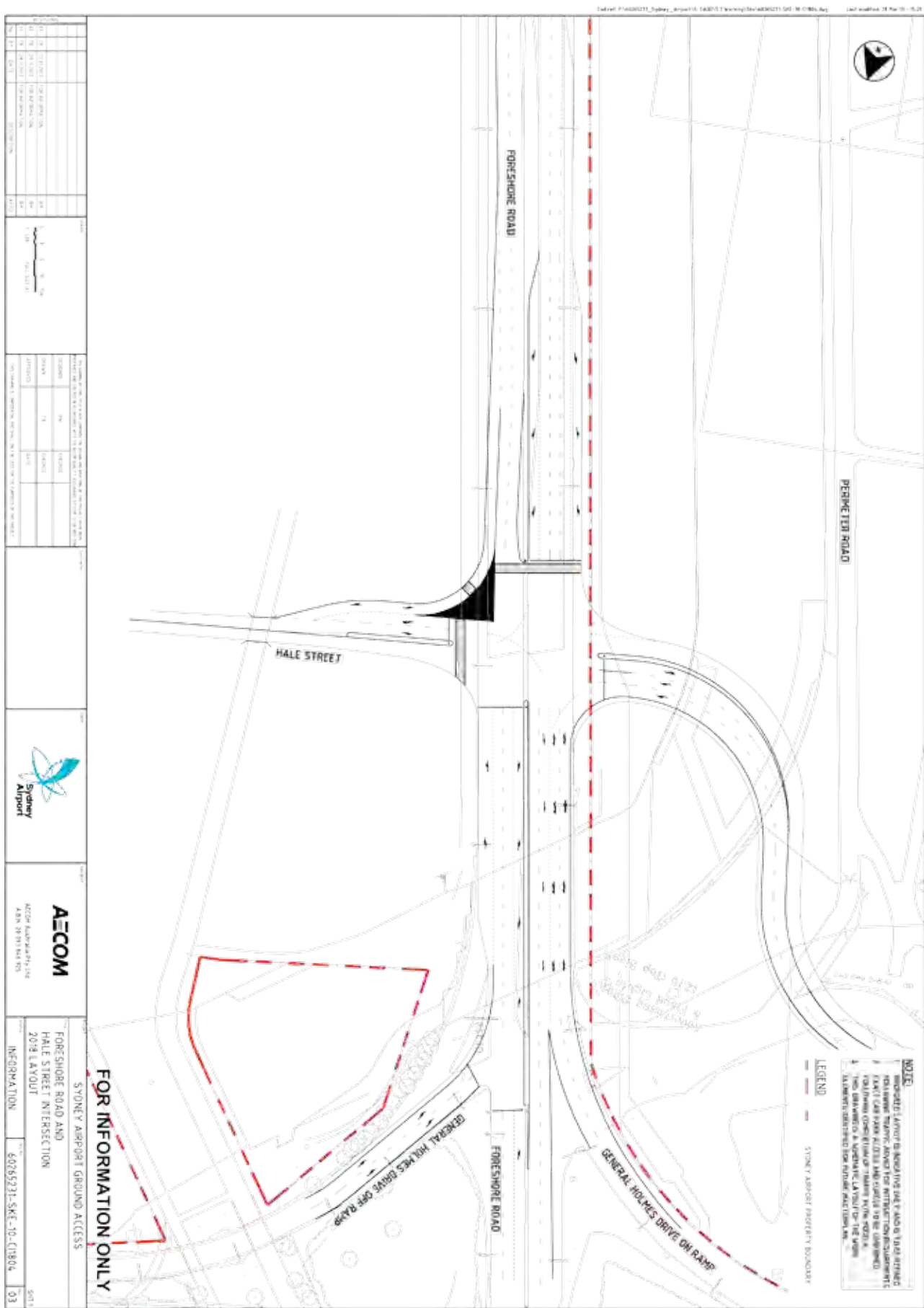
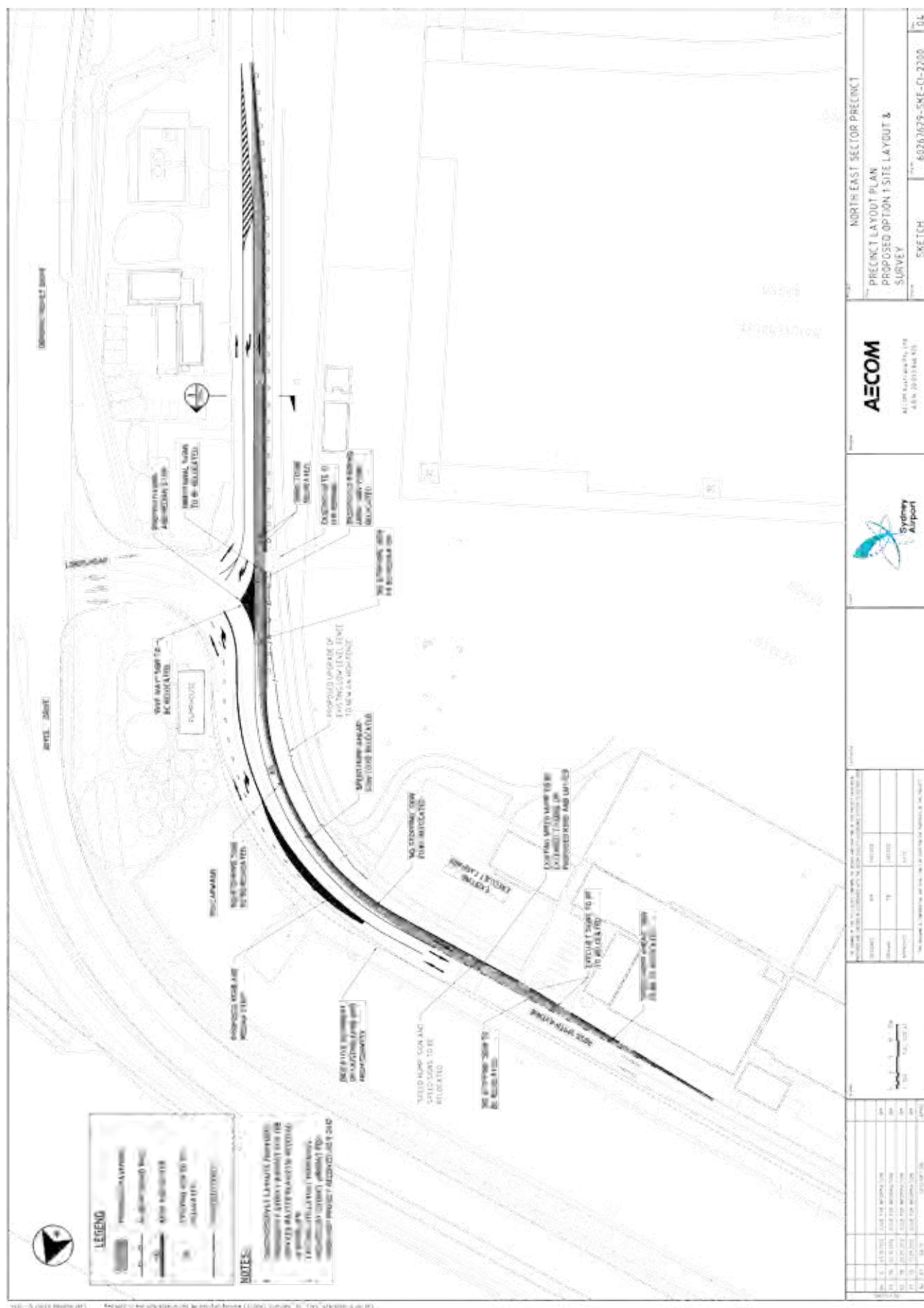


Figure A7 Ross Smith Avenue / Lords Road intersection upgrade



3.0 Facilities for moving people and freight

Well established arterial road and public transport networks serve both airport users and non-airport traffic. Access is provided by the Airport and East Hills train line, public buses, coaches, mini buses, taxis, limousines, private vehicles and walking/cycling links.

3.1 Roads

Sydney Airport is served by an extensive road transport system. The M5 East Motorway, the Eastern Distributor, Southern Cross Drive, General Holmes Drive, the Princes Highway and O’Riordan Street are the main vehicular access routes. Road access to Terminal 1 is provided by Airport Drive and Marsh Street. Road access to Terminals 2 and 3 is by the Qantas Drive/Joyce Drive/O’Riordan Street intersection.

Vehicular traffic surveys undertaken in November 2011¹ found that the proportion of non-airport traffic on most of the major roads in the peak direction of travel was considerably higher than the proportion of airport traffic.

On the principal routes such as the Princes Highway, General Holmes Drive, M5 East (east of Marsh Street) and Southern Cross Drive, the proportion of airport traffic was between 11%-25%. The proportion of airport traffic estimated to use the M5 East west of Marsh Street in the peak direction was 24%. On Airport Drive, non-airport through traffic accounts for up to 52% of movements in the AM and PM peak.

Planned changes to the road network, as outlined in Section 2.0 of this appendix and Chapter 7 of the Master Plan, will require close cooperation with TfNSW and RMS. This will be facilitated through the established working arrangements between these agencies and Sydney Airport identified in Section 5.0 of this appendix.

An airport transfer bus (T-Bus) operates between T1 and T2/T3 to facilitate passenger transfer between the terminal precincts. In addition the Blu Emu express bus operates 24 hours per day transferring staff and long-stay passengers from the Blu Emu Car Park (in the South East Sector) to T2/T3.

Road access and egress arrangements to freight facilities would be provided by intersections along Airport, Qantas and Joyce drives. Access to freight facilities near T1 will continue via Link Road while access to existing and relocated facilities in the North East Sector is planned to be via Lancastrian Road and Ross Smith Avenue.

3.2 Transport facilities

Taxis, coaches and mini-buses provide an important transport choice for passengers accessing Sydney Airport and account for over one fifth of all passenger trips. This is expected to decrease slightly over the period of the five year ground transport plan as more people choose public transport.

Sydney Airport has invested in upgrading facilities for taxis, coaches and buses over recent years and these are expected to be adequate for the period through to 2018.

Many passengers prefer to access the airport in private vehicles and Sydney Airport has also invested in providing parking, drop-off and pick-up facilities to cater for this requirement. Sydney Airport provides facilities for drop-off and pick-up at both T1 and T2/T3, which has proved to be a very popular option. Over the course of the five year ground transport plan, the proportion of passengers choosing to use the facilities in the car park precinct is expected to decrease as the use of public transport grows.

However, despite the expected modal share drop in demand for private access, there will be an increase in absolute terms for the number of vehicles requiring facilities in the T2/T3 precinct. Consequently, provision has been made as part of the five year ground transport plan for a public bus and multi-purpose parking facility of up to 3,000 spaces to cater for a range of uses including car rental, valet and limousine storage as well as general parking. At T1 the recent completion of a second multi-storey car park is expected to provide enough car spaces to accommodate forecast demand through until 2018.

3.3 Public transport

The Airport Link train stations at T1 and T2/T3 facilitate rail travel to City Circle stations within the Sydney CBD and via the Airport and East Hills Line to Campbelltown and Macarthur. The Airport Link also provides an inter-terminal transfer facility for passengers transferring between the T1 and T2/T3 precincts. Airport travellers typically represent a small but significant proportion of rail patrons on the Airport and East Hills line.

On 20 October 2013, the NSW Government delivered on its commitment to increase the number of trains passing through Sydney Airport on the Airport & East Hills line during peak hours from eight to 10 trains per hour. The NSW Government has also indicated that the rail line has the potential to provide greater long-term capacity. Upgrades to the power supply and safety measures outlined in Sydney’s Rail Future will allow for up to 20 train services per hour on the airport line in the medium to long term.

¹ Transport and Urban Planning Associates 2011

Travellers using the rail network to access the airport are subject to a station access fee on top of the base rail fare. This fee is not charged for other stations on the same rail line and consequently the cost of a ticket to the airport stations is considerably higher than any other similar length trip within the rail system. Sydney Airport has advocated for the reduction of the station access fee to increase patronage on rail for passengers as well as staff.

There is a clear opportunity to increase the provision of public buses servicing the airport and Sydney Airport has welcomed the stated intention of the NSW Government to provide additional public bus services to the airport. Currently, there is a single public bus route serving the terminals, being the Route 400 service, which connects Sydney Airport to Rockdale, Burwood and Bondi Junction. The Route 410 service operates along Airport Drive but stops only at the Qantas Jet Base.

To encourage a shift in public transport mode share, Sydney Airport has committed to providing public bus facilities at each terminal as part of its five year ground transport plan. A bus and multi-purpose parking facility is planned to be located between Ninth Street and the Seventh Street extension at T2/T3 and will provide faster and more direct access for public buses.

Preliminary investigations indicate that the planned location of the public bus facility will reduce delays for buses and therefore for passengers accessing the airport precinct by this mode of transport. Sydney Airport will continue to work closely with TfNSW to support its plans to grow the number of public buses accessing the airport as foreshadowed in the LTTMP.

The proposed public bus facility would be supported by pedestrian circulation corridors, orientation spaces, way-finding signage and flight information displays to provide airport users with a customer experience designed to encourage the use of this sustainable transport choice.

Sydney Airport will continue to work with the NSW Government, stakeholders and private infrastructure owners to further increase the attractiveness and competitiveness of public transport access modes. This could include dedicated bus priority lanes or bus priority signals on roads leading to the airport precinct.

Any increases in public transport mode share would further improve the performance of the road system.

3.4 Active transport modes

Shared pedestrian and cycle routes are provided along the Cooks River and Alexandra Canal on the north side of Airport Drive and via the Giovanni Brunetti Bridge connecting to Mascot via Coward Street. Shower facilities are provided in T1 for passengers and commuters. Secure bicycle parking facilities are provided in T1, T2/T3 and the Qantas Jet Base. These facilities will remain in place during the course of the five year ground transport plan.

More information on proposals to improve active transport access to Sydney Airport can be found in Section 7.4 of this Master Plan.

4.0 Linkages to the adjacent network

4.1 Terminal 1

At T1, the forecourt provides an important interchange function between public and private transport modes, including bus (public buses, coaches and mini-buses) and car users (public cars, limousines, rental cars, taxis, staff).

Access to the rail station will also continue to be provided from within T1. In addition to public and staff car parking, the existing car parks cater for car rental and valet parking and have been designed to facilitate a range of future ground transport uses, such as undercover bus and coach parking. Extensive cycle and pedestrian facilities are provided (refer to Figure A2 for further detail), connecting the terminal to the car parks. Internal road access is provided directly adjacent to the terminal and multi-storey car parks for ease of access.

Bus and car users enter and exit the precinct from Airport Drive and Marsh Street via an existing network of internal roads. Existing cycle and pedestrian facilities are provided, connecting to the regional network along Airport Drive. These facilities are planned to be progressively upgraded as required to improve amenity and connectivity.

4.2 Terminal 2 / Terminal 3

At T2/T3, the entrance and exit portals provide a direct interface for passengers, staff and visitors. Access to public and private transport modes is available via an existing network of dedicated pedestrian subways, lifts and footpaths. Cycle facilities are also provided (refer to Figure A4 for further detail). This gives ready access to buses, trains and taxis as well as car parking.

The circulation of buses and cars into and out of the precinct is provided via Sir Reginald Ansett Drive, connecting to Qantas Drive, Joyce Drive and O'Riordan Street. Cycle and pedestrian facilities are provided, connecting to the regional

network along Qantas Drive. These facilities, including converting Sir Reginald Ansett Drive into a dedicated entrance and the creation of a new dedicated exit (an extension of Seventh Street) between Shiers Avenue and Qantas Drive, are planned to be progressively updated by 2018 to improve amenity and connectivity between modes for all ground transport users (see Section 2.2).

4.3 Freight

Freight facilities will be retained in current locations north of T1. The landside movement of freight to and from the airport is facilitated by light and heavy commercial vehicles, with access from Link Road, Ross Smith Avenue and Sir Reginald Ansett Drive. The movement of freight from aircraft to the terminal is facilitated by dedicated ground service equipment on secure airside roads.

As noted in Chapter 8 of the Master Plan, it is expected that these T1 freight facilities will be progressively updated to promote the efficient handling of air freight. This improvement to the freight interchange function will provide opportunities to rationalise vehicle movements and improve throughput.

5.0 Arrangements for working with stakeholders

Sydney Airport has consulted and worked closely with those authorities responsible for the road network and public transport system (see Chapter 1).

The establishment of the Transport for NSW and Sydney Airport joint working group (JWG) has been instrumental in the development of the integrated road and public transport plans identified in this Master Plan. Senior representatives from TfNSW, RMS and Sydney Airport meet monthly to discuss and work on issues of common interest affecting Sydney Airport. The JWG is chaired on a rotating basis between TfNSW and Sydney Airport and is governed by an agreed terms of reference.

Representatives of Sydney Airport and the NSW Government transport agencies also have well established and long term relationships at a technical and planning level. Communication and interaction occurs on a regular but ad-hoc basis according to the requirements of the issues at hand. The scope, inputs and outputs involved with the detailed traffic modelling undertaken for this Master Plan were undertaken in consultation with RMS.

Sydney Airport will continue to work and collaborate with NSW Government agencies to achieve the planned ground transport outcomes described in the Master Plan.

6.0 Capacity of the transport system

To ensure that the transport system has sufficient capacity to support operations and other activities, a rigorous and detailed ground transport modelling approach was adopted. This modelling was prepared for Sydney Airport by AECOM, a global professional services company, providing transportation services in more than 100 countries. AECOM has been ranked No. 1 in transportation globally for 10 consecutive years.²

A demand profiling model and traffic simulation models were separately developed to assess ground transport capacity requirements for busy days in 2018 and 2033. Both models were calibrated against existing 2012 road conditions to confirm that the models produced a good representation of current day traffic volumes and behaviour at key locations.

The demand model generated hourly flow profiles for the given busy day for each modelled year. Arriving and departing vehicle volumes were derived for both T1 and T2/T3 terminal precincts. This enabled Sydney Airport to gain an understanding and appreciation of the traffic movement by both direction and location so that capacity requirements could be clearly understood.

In addition to the hourly volumes for each terminal precinct, peak hour volumes were defined for the non-terminal areas such as the northern lands precinct, the South East Sector and the jet base.

For the traffic modelling, a detailed micro-simulation model has been developed using Commuter software to encompass the roads around the whole airport. The 2012 model extents are shown in **Figure A8**.

The scope of the traffic modelling was agreed with RMS to ensure that the modelling tool, modelled area, time periods (06:00-10:00am and 15:30-19:30pm) and level of detail were in line with the expectations of RMS and other models being developed for the area.

The calibrated 2012 demand profiles for the airport were provided for incorporation to the RMS strategic highway assignment (SHA) model. This enabled RMS to recalibrate its current year model to represent existing conditions. From this, RMS provided revised traffic forecasts for the network shown in **Figure A8**. RMS's SHA model takes into consideration population and employment growth in the wider metropolitan area and also incorporates some future road network assumptions, including new motorways such as WestConnex. The derived outputs therefore provide a robust

² Engineering News Record Magazine July 2012

Figure A8 Commuter model extent



forecast of traffic volumes for the roads surrounding Sydney Airport from which assessment of local infrastructure changes could be undertaken.

The outcome of the modelling conducted by AECOM indicates that the capacity of the transport system accommodates the requirements of the operations and other activities planned at the airport in 2018 and 2033.

7.0 Likely effects of proposed developments

The package of infrastructure proposed as part of the five year ground transport plan not only supports the forecast growth of traffic but also improves the existing levels of service for road users.

The modelled performance results for key intersections adjacent to the airport show a measurable improvement in intersection performance compared to the current performance. These results are based on the modelling assessments undertaken by AECOM using the commuter microsimulation tool, and take into account the effect of the development plan (including forecast passenger growth and terminal, road, airfield and other developments) on the ground transport system and traffic flows at, and surrounding, the airport.

The most noticeable improvements occur in the T2/T3 precinct where they are most needed. With the implementation of planned road changes inside and outside the airport boundary as identified in this appendix, the intersections adjacent to the T2/T3 precinct would operate with spare capacity during both peak periods. This is attributable to the reduction of conflicting movements at the intersections of Robey Street/O'Riordan Street as well as at O'Riordan Street/Joyce Drive. In addition, the planned removal of the exit movement from the Sir Reginald Ansett Drive to the proposed northern arm of Seventh Street allows greater phase times for vehicles to enter the precinct.

The planned improvements to these intersections benefit non-airport through traffic as well as improving the travel times of passengers travelling to and from T2/T3 and to those traveling to and from T1 via Airport and Qantas Drives.

B

APPENDIX B

APPENDIX B HISTORY OF SYDNEY AIRPORT AND EXISTING FACILITIES

1.0 Key stages in the development of Sydney Airport

Key stages in the development of Sydney Airport are set out in **Table B1**.

Table B1 – Development of Sydney Airport

	Year	Activity	Master Plan implications
Pre-aviation		The land on which the airport is sited – the northern shore of Botany Bay – is within the traditional country of the Eora people, the name given to the coastal Aborigines around Sydney.	A number of studies have been undertaken and have indicated that there are no Aboriginal archaeological sites or areas of potential archaeological sensitivity within the airport.
	19th century	Freshwater supply for Port Jackson sourced from ponds on eastern side of airport site (1835). Construction of Alexandra Canal which was planned to connect Botany Bay with Port Jackson. During late 19th and early 20th centuries, airport site is used for industrial buildings including textile and flour mills.	The Engine and Mill Ponds are identified as environmentally significant areas in the Airport Environment Strategy – in recognition of pre-aviation uses of the airport site.
Early airport development	1911	The first flight occurs when an aircraft takes off from the former Ascot Racecourse (now part of the airport site).	Environmentally significant remnant fig trees remain within the area.
	1920s	Mascot Aerodrome officially opens and Commonwealth Government acquires the aerodrome.	This is part of a program to develop a nationwide airport network.
	1930s	Additional land is purchased, the main runway is surfaced with gravel and two ancillary grass runways are laid out.	These early runways were located in the vicinity of what is now the T2/T3 and Qantas Jet Base.
	1940-45	New passenger terminal opens and airport is further developed during World War II to enhance its civilian and military facilities.	Elements of this building remain in the T2/T3 precinct and have been identified as having heritage significance.
	Post 1945	Cooks River is diverted and two new runways are built.	Key elements of existing airport laid out – in particular the runway.
Into the jet era	1959	Arrival of B707 and other jet and turbo-prop aircraft ushers in rapid growth in air travel.	Curfew at Sydney Airport first introduced after the government decided that these older noisy jet aircraft "will not be scheduled to take off or land during the quiet hours of the night".
	1968	Main north-south runway (16R/34L) is extended by land reclamation into Botany Bay to cater for long-haul international jets.	Curfew remains a key operating influence for Sydney Airport.
	1970	First stage of international terminal opens on current site.	Location of General Holmes Drive under the runway and diversion of the southern and western suburbs ocean outfall sewers.
	1970s	Further expansion of the international and domestic terminals. In 1972, Runway 16/34 is extended into Botany Bay to its present length of 3,962m.	

Major airport expansion	1992	Major expansion of International terminal adds eight gates for B747-400 aircraft.	
	1994	The parallel runway (16L/34R) opens at its current length of 2,438m. New flight paths added.	
	1996	Current control tower opens.	Complements parallel runways.
	1997	Aircraft movement cap of 80 flights per hour is legislated.	The Long Term Operating Plan commences. Noise insulation program commences and is completed by the late 1990s.
	2000	International and domestic terminals significantly upgraded and expanded.	
	2000	Significant ground access infrastructure developed – the Airport Rail Link, the Eastern Distributor and M5 East Motorway.	
Post-privatisation	2002	Sale of Sydney Airport to Southern Cross Airports Corporation is completed.	Statutory requirement for development of a 20 year Master Plan for the airport.
	2004	Sydney Airport Master Plan 03/04 approved.	Sets out planning proposals for Sydney Airport for a 20 year period to 2023/24.
	2007	The first ever commercial flight by the new generation quieter A380 lands at Sydney Airport. Sydney Airport will soon become one of the busiest A380 airports in the world.	
	2009	Sydney Airport Master Plan 2009 approved.	Sets out planning proposals for Sydney Airport for a 20 year period to 2029.
	2011	Sydney Airport announces New Vision that will see terminal precincts transformed into integrated international, domestic and regional precincts by 2019 without any change to operating restrictions.	The feedback and comments received during consultation on the New Vision have informed the preparation of the development plan in this Master Plan.
	2002–2013	Over \$2 billion of investments and other initiatives during the past decade have led to increased service levels, enhanced safety and security, delivered environmental improvements and increased capacity to meet demand. Key projects include terminal upgrades, new car parks, new checked baggage screening facilities, runway end safety areas and making Sydney Airport ready for larger, quieter, cleaner and more fuel efficient aircraft.	

2.0 Existing facilities

2.1 Existing terminals

Passenger terminals serve the needs of different types of users by:

- Processing check-in, security, border controls, aircraft boarding and disembarking, and baggage handling for travellers
- Providing for passengers waiting for or transferring between flights
- Providing passengers and airport visitors with facilities including food and beverage, toilets, shopping and other activities

Associated activities and infrastructure such as landside access, car parking and utilities support the operation of the terminals and facilitate the passenger experience.

Over many years, there has been substantial investment in the terminals at Sydney Airport. Terminal 1 (T1) and Terminal 2 (T2) are respectively the common user international and domestic facilities. Terminal 3 (T3) is currently a dedicated Qantas owned and operated domestic terminal servicing Qantas mainline operations.

2.1.1 Terminal 1

Opened in 1970, it is the current international terminal located in the North West Sector of the airport. Since that time, the terminal has been extensively modified and expanded.

T1 is a four level structure, with vertically separated arrival and departure passenger concourses currently supporting 24 contact aircraft gates with aerobridges and a walk-up gate, together with other bussed and layover stands in a number of locations on the airfield.

The current total floor area is approximately 254,000 square metres. Major functional elements include:

- 212 departure check-in counters
- 15 check-in kiosks
- Integrated outbound baggage handling and security screening system
- 38 departure passport control positions
- Passenger and hand baggage screening facilities
- 24 conventional passport control positions and 6 Smart Gate positions in Pier B, and 20 conventional passport control positions and 9 Smart Gate positions in Pier C
- Transfer passenger and baggage screening facilities
- 12 baggage reclaim units
- Inbound baggage screening facilities
- Extensive retail and related facilities.

2.1.2 Terminals 2 and 3

The current domestic terminal complex is located in the North East Sector of the airport and comprises two adjacent but currently unconnected buildings –T2 and T3.

T2, owned by Sydney Airport, is a three-level structure which supports two single-level arrival/departure pier type concourses. Currently, the piers, after the recent expansion of Pier A, serve up to a total 23 contact aircraft gates and a number of stand-off bussed aircraft positions.

T3, operated by Qantas, is a three-level structure which is integrated with a single-level linear and satellite type arrival/departure passenger concourse. Currently, the concourse provides a nominal 16 contact aircraft gates with aerobridges and several stand-off bussed aircraft positions. The lease on T3 expires in 2019.

T2 and T3 are not physically linked at terminal level, although underground pedestrian access between the terminal baggage halls is available via the links to the airport rail link domestic terminal station. Together, T2 and T3 have a gross floor in excess of 100,000 square metres. The existing terminal facilities provide good levels of service at current traffic levels. Major functional elements include:

- 50 check-in counters, no bag drops, 42 kiosks/passenger and hand baggage screening facilities at T2
- 10 check-in counters, 24 bag drops, 48 kiosks/passenger and hand baggage screening facilities at T3
- Transfer passenger and baggage screening facilities
- Integrated outbound baggage handling and security screening system
- A combined 11 baggage reclaim units.

2.2 Existing movement areas

The existing airfield layout is shown on **Figure 11.3** in Chapter 11.

2.2.1 Runways

Sydney Airport has three runways. The dimensions and declared distances of these runways are given in **Table B2**.

Runways 16R/34L and 16L/34R are parallel on an approximate north-south alignment separated by a distance of 1,037m. Runway 16R/34L is suitable for heavy long haul departures. Runway 07/25 crosses Runway 16R/34L and is on an approximate east-west alignment. Weather requires the exclusive use of Runway 07/25 for a limited number of hours per year when strong winds preclude the use of the north/south runways.

Runways 16R/34L and 07/25 and their supporting taxiways currently accommodate operations by Code F aircraft.

Sydney Airport has sophisticated equipment to assist with safe take-off and landing during low visibility conditions. This allows the airport to remain operational during a wide range of weather conditions:

- All runways are provided with precision approach path indicator systems (PAPIS) to provide visual approach slope guidance to aircraft.
- Transmissometer units are operational on all runways and provide accurate visibility assessments to aircraft crews when operating in low visibility conditions. This technology facilitates increased aircraft movements in those conditions.
- Stop bars have been commissioned at Sydney Airport to enhance runway safety and better facilitate low visibility operations.
- Runways 16L and 16R are currently equipped with Cat 1 high intensity approach lighting (HIAL) systems.
- All runways are equipped with instrument landing systems (ILS) to permit aircraft to conduct precision approaches in poor weather. Instrument landing systems are classified according to their ability to facilitate landings in poor weather conditions. Runways 16L and 16R currently facilitate approaches in visibility conditions down to 550 metres.
- All runways have complying runway end safety areas (RESAs).

Table B2 Runway data

Runway direction	Length (m)	Width (m)	Take-off run available (m)	Take-off distance available (m)	Accelerate stop distance available (m)	Landing distance available (m)
16R	3962	45	3962	4052	3992	3877
34L	3962	45	3962	4052	3962	3962
16L	2438	45	2438	2528	2438	2207
34R	2438	45	2438	2498	2438	2400
07	2530	45	2530	2620	2560	2530
25	2530	45	2530	2590	2530	2429

2.2.2 Taxiways

Runways are supported by a comprehensive taxiway system designed to facilitate the efficient movement of aircraft between the runways and terminal areas. Rapid exit taxiways are provided on the parallel runways to minimise runway occupancy time.

2.2.3 Aprons and stands

Apron areas are provided to facilitate aircraft parking. The parking position is known as an aircraft stand (or gate). Existing aprons at Sydney Airport accommodate operations by the full range of aircraft types. Currently there are approximately 106 aircraft stands dedicated to supporting international, domestic, regional and freight operations.

There are a number of additional parking positions on the aprons within the general aviation area for aircraft of various sizes and Qantas currently provides parking positions for its own use within the engineering facilities north of T3 in the North East Sector of the airfield.

Apron areas also support activities associated with the servicing of aircraft such as baggage, freight, refuelling and flight catering and utilise a variety of ground support equipment (GSE) operated by third parties. A network of airside roads provides for GSE and other vehicle movements.

2.2.4 Engineering facilities

The engineering facilities are located in the North East Sector of the airport north of Terminal 3. The area comprises a lease area of approximately 30 hectares. The engineering facilities are used by Qantas for aircraft maintenance, layover parking and also contain a variety of aviation support facilities.

During the master planning period it is planned that a maintenance and engineering precinct will be developed in the South East Sector of the airfield and that potentially there will be a reconfiguration of facilities in the North East Sector.

2.2.5 General aviation

The general aviation parking area is located in the North East Sector, adjacent to the Runway 25 threshold. The area provides aircraft parking for a number of freight, corporate and private aircraft as well as a variety of aviation support facilities such as maintenance hangars, freight handling and administrative buildings.

2.2.6 Helicopters

A helicopter precinct is located in the South East Sector adjacent to the Runway 25 threshold. The area includes a touch down and lift off (TLOF) area, taxiways, parking pads, storage/maintenance hangars and administrative buildings.

2.2.7 Emergency facilities

Sydney Airport has two marshalling areas for the staging of emergency vehicles and associated communication and coordination facilities located adjacent to the aviation rescue and fire fighting (ARFF) services facilities. There are also two emergency evacuation facilities for marine rescue and recovery located adjacent to the parallel runways within Botany Bay.

2.3 Existing support systems

2.3.1 Airservices Australia facilities

Airservices Australia is responsible for the provision of air traffic control (ATC), ARFF and the provision and maintenance of radio navigation aids and systems.

The control tower is situated mid-way between runways 16R/34L and 16L/34R and south of Runway 07/25. The primary responsibility of ATC staff is the processing and separation of air traffic in both the initial and final stages of flight. ATC also provides surface movement control to aircraft and vehicles on the runways and taxiways.

Sydney Airport is equipped with an advanced surface movement guidance and control system (ASMGCS) to assist with identification and management of all aircraft and vehicles on the airport manoeuvring area. ASMGCS consists of an enhanced surface movement radar (SMR) combined with a multilateration system to track aircraft and vehicles on the airport surface (see Section 6.8).

The wide area multilateration system (WAM) is a surveillance technology with a high update rate, which permits ATC to accurately undertake precision runway monitoring for aircraft on approach to the parallel runway system in poor weather conditions. It is critical to maintaining runway capacity in these conditions.

The terminal area radar provides a primary radar surveillance capability out to a radius of 50 nautical miles from Sydney Airport. It provides secondary radar coverage to about 175 nautical miles. This system is augmented by the wide area multilateration and automatic dependent surveillance broadcast system.

Surveillance and navigation systems rely on the transmission of radio waves that must be protected from any structures or obstacles that could cause signal refraction or interference. Consequently, areas located either on-airport or off-airport surrounding these facilities may have development restrictions imposed through Sydney Airport's development approval assessment process (see Appendix F).

The ARFF service has two on-airport fire stations and currently provides ICAO Category 9 standard during hours of flight operations, upgrading to Category 10 as required to facilitate A380 operations. The ARFF service is also equipped to undertake marine rescue within Botany Bay. A fire training area is located to the north of the ARFF facility near Runway 16L.

2.3.2 Bureau of Meteorology facilities

The Bureau of Meteorology (BOM) has a number of airport facilities to support aircraft operations. These include:

- A weather balloon-launching station
- Instrument enclosure
- A vertical wind profiler
- Visibility sensors
- Observation office

2.4 Overview existing freight facilities and service providers

The existing airside and landside cargo terminal facilities at Sydney Airport are occupied by and the responsibility of various service providers or Cargo Terminal Operators (CTOs).

There are currently four international CTOs and two domestic CTOs operating at Sydney Airport, providing a broad range of services. The international CTOs are Qantas Freight, Toll/Dnata, Australian Air Express and Menzies. The domestic CTOs are Australian air Express and Toll Aviation. DHL operates as an independent express operator. The area dedicated to freight operations/international and domestic CTOs is 11.5 hectares.

The airside terminal facilities are located on land leased from Sydney Airport. These are primarily located in the Link Road precinct for international air freight handling and domestic air freight handling located within the passenger terminal precinct of T2 and T3.

Livestock handling facilities are provided at Sydney Airport in accordance with Australian quarantine requirements in the current international precinct.

Off-site, there are around 130 forwarders, logistics providers and integrators located within a 5km radius of Sydney Airport. These operations range in scale, complexity and degree of service from major operations to small owner-operators offering very basic services.

Sydney Airport air freight volumes are dominated by imported goods and associated handling requirements. As a hub airport, air freight to and from Sydney is transhipped via domestic routes, which produces different handling characteristics for airlines.

Freight terminal capacity requirements are a consequence of terminal and ground handling productivity, efficiency and handling requirements. Based on average airport-wide productivity of 12 tonnes per square metre per annum the capacity of existing on airport facilities is around 450,000 to 500,000 tonnes per annum for international and 80,000 tonnes per annum for domestic. Future demand will be met through improved handling efficiencies, higher productivity and increased focus on time critical products on airport by service providers.

C

APPENDIX C

APPENDIX C RUNWAY MODES OF OPERATION

To facilitate noise sharing and implementation of the Long Term Operating Plan for Sydney Airport, Airservices Australia has adopted a preferred runway selection system which, depending on weather and traffic, utilises the runway modes of operation on specified days and times. The following arrangements set out in **Tables C1** and **C2**, and **Figure C1** became effective on 1 July 2010.

Table C1 Preferred runway selection – Monday to Friday

2300 to 0600	1.	Curfew – Departures 16R / Arrivals 34L (Mode 1)
0600 to 0700	1.	SODPROPS – Departures 16L / Arrivals 34L
	2.	Departures 16L&R / Arrivals 34L (shoulder curfew). If traffic permits.
	3.	Departures 34R, 25 & 34L/Arrivals 34L&R (Mode 8), or Departures 25 / Arrivals 34L&R (Mode 7), or Departures 16L&R / Arrivals 25 (Mode 5), or Departures 16L&R / Arrivals 07 (Mode 14A)
	4.	34 (Mode 9) or 16 (Mode 10)
	5.	07 (Mode 12) or 25 (Mode 13)
0700 to 2245 / 2300	1.	SODPROPS - Departures 16L / Arrivals 34L
	2.	Departures 16L&R / Arrivals 07 (Mode 14A), or Departures 34R, 25 & 34L / Arrivals 34L&R (Mode 8), or Departures 25 / Arrivals 34L&R (Mode 7), or Departures 16L&R / Arrivals 25 (Mode 5)
	3.	34 (Mode 9) or 16 (Mode 10)
	4.	07 (Mode 12) or 25 (Mode 13)
2245 to 2300	1.	SODPROPS - Departures 16L (mandatory) / Arrivals 34L
	2.	Departures 16L&R (mandatory) / Arrivals 34L (shoulder curfew) unless there would be significant delays to either departing or arriving aircraft, or traffic complexity requires a variation, or weather conditions preclude the use of 34L
	3.	Departures 16L&R / Arrivals 25 (Mode 5), or Departures 16L&R / Arrivals 07 (Mode 14A)
	4.	16 (Mode 10)
2300 to 0600	1.	Curfew – Departures 16R / Arrivals 34L (Mode 1)

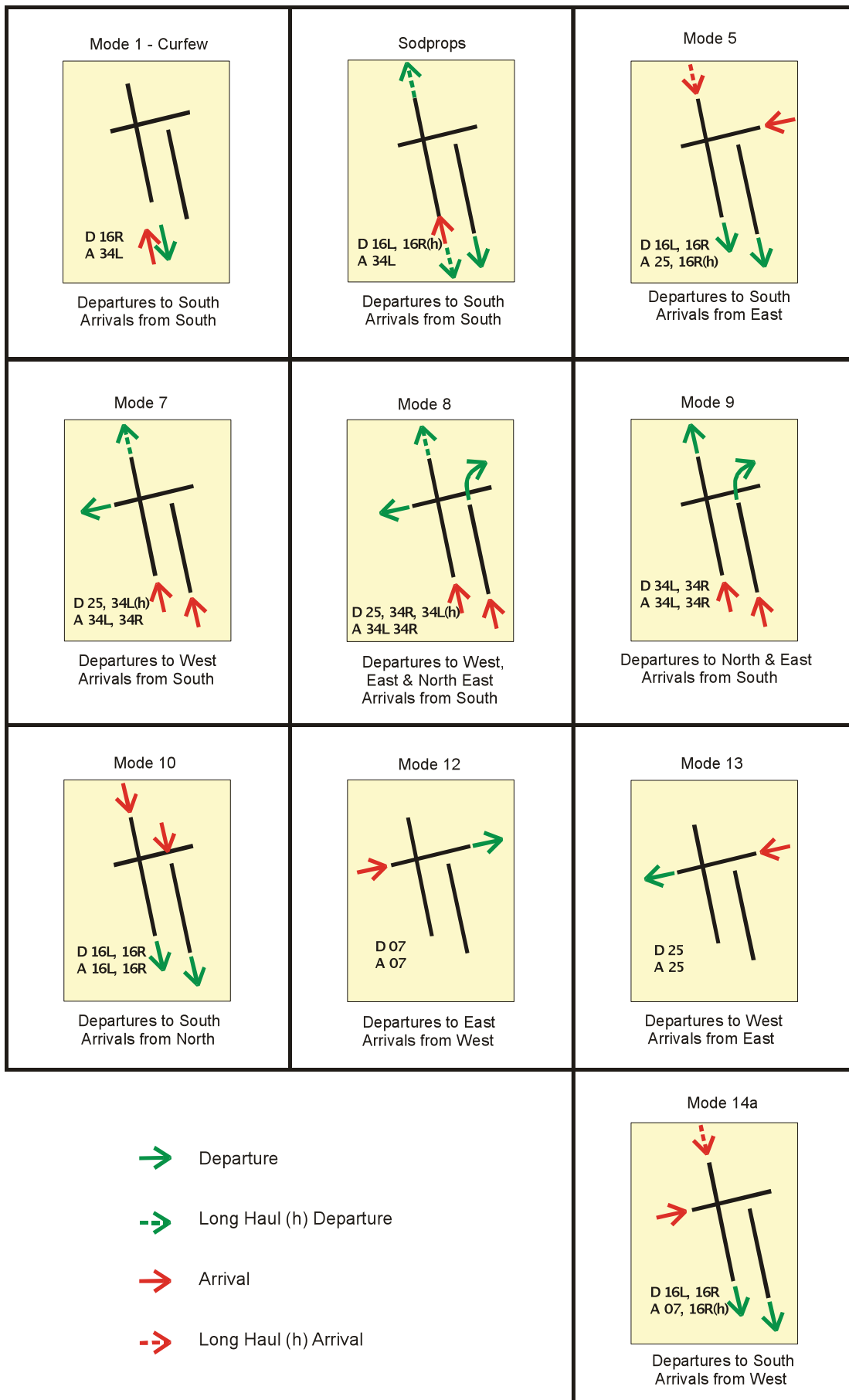
Table C2 Preferred runway selection – Saturday and Sunday

0600 to 0700 Saturday	1.	SODPROPS – Departures 16L / Arrivals 34L
	or	
0600 to 0800 Sunday	2.	Departures 16L&R / Arrivals 34L (shoulder curfew). If traffic permits.
	3.	Departures 16L&R / Arrivals 25 (Mode 5), or Departures 16L&R / Arrivals 07 (Mode 14A), or Departures 34R, 25 & 34L / Arrivals 34L&R (Mode 8), or Departures 25 / Arrivals 34L&R (Mode 7)
	4.	34 (Mode 9) or 16 (Mode 10)
	5.	07 (Mode 12) or 25 (Mode 13)
0700 to 2200 Saturday	1.	SODPROPS - Departures 16L / Arrivals 34L or
0800 to 2200 Sunday	2.	Departures 16L&R / Arrivals 07 (Mode 14A), or Departures 34R, 25 & 34L / Arrivals 34L&R (Mode 8), or Departures 25 / Arrivals 34L&R (Mode 7), or Departures 16L&R / Arrivals 25 (Mode 5)
	3.	34 (Mode 9) or 16 (Mode 10)
	4.	07 (Mode 12) or 25 (Mode 13)
2200 to 2245	1.	SODPROPS - Departures 16L (mandatory) / Arrivals 34L
	2.	Departures 16L&R (mandatory) / Arrivals 34L (shoulder curfew) unless there would be significant delays to either departing or arriving aircraft or traffic complexity requires a variation or weather conditions are not suitable.
	3.	Departures 16L&R / Arrivals 25 (Mode 5)
	4.	Departures 16L&R / Arrivals 07 (Mode 14A)
	5.	Departures 34R, 25 & 34L / Arrivals 34L&R (Mode 8)
	6.	Departures 25 / Arrivals 34L&R (Mode 7)
	7.	34 (Mode 9) or 16 (Mode 10)
	8.	07 (Mode 12) or 25 (Mode 13)
2245 to 2300	1.	SODPROPS – Departures 16L&R (mandatory) / Arrivals 34L
	2.	Departures 16L&R (mandatory) / Arrivals 34L (shoulder curfew) unless there would be significant delays to either departing or arriving aircraft, or traffic complexity requires a variation, or weather conditions preclude the use of 34L.
	3.	Departures 16L&R / Arrivals 25 (Mode 5), or
	4.	Departures 16L&R / Arrivals 07 (Mode 14A) 16 (Mode 10)

Notes:

- Rwy 34 and Rwy 16 parallel runway operations should only be considered for use if required for traffic management purposes during the following hours:
 - 0700 to 1100 Monday to Saturday
 - 0800 to 1100 Sunday
 - 1500 to 2000 Sunday to Friday.
 In order to take advantage of suitable traffic dispositions, variations to these times will occur.
- 20 knot crosswind and 5 knot downwind criteria apply to all dry runway conditions
- This is not an operational document. It has been prepared for information purposes only and is subject to change without notice.

Figure C1 Runway modes of operation



D

APPENDIX D

APPENDIX D OPERATIONAL LAWS AND REGULATIONS

Sydney Airport is subject to various airport specific and general laws and regulations. Set out below is an explanation of some of the key operational laws and regulations that apply at Sydney Airport.

1.0 Overnight curfew on aircraft movements

The Sydney Airport Curfew Act 1995 and associated instruments (curfew laws) restrict take-offs and landings during the curfew period from 11pm to 6am to:

- Small propeller and jet aircraft that comply with specified noise standards
- Limited numbers of medium size freight jets meeting specified noise standards

During the curfew period, all aircraft must operate over Botany Bay rather than residential areas. Arrivals are required to operate to the north on Runway 34L. Departures are required operate to the south on Runway 16R.

Under the Sydney Airport Curfew Regulations 1995, international passenger aircraft are permitted to arrive in the curfew shoulder period between 5am and 6am. However, no more than 24 international passenger aircraft arrivals are permitted per week (and no more than 5 per day).

The curfew restrictions do not apply in the case of emergency. In exceptional circumstances, the Minister for Infrastructure and Regional Development may grant dispensations for other aircraft to operate during the curfew period.

2.0 Aircraft movement limit and slot management scheme

The Sydney Airport Demand Management Act 1997 and associated instruments (slot laws) establish:

- A maximum aircraft movement limit, or movement cap, of no more than 80 aircraft movements at Sydney Airport per operational hour
- A framework for the allocation and management of slots within the movement cap

All commercial and private aircraft require a slot to land or take-off from Sydney Airport. Military, emergency and helicopter movements are exempt. Airport Coordination Australia (ACA) allocates slots and manages slot coordination at Sydney Airport.

ACA allocates slots to airlines on a seasonal basis in accordance with the following:

- ACA will first allocate slots to airline operators with historical precedence
- ACA will then allocate slots to new entrant and incumbent airlines
- Any remaining slots may be allocated to regional airlines, non-scheduled and general aviation operators. However, the slot laws contain a mechanism that preserves a certain number of slots for regional airlines in an effort to guarantee access to Sydney Airport for regional communities

In allocating slots, ACA must consider any advice provided by Airservices Australia as to the likely effect of allocation on the operational efficiency of Sydney Airport.

3.0 Noise sharing and the long term operating plan

The Sydney Airport Long Term Operating Plan (LTOP) was introduced following extensive consultation in 1996 and 1997 as a program of aircraft noise management. The LTOP seeks to ensure that aircraft movements are maximised over water and non-residential land. Where flight over residential areas cannot be avoided, the LTOP aims to safely share the noise between communities.

Ten runway modes of operation (RMO) are currently available for use at Sydney Airport to facilitate noise sharing consistent with LTOP. Appendix C sets out the RMO in use at Sydney Airport.

The implementation of noise sharing arrangements is monitored by the Sydney Airport Community Forum (SACF) and an implementation and monitoring committee (IMC). SACF is the main body for community consultation on Sydney Airport flight paths and their impacts. SACF includes representatives from the community, local councils, industry and state and federal parliaments.

4.0 Aviation security

Australia's aviation security regime has been progressively enhanced following the terrorist attacks in the USA in September 2001.

The Aviation Transport Security Act 2004 and Aviation Transport Security Regulations 2005 (aviation security laws) require security controlled airports, including Sydney Airport, to:

- Prepare and implement a transport security program (TSP)
- Conduct security screening of all passengers, staff and visitors, including random explosive trace detection and body scanning
- Conduct security screening of all carry-on baggage
- Screen all checked bags
- Control airside access and secure areas
- Implement enhanced inspection area controls

5.0 Aviation safety

The Civil Aviation Safety Regulations 1998 and associated instruments (aviation safety regulations) set out Sydney Airport's safety standard obligations and the requirement for Sydney Airport to comply with the manual of standards (MOS). The MOS comprises the specifications and standards that are necessary for the safety of air navigation at aerodromes. These include standards in relation to:

- Airport emergency planning
- Aerodrome lighting
- Operational requirements
- Inspections, audits and certification
- Wildlife management
- Safety management systems

MOS Part 139 sets out the standards and operating procedures for certified, registered aerodromes and other aerodromes used in air transport operations.

E

APPENDIX E

APPENDIX E PLANNING LAWS AND REGULATIONS

Sydney Airport is subject to various airport specific and general laws and regulations. Set out below is an explanation of some of the key planning laws and regulations that apply at Sydney Airport.

All development undertaken at Sydney Airport pursuant to this Master Plan will be of the quality and standard reasonably expected of a major international airport in Australia, and will provide appropriate facilities for comfort, ease of access, expeditious movement and efficient use of Sydney Airport by passengers and all other users of Sydney Airport.

1.0 Airport master planning

The Airports Act 1996 (the Act) requires the Master Plan to identify Sydney Airport's intentions for land use and related development of the airport site where the uses and developments embrace – airside, landside, surface access, and land planning/zoning aspects.

The master planning requirements are part of the Australian Government's regulatory framework for airport lessee companies. The Australian Government announced several reforms to the airport planning framework in its National Aviation Policy White Paper released in December 2009. These reforms were introduced by way of amendments to the Airports Act in December 2010.

On 5 December 2011, an extensive community consultation and engagement process for Sydney Airport's development plan commenced. The plan would see the phased development of Sydney Airport, transforming it into two integrated terminal precincts, with international, domestic and regional services in each of the two terminal precincts.

This Master Plan has been prepared in accordance with the requirements of the Act. In summary, a master plan must include the strategic direction for efficient and economic development at the airport and to indicate to the public the intended uses of the airport site. A master plan must cover a period of 20 years and ordinarily, be reviewed every five years. A master plan must be displayed for public comment for 60 business days and must address a variety of issues including:

- Development objectives and assessment of future needs
- Intentions for land use
- Australian Noise Exposure Forecast and the airport's intentions for managing noise
- Flight paths
- Environmental concerns
- Ground transport
- Commercial activities
- Economic contributions

The Airports Regulations 1997 provide land use, planning and building controls for Commonwealth leased airports. Part 5 of the regulations states that the Master Plan must set out proposals in a similar format to that required by state or territory legislation (as described above), specifically:

'For Section 71 of the Act, an airport master plan must, in relation to the landside part of the airport, where possible, describe proposals for land use and related planning, zoning or development in an amount of detail equivalent to that required by, and using terminology (including definitions) consistent with that applying in land use planning, zoning and development legislation in force in the State or Territory in which the airport is located'. The land use definitions (see Appendix C) and terminology used in NSW planning legislation have been used, where appropriate, to provide a level of detail and transparency.

Additionally the Airports Regulations 1997 specify that for Subsection 71(5) of the Airports Act a Master Plan must address:

'any obligation that has passed to the relevant airport — lessee company under Subsection 22 (2) of the Act or Subsection 26 (2) of the Transitional Act'.

2.0 Airport developments

Construction of new development at the airport is subject to a robust development assessment process that provides a system for approving building activities. The Airports (Building Control) Regulations 1996 establish a system for approving appropriate building activities on the airport site.

Regulation 2.05 of the Airports (Building Control) Regulations 1996 requires an application for approval of a building activity to include a statement describing how the proposed building activity is consistent with both the Master Plan and the Environment Strategy.

Building activities at the airport require a building activity approval from the airport building controller (ABC) who is advised by the airport environment officer (AEO). Both the ABC and the AEO are independent officers employed by the Department of Infrastructure and Regional Development.

In addition, a corresponding consent must also be granted by Sydney Airport. In this way, all proposed developments are assessed using the same process so as to determine whether the development is consistent with the Master Plan. This facilitates the independent assessment of development within the airport environment. Sydney Airport has an internal process for assessing development proposals which is described in more detail in section 3 below. A statutory assessment of the environmental impacts created by a new development is also undertaken by the AEO.

Where proposed works are deemed to require a major development plan (MDP), an environmental assessment is carried out and community consultation is undertaken prior to seeking (pursuant to Division 4 Part 5 of the Act, including Section 89), approval from the Minister for Infrastructure and Regional Development. Major development plans may only be approved if they are consistent with the master plan in force for the airport.

3.0 Development assessment at Sydney Airport

Development at Sydney Airport is managed under a regulatory framework set by the Airports Act 1996 and associated regulations as well as the Environment Protection and Biodiversity Conservation Act 1999.

3.1 Regulatory processes

The statutory and management process for lodging, assessing and approving works at Sydney Airport is summarised in the flow chart attached at **Figure E1**.

The Airports (Building Control) Regulations 1996 require that carrying out a building activity, as defined in Section 98 of the Airports Act 1996 (described as development in this Master Plan), must have written consent of the airport lessee company (Sydney Airport Corporation Limited). Sydney Airport's written consent is based on a management process through which stakeholder impact identification, infrastructure impacts, environmental impacts and management, current and future adjoining development interfaces, and property and legal risk issues are identified and addressed. Key aspects of this process are as follows:

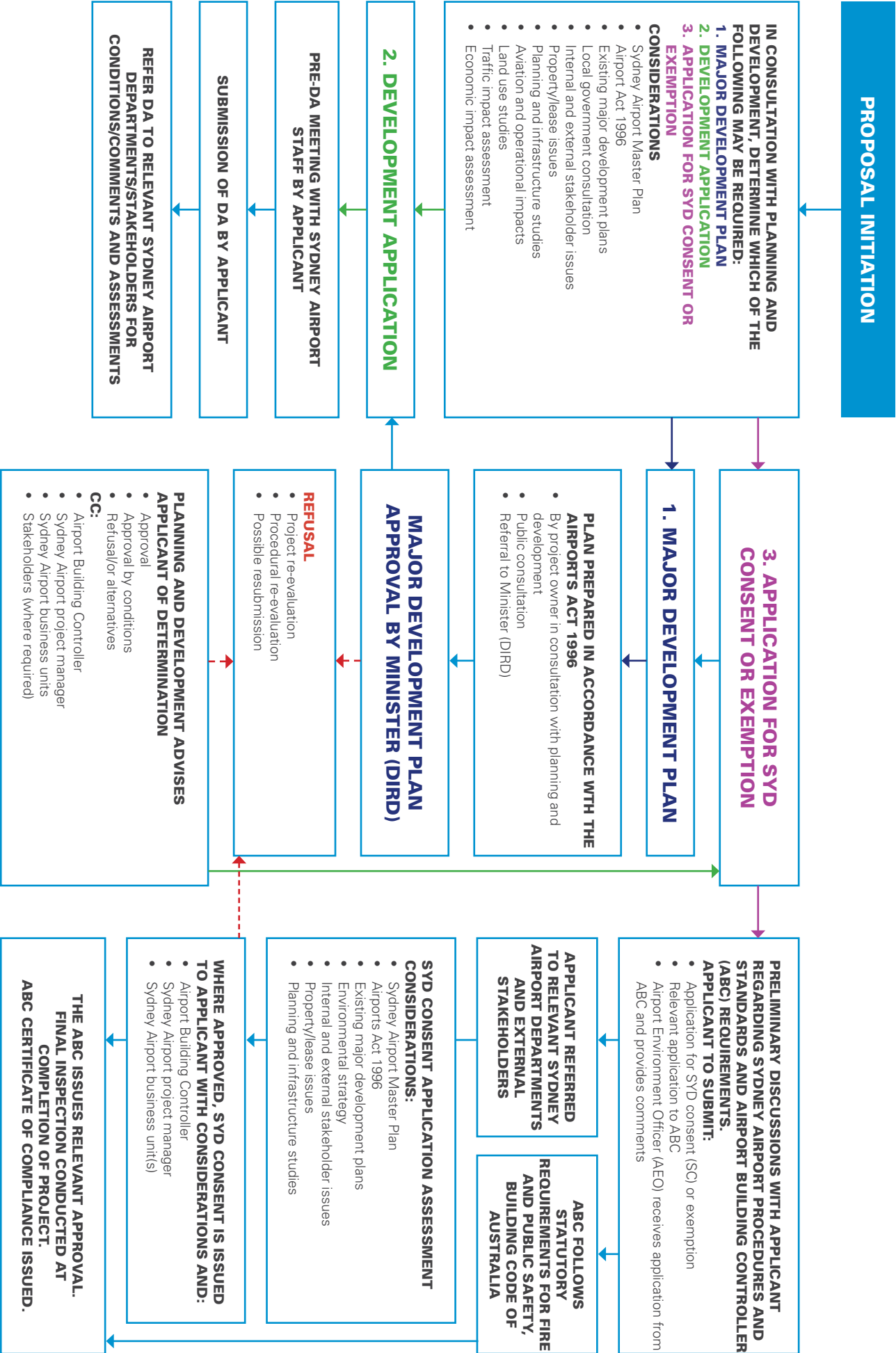
- Prior consultation with Sydney Airport planning and development as to the need for a major development plan (MDP), Sydney Airport development application, application for Sydney Airport consent or an exemption application under the Airports (Building Control) Regulations 1996. MDPs and development applications assess the general concept for the proposal and whether it is appropriate to proceed to applications for Sydney Airport consent or exemption. These applications are considered to be written consents under Airports (Building Control) Regulations 1996, regulations 2.03 and 2.05
- Determine whether the development is consistent with Section 32 of the Airports Act 1996
- Determine the development's consistency with the Master Plan and Environmental Strategy
- Consult with internal and external stakeholders, in particular, local government, regarding developments in proximity to boundaries as well as state government agencies

Pursuant to the Airports Act and Airports 1996 (Building Control) Regulations, Sydney Airport's written consent must also be accompanied by the consent of the airport building controller before works commence. Works of a minor nature may be expected only after consultation with the ABC. ABC applications are made pursuant to the Airports Act and Regulations 1996 and focus primarily on:

- Consistency of the development with the Master Plan
- Compliance with the Building Code of Australia
- A statutory assessment of the environmental impacts created by new developments, which is assessed by the airport environmental officer through the airport building controller, in accordance with the Airport (Building Control) Regulations 1996. Sydney Airport also has regard for the "type, location, bulk, height, density, design and external appearance of the development that will result from the proposed building activity ('development' for the purpose of this Master Plan)"

Environmental impact assessment is regulated by the Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act), the Airport (Environmental Protection) Regulations 1997 (AEPR) and the Sydney Airport Environmental Strategy 2005-2010. Sydney Airport's environmental requirements are summarised in the fact sheet for environmental impact assessment of development and other applications at Sydney Airport, July 2003.

Figure E1 Sydney Airport planning and development process



3.2 Development standards

In addition to assessing proposals on regulatory compliance, proposals are also assessed on their performance in relation to a range of aviation, infrastructure, planning and environmental studies.

Due to the nature of the airport environment, development standards relating to each development are assessed on aviation-related standards not normally found in local planning ordinances. However, common planning standards and practices are applied to airport development where it is prudent to do so.

Sydney Airport's development standards are typically based on the list of documents and issues at **Table E1**.

Each development is assessed on its performance against each of these issues and corresponding guidelines and benchmark documents.

Table E1 Development standards

Issue	Area	Sydney Airport guidelines and benchmark documents
Airside infrastructure	Aviation	MOS 139, ICAO Annex 14
Navigation surveillance systems	Aviation	Airservices Australia Navigational Aid Surface Drawings, MOS 172
Aircraft noise	Aviation	Building siting and insulation AS2021-2000 – Aircraft Noise Intrusion – Building, Siting and Construction
Obstacle limitation surface	Aviation	Airports (Protection of Airspace Regulations)
Runway end safety	Aviation	MOS 139
Lighting	Aviation	MOS 139
Bird hazard	Aviation	Wildlife management plan
Dust hazard	Aviation	Airport works plans
Aviation security	Aviation	Transport security program
Radar reflectivity and navigational aids	Aviation	Assessed on a case by case by Airservices Australia
Master grading	Infrastructure	Services master plan
Utilities	Infrastructure	Services master plan
Advertising and signage	Planning	Sydney Airport Master Plan; SEPP 64 principles
Land use	Planning	Sydney Airport Master Plan
Road traffic generation, traffic and transport management	Planning	Ground transport strategy, RTA guide to traffic generating development
Utilities protection	Planning	New southern railway, underground fuel and gas pipelines, SWSOOS, services master plan
Contaminated sites	Environmental	Contaminated sites register
Heritage	Environmental	Environment strategy and heritage management plan
Fuel storage	Environmental	Above-ground fuel storage policy
Asbestos	Environmental	Work health and safety standards
Environmentally sustainable development	Environmental	Environment strategy

3.3 External consultation

Table E2 outlines a list of the agencies consulted on an ongoing basis. Note that agencies are consulted where there is a requirement for specific input on a particular issue. Other agencies not appearing below may also be consulted.

Table E2 External consultation

Consulted party	Reason
Department of Planning and Infrastructure (NSW)	Consultation regarding major on-airport developments
Airlines and tenants	Consultation regarding major on-airport developments
Local government authorities	Stakeholder consultation with local government on development interface issues on the airport boundary, including major developments
Airservices Australia and Civil Aviation Safety Authority	Radar/Navigational/OLS interference issues
Roads and Maritime Services	Trunk road access, advertising signage, traffic generating developments
Sydney Water Corporation	Potable water, trade waste, heritage (Alexandra Canal), air rights, SWSOOS
Sydney Ports Corporation	Port Botany/airport interface issues
Ausgrid	Electrical supply – network issues on-site/off-site
JUHI	Pipeline protection – hydrant installation and pipeline
Airport Link Company	New southern railway tunnel protection
APA Group	Moomba Gas pipeline protection
Department of Sustainability, Environment, Water, Population and Communities	Heritage matters

4.0 Consistency with state environmental planning policies, zones and Section 117 directions

4.1 Consistency with state environmental planning policies

Table E3 State environmental planning policies

State environmental planning policy (SEPP)	Relevance / consistency
No 1 – Development Standards	<p>The purpose of SEPP No. 1 is to provide more flexibility to development standards. The SEPP allows an authority to approve a non-complying development proposal provided that they can show that the set standard is unreasonable or unnecessary.</p> <p>Sydney Airport has a comprehensive development assessment process pursuant to the aims and objectives of the Airports Act 1996.</p>
No 4 – Development Without Consent and Miscellaneous Exempt and Complying Development	<p>The purpose of SEPP No. 4 is to provide a planning framework for small scale developments with minimal environmental effect and community impact.</p> <p>Sydney Airport has a comprehensive development assessment process pursuant to the aims and objectives of the Airports Act 1996.</p>
No 19 – Urban Bushland	<p>The aim of this SEPP is to protect and preserve bushland in urban areas. The SEPP applies to the local government areas (LGAs) of Botany Bay and Marrickville. This SEPP applies to Wolli Creek Regional Park located within Rockdale LGA and runs from Cooks River approximately 1 km from Sydney Airport. The provisions of this SEPP do not specifically apply to the airport. However, as the relevant LGAs are identified as land to which the SEPP applies, it has been considered.</p>
No 22 – Shops and Commercial Premises	<p>SEPP No. 22 permits a change of non-conforming (commercial) use within a business zone, from one kind of commercial premises to another kind of commercial premises or shop, provided that that change will incur only minor (if any) environmental impact within that zone and on surrounding uses. Any change of use is handled through Sydney Airport's internal development assessment process and may also require airport building controller approval.</p>

No 33 – Hazardous and Offensive Development	<p>SEPP 33 aims to identify potentially hazardous or offensive development and, in determining whether a development is hazardous or offensive industry, requires measures to be employed to reduce the impact of such development.</p> <p>Any proposed development of a hazardous or offensive nature on Sydney Airport requires development consent. Supporting information may include a hazard analysis prepared in accordance with relevant requirements.</p>
No. 55 – Remediation of Land	<p>The objectives of SEPP 55 include the remediation of contaminated land for the purpose of reducing the risk to human health or another aspect of the environment. Under the SEPP, a consent authority must not grant consent to a development unless it has considered whether the land is contaminated and whether it is suitable, or can be made suitable, for the proposed use.</p> <p>Sydney Airport has legislative requirements and internal processes to manage contaminated sites to achieve objectives similar to the aims and objectives of SEPP 55. These objectives are documented in Sydney Airport Environment Strategy 2013 - 2018.</p>
No 64 – Advertising and Signage	<p>SEPP 64 aims to ensure outdoor advertising is compatible with the desired amenity and visual character of an area, provides effective communication in suitable location, and is of high quality design and finish.</p> <p>Consistent with the aims of SEPP 64, Sydney Airport considers issues of road safety, amenity, character and finish when assessing proposals for advertisements and signage within the airport.</p>
No 71 – Coastal Protection	<p>The aims of SEPP 71 is to ensure that development in the NSW coastal zone is appropriate and suitably located, to ensure that there is a consistent and strategic approach to coastal planning and management, and to ensure there is a clear development assessment framework for the coastal zone.</p> <p>The Master Plan provides for improved public access in the area of Commonwealth Beach (Kyeemagh) which is consistent with the aims of this SEPP. Any future development in this area would also be cognisant of the need to ensure protection of the visual amenity and beach environment. The SEPP outlines development controls for the disposal of effluent and stormwater and public access to areas covered by this SEPP.</p>
Major Development 2005	<p>This SEPP applies to state significant sites, as described in Schedule 3 of the SEPP, and transitional Part 3A projects as described in Schedule 6A of the Environmental Planning and Assessment Act 1979. It is noted that Part 3A only continues to apply to projects that were approved prior to 1 October 2011 or undetermined project and concept plan applications where director general requirements were issued before this date. The major development SEPP would therefore only apply where there are any existing Part 3A approvals affected by the transitional provisions.</p>
State and Regional Development 2011	<p>This SEPP identifies development to which the state significant development assessment and approvals pathway (under Part 4 of the EP&A Act) applies and relates to development deemed to be state significant and critical state significant infrastructure.</p> <p>This SEPP replaces SEPP (Major Development) 2005 to facilitate the application of assessment processes that apply to state significant development and state significant infrastructure not affected by commonwealth development approval requirements.</p>

Infrastructure 2007	<p>The aim of the infrastructure SEPP is to facilitate development of a range of infrastructure works in NSW. The SEPP establishes a consistent planning regime for infrastructure projects and the provision of services across NSW, along with providing for consultation with relevant public authorities during the assessment process. The SEPP supports greater flexibility in the location of infrastructure and service facilities along with improved regulatory certainty and efficiency.</p> <p>The commencement of infrastructure SEPP repealed a number of SEPPs that would have otherwise applied to the airport site. The provisions of the applicable repealed SEPPs have been subsumed in the infrastructure SEPP, including:</p> <ul style="list-style-type: none"> • SEPP No. 11 – Traffic Generating Developments • SEPP No. 31 – Sydney (Kingsford Smith) Airport • SEPP No. 35 – Maintenance Dredging of Tidal Waterways • SEPP No. 43 – New Southern Railway <p>In addition, the infrastructure SEPP was amended in 2011 in accordance with the state and regional development SEPP to facilitate the introduction of a new approvals pathway applicable to development classified as state significant development and state significant infrastructure (refer to SEPP State and Regional Development above). The Master Plan is consistent with the provisions of the infrastructure SEPP insofar as the Master Plan requires both an environmental assessment and accountability regime in requiring consent for all works undertaken on the airport site.</p>
Temporary Structures and Places of Public Entertainment 2007	<p>This SEPP provides for the erection of temporary structures and the use of places for public entertainment while protecting public safety and local amenity. The SEPP supports the transfer of the regulation of places of public entertainment and temporary structures from the Local Government Act 1993 to the EP&A Act. The Master Plan considers this SEPP and has included temporary structures as a use that is permitted with consent in specified land use zones.</p>
Sydney Regional Environmental Plan No. 33 – Cooks Cove	<p>As of 1 July 2009, Regional Environmental Plans (REPs) are no longer part of the hierarchy of planning instruments in NSW and are now deemed as SEPPs. Cooks Cove REP is therefore deemed to be a SEPP.</p> <p>Cooks Cove is a 100 hectare site in Arncliffe, located to the west of the airport site. Development proposed for the site is largely consistent with adjacent airport operations and involves the relocation of the Kogarah Golf Club to the south of the site, urban development comprising a 21 hectare trade and technology centre and 80 hectares of open space. As part of the project, new and upgraded sporting fields.</p> <p>A key objective of the Cooks Cove REP is to capitalise on the physical proximity of Cooks Cove to the airport to create trade-focussed development. The REP establishes zoning and development controls to facilitate development within the Cooks Cove site. The REP provides opportunities to locate employment generating activities in the area, designates public and private open space, improves foreshore access and provides protection for the existing wetlands. Airport operations have been considered in the formulation of the SREP.</p>
Port Botany SEPP 2013 (Proposed)	<p>The proposed SEPP is to provide a revised planning framework within which the private operator (under a lease agreement with the NSW Government) will function. The revised planning framework is to rationalise existing controls and allow for efficient functioning of land at Port Botany, including waterfront / wharf areas, for port purposes and ensure ongoing integrity of the shipping channel to support Port operations.</p> <p>The proposed SEPP applies to land and water areas that are adjacent to Sydney Airport. Given the close proximity to Sydney Airport, the proposed SEPP and any other-port related relevant Guidelines must have regard to the need to ensure future development or other activities proceed in a manner that does not compromise aviation safety.</p> <p>The proposed SEPP is currently being assessed by the NSW Department of Planning and Infrastructure.</p>

4.2 Consistency of Master Plan's zones with local environmental plans

4.2.1 Introduction

Local environmental plans (LEPs) are prepared under Part 3 of the NSW Environmental Planning and Assessment Act 1979 (EP&A Act) and provide the local planning provisions and development controls for a local government area (LGA). The Sydney Airport site is located within the Botany Bay, Rockdale and Marrickville LGAs (see **Figure 11.2** in Chapter 11). The applicable LEPs and the relevant associated provisions under each are outlined in this appendix, together with an assessment of the consistency of the Master Plan's land use zones with the relevant provisions.

4.2.2 Definition of development on Sydney Airport

In relation to Sydney Airport operations and development, an undertaking for the purpose of air transport is defined under Marrickville Local Environmental Plan 2011 (Marrickville LEP), Rockdale Local Environmental Plan 2011 (Rockdale LEP) and Botany Bay Local Environmental Plan 2013 (Botany Bay LEP) as either an 'airport' or 'public utility undertaking'.

Definitions contained within Botany Bay, Marrickville and Rockdale LEPs that are related to airports and airport associated uses are as follows:

"Air transport facility means an airport or a heliport that is not part of an airport, and includes associated communication and air traffic control facilities or structures."

"Airport means a place that is used for the landing, taking off, parking, maintenance or repair of aeroplanes, and includes associated buildings, installations, facilities and movement areas and any heliport that is part of the airport. Airports are a type of air transport facility."

"Depot means a building or place used for the storage (but not sale or hire) of plant, machinery or other goods (that support the operations of an existing undertaking) when not required for use, but does not include a farm building."

"Freight transport facility means a facility used principally for the bulk handling of goods for transport by road, rail, air or sea, including any facility for the loading and unloading of vehicles, aircraft, vessels or containers used to transport those goods and for the parking, holding, servicing or repair of those vehicles, aircraft or vessels or for the engines or carriages involved."

"Passenger transport facility means a building or place used for the assembly or dispersal of passengers by any form of transport, including facilities required for parking, manoeuvring, storage or routine servicing of any vehicle that uses the building or place."

"Public utility undertaking means any of the following undertakings carried on or permitted to be carried on by or by authority of any government department or under the authority of or in pursuance of any commonwealth or state act:

- (a) Railway, road transport, water transport, air transport, wharf or river undertakings,*
- (b) Undertakings for the supply of water, hydraulic power, electricity or gas or the provision of sewerage or drainage services,*
- (c) And a reference to a person carrying on a public utility undertaking includes a reference to a council, electricity supply authority, government department, corporation, firm or authority carrying on the undertaking"*

4.2.3 City of Botany Bay

The relevant zoning provisions of Botany Bay Local Environmental Plan 2013 (Botany Bay LEP), as they relate to and its land use zones, are detailed below.

4.2.3.1 Botany Bay Local Environmental Plan 2013

The relevant zoning provisions of Botany Bay LEP as they relate to Sydney Airport and its land use zones, are described below.

Zoning of Sydney Airport land under Botany Bay LEP

SP2 Infrastructure (Airport)

The airport site is zoned SP2 Infrastructure (Airport) under the Botany Bay LEP, specifically zoning the site for airport use (refer to **Figure 11.2** in Chapter 11). The objective of the SP2 Infrastructure zone is 'to provide for infrastructure and related uses and to prevent development that is not compatible with or that may detract from the provision of infrastructure'. Environmental protection works in this zone are permitted without consent. Land uses permitted with consent in this zone include development for the airport or development ordinarily incidental or ancillary to development for the purpose of an airport.

The Master Plan has divided this portion of the land into the following separate zones to accurately reflect on-site activities. These zones include:

- AD1 – Aviation Activities and Aviation Support Facilities
- AD2 – Airport Terminal and Support Services

- AD3 – Airport Logistics and Support
- AD4 – Utilities Reservation
- AD5 – Aviation Reservation
- BD1 – Business Development
- BD2 – Enviro-Business Park
- EC1 – Environmental Conservation

Each zone provides for specific types of land uses related to airport operations and other development that is considered ancillary or incidental to airport operations. The aviation related land uses are consistent with the SP2 Infrastructure (Airport) zoning under Botany Bay LEP. The business, industrial and commercial land uses that are permissible with consent under the Master Plan are consistent with the SP2 Infrastructure (Airport) zoning provisions under Botany Bay LEP where a contemporary view is taken of what the purpose of an 'airport' is and the complementary land uses that support it.

SP2 Infrastructure (Railway)

Adjacent to the SP2 Infrastructure (Airport) zone along the northern and eastern perimeter of the airport is the SP2 Infrastructure (Railway) zone under the Botany Bay LEP. This rail network services Port Botany and provides a buffer between the airport and adjacent industrial and business development zones. The objective of this zone is to 'provide for infrastructure and related uses and to prevent development that is not compatible with or that may detract from the provision of infrastructure'. Environmental protection works are permitted without consent in this zone. Land uses permitted with consent in this zone include development for the purpose of a railway or development ordinarily incidental or ancillary to development for the purpose of a railway.

Zoning adjacent to the northern perimeter of the airport is AD1 (Aviation Activity and Aviation Support Facilities), AD2 (Airport Terminal and Support Services), and AD3 (Airport Logistics and Support) under the Master Plan. Zoning adjacent to the eastern perimeter is AD1 (Aviation Activity and Aviation Support Facilities), BD1 (Business Development) and EC1 (Environmental Conservation) under the Master Plan. The zones specified under the Master Plan will not conflict with or prevent the efficient operations of SP2 Infrastructure (Railway) zone.

IN1 General Industrial

A large parcel of land is located to the north of the airport site and is generally defined by Coward Street and Qantas Drive. This land is zoned IN1 General Industrial under the Botany Bay LEP. The objectives of this zone are to 'provide a wide range of industrial and warehouse land uses, encourage employment opportunities, minimise any adverse effect of industry on other land uses and to support and protect industrial land for industrial uses'.

A wide range of non-residential land uses are permitted with consent in the IN1 General Industrial zone.

This zone provides a transition to more sensitive land uses (for example, land zoned for residential uses) further north and east. In addition, the IN1 zone adjoins land zoned SP2 Infrastructure (Railway) under the Botany Bay LEP to the south, which provides a transition zone to the aviation activities located in the north of the airport site.

Land zoned AD1 (Aviation Activity and Aviation Support Facilities) and AD3 (Airport Logistics and Support) zones under the Master Plan adjoins land within the IN1 zone under the Botany Bay LEP. Collectively, these zones comprise a number of complementary land uses, ensuring that the zones will contribute towards an aviation-related commercial/light industrial hub.

B5 Business Development

Land zoned B5 Business Development is located to the north-east of the airport site and is contiguous with the airport site as far south as General Holmes Drive. In addition, there is a small parcel of land zoned B5 to the east of the airport site, adjacent to Botany Road. A portion of the railway that adjoins the northern boundary of the airport is also zoned B5. The objective of this zone is 'to enable a mix of business and warehouse uses, and bulky goods premises that require a large floor area, in locations that are close to, and that support the viability of, centres'.

The Master Plan designates three separate zones within the area adjacent to B5 zoned land, those being AD1 (Aviation Activity and Aviation Support Facilities), AD2 (Airport Terminal and Support Services), AD3 (Airport Logistics and Support). Uses that are permissible with consent under these zones comprise aviation-related activities, including aviation support facilities, passenger transport terminals and support services as well as a business development. These uses are considered to be consistent with the objectives and permissible uses within the B5 zone.

R2 Low Density Residential

Land zoned R2 Low Density Residential is located to the east of General Holmes Drive and adjoining the Mill Pond and the Sydney Airport landholding in this area. A portion of this residential land is identified as a heritage conservation area on the Botany Bay LEP Heritage Map. The primary objective of the R2 zone is 'to provide for the housing needs

of the community within a low density residential environment' and 'to enable other land uses that provide facilities or services to meet the day to day needs of residents. An expansive area of residential zoned land (R2 Low Density and R3 Medium Density) is located east of Botany Road, adjoining areas zoned for a range of business, commercial, retail and community uses (that is, B1 Neighbourhood Centre, B2 Local Centre, B4 Mixed Use and B7 Business Park).

Land zoned RE1 Public Recreation and Foreshore Road to the south east of the airport, provides a buffer between the airport site and the residential lands to the south east. This land has been zoned by council as low density residential in recognition of the potential for land use conflicts.

Airport land adjoining the R2 zone is zoned EC1 (Environmental Conservation) under the Master Plan. Land zoned BD1 (Business development) under the Master Plan is also located in proximity to land within the R2 Low Density Residential zone. The EC1 zone provides a buffer between residential dwellings to the south east and airport operations.

Land within the airport site zoned BD1 (Business Development) is separated by the majority of the airport site by land zoned SP2 Classified Road (Botany Road) under the Botany Bay LEP. The BD1 zone is not considered to be inconsistent with surrounding R2 zoned land given the presence of other business/commercial/retail type uses which are mostly interspersed throughout residential areas within the LGA. In addition, BD1 zoned land within the north-eastern portion of the airport site is separated from residential zoning by IN2 (Industrial) and B4 (Mixed Use) zoning, providing a transition between these uses.

R3 Medium Density Residential

Land zoned R3 Medium Density Residential under Botany Bay LEP does not directly adjoin the airport site but is located in proximity of the site to the north and east. In accordance with the Botany Bay LEP, council will consider the suitability of higher density development within the R3 zone in relation to other uses, in particular airport operations, to minimise the potential for conflicting land uses. Zones under the Master Plan located in closest proximity to R3 zoned areas include zones BD1 (Business Development) and EC1 (Environmental Conservation), which are compatible with the purpose of the R3 zone.

B7 Business Park

Land zoned B7 Business Park is situated to the north of the airport site and adjoins the airport to the east. The objectives of the B7 zone are to provide a range of office and light industrial uses, to encourage employment opportunities, and to provide facilities and services to service workers in the area. The B7 zone also aims to ensure that uses within this zone are commensurate with the capacity of the surrounding road network, particularly given the location of the airport to the south. Various different uses are permissible with consent in this zone, including business premises, community facilities, dwelling houses, light industries and recreation areas. Passenger transport facilities are also permissible within this zone and home occupations are permissible without consent.

Land zoned EC1 (Environmental Conservation), situated to the east of the airport, adjoins the B7 zone to the north and is generally bounded by General Holmes Drive and Bay Street. As noted above, the EC1 zone in this portion of the site provides a buffer to airport operations in the west and minimises the potential for land use conflicts between land zoned under the Botany Bay LEP and the Master Plan. The EC1 zone is therefore considered to be compatible with the B7 Business Park zone.

4.2.4 Marrickville Council

4.2.4.1 Marrickville Local Environmental Plan 2011

The relevant zoning provisions of Marrickville Local Environmental Plan 2011 (Marrickville LEP), as they relate to Sydney Airport and its land use zones, are detailed below.

Zoning of Sydney Airport land under Marrickville LEP

Zone SP2 Infrastructure (Air Transport Facilities)

A portion of the northern sector of the airport site, around Alexandra Canal, is located within the Marrickville LGA. Sydney Airport is zoned SP2 Infrastructure (Air Transport Facilities) under Marrickville LEP. The Master Plan has zoned this land for four (4) separate purposes. These are:

- AD1 – Aviation Activity and Aviation Support Facilities
- AD2 – Airport Terminal and Support Services
- AD3 – Airport Logistics and Support
- AD4 – Utilities Reservation

The objective of the SP2 (Infrastructure) zone is 'to provide for infrastructure and related uses, to prevent development that is not compatible with or that may detract from the provision of infrastructure and to protect and provide for land used for community purposes'.

Under the SP2 Infrastructure (Air Transport Facilities) zone, home occupations are permitted without consent. Roads and any development that is ordinarily incidental or ancillary to development for the purpose of air transport facilities is permitted with consent in the SP2 Infrastructure (Air Transport Facilities zone). All other land uses are prohibited in this zone.

The Master Plan proposes to zone this land as AD1 (Aviation Activity and Aviation Support Facilities), AD2 (Airport Terminal and Support Services) and AD3 (Airport Logistics and Support) which permit uses that are fundamental to airport operations.

Zone IN1 General Industrial

Sydney Airport owns a freehold parcel of land north of Airport Drive and Alexandra Canal, which is within the airport boundary, as depicted in **Figure 11.2** in Chapter 11. This freehold land does not fall within the Commonwealth's landholding of the airport. This land is therefore governed under the provisions of the NSW EP&A Act and Marrickville LEP and is zoned IN1 General Industrial under Marrickville LEP.

The purpose of the IN1 zone is to provide for industrial and warehouse uses, to encourage employment, minimise adverse effect of industry on other land uses, and to protect industrial land in proximity to Sydney Airport and Port Botany. Under the Master Plan, this land is zoned AD3 (Airport Logistics and Support) which permits uses that support airport operations.

Types of development permissible with consent in the IN1 zone include (but are not limited to) dwelling houses, general industries, light industries, neighbourhood shops, and takeaway and food and drink premises. While permissible with consent in the IN1 zone, development consent in relation to dwelling houses only applies to alterations or additions to existing dwellings. It is also noted that a number of airport related uses, such as air transport facilities, airstrips and passenger transport facilities, are prohibited in the IN1 zone.

Existing development within the IN1 zone comprises a number of uses prohibited under Marrickville LEP, including animal boarding or training establishments, commercial premises, child care centres, and air transport facilities. Aviation-related uses within the AD3 zone would not unreasonably intensify the use of this area beyond what currently exists. In addition, there are no sensitive land uses adjoining or in proximity to this portion of the airport site.

A portion of the IN1 zoned land is owned by Sydney Airport but is not zoned under the Master Plan and is not subject to the requirements of the Airports Act or the Master Plan.

RE1 Public Recreation

Land zoned RE1 Public Recreation is located adjacent to the airport site, to the north of Alexandra Canal. A small portion of this land is located adjacent to land zoned AD1 (Aviation Activity and Aviation Support Facilities) and AD2 (Airport Terminal and Support Services) under the Master Plan. The objective of the RE1 zone is to enable land to be used for public open space or recreational purposes, provide a range of recreational settings and activities, community facilities, services and compatible land uses, and to protect and enhance the natural environment for recreational purposes.

The location of the RE1 zone on the opposite side of Alexandra Canal, coupled with the purpose of the zone, minimises the potential for land use conflicts between this land and the airport site. In addition, RE1 zoned land provides a buffer between residential development to the north and airport operations.

A portion of the RE1 zoned land is owned by Sydney Airport but is not zoned under the Master Plan and is not subject to the Master Plan requirements. Sydney Airport also owns a small portion of land adjacent to the RE1 zone, along Old Street in Tempe, which currently accommodates a water tank. This land is zoned AD4 (Utilities Reservation) under the Master Plan, which permits uses that are consistent with the current use of this land.

Zone SP2 Infrastructure (Rail Infrastructure Facilities, Air Transport Facilities and Stormwater Management Systems)

Land within the Marrickville portion of the site is zoned SP2 Infrastructure and includes land for rail infrastructure facilities, air transport facilities and stormwater management systems. The objective of the SP2 Infrastructure zone is to 'provide for infrastructure and related uses, prevent development that is not compatible with or that may detract from the provision of infrastructure and to protect and provide for land used for community purposes'.

Alexandra Canal to the north of the airport is zoned SP2 Infrastructure for the purpose of stormwater management systems. Port Botany freight line and Airport Drive are zoned SP2 Infrastructure (Rail Infrastructure Facilities and Air Transport Facilities respectively). This zoning supports airport operations and is therefore consistent with the AD2 zone under the Master Plan.

Acoustic and height considerations

Marrickville LEP contains provisions relating to development on land that is near the airport, has an ANEF contour of 20 or greater and where the consent authority considers the land to be affected by aircraft related noise. This provision places specific controls on development within these areas and requires the consent authority to consider the following:

- Whether the development will result in an increase in the number of dwellings or people affected by aircraft noise

- The location of the development in relation to the criteria contained in Australian Standard AS 2021-2000, Acoustics – Aircraft Noise Intrusion – Building Siting and Construction
- Satisfaction that the development will meet the indoor design sound levels in relation to the criteria provided in Australian Standard AS 2021-2000, Acoustics – Aircraft noise intrusion – Building siting and construction

Marrickville LEP contains provisions relating to the protection of airspace operations to direct the consent authority when assessing development applications to have regard to whether the proposed development will penetrate the limitation or operations surface. Development consent must not be granted if the consent authority and commonwealth body are satisfied that the proposed development will penetrate the limitation or operations surface.

4.2.5 Rockdale Local Environmental Plan 2011

The relevant zoning provisions of Rockdale LEP, as they relate to Sydney Airport and its land use zones, are detailed below.

Zoning of Sydney Airport land under Rockdale LEP

Zone SP2 Infrastructure (Airport)

The portion of the airport site located within the Rockdale LGA is zoned SP2 Infrastructure (Airport), which permits development for airport purposes. Development that is ordinarily ancillary to airport purposes is permissible with consent in this zone. The Master Plan has zoned this land for five (5) separate purposes. These are:

- AD1 – Aviation Activities and Aviation Support Facilities
- AD2 – Airport Terminal and Support Services
- AD3 - Airport Logistics and Support
- BD1 – Business Development
- BD2 – Enviro-Business Park

The provisions of the Rockdale LEP that relate to land adjoining Sydney Airport are discussed below.

Zone RE1 Public Recreation

Land zoned RE1 Public Recreation under Rockdale LEP is located along the foreshore of the Cooks River, adjacent to the airport to the west. The objectives of this zone are to enable land to be used for public open space for a range of recreational purposes and to protect and enhance the natural environment for recreation purposes. The types of uses that are permissible in the zone are recreational related uses, which includes community facilities and child care centres.

The western sector of the airport site adjacent to RE1 zoned land is zoned AD1 (Aviation Activity and Aviation Support Facilities) and BD1 (Business Development) under the Master Plan.

The separation achieved by the Cooks River ensures that the proposed zonings will not conflict with the public recreation areas. Amenity impacts on existing open space areas will remain unchanged.

Zone R2 Low Density Residential

Land zoned R2 Low Density Residential is located to the south-west of the airport site, with a band of open space (zoned RE1 Public Recreation) separating this residential zoning and the Cooks River.

Land use zones within the airport that are closest to R2 zoned land are AD1 (Aviation Activity and Aviation Support Facilities) and BD1 (Business Development). The physical barrier created by the Cooks River provides a buffer between residential zoning in the west and airport activities in the east.

Clause 6.3 Development in areas subject to aircraft noise

The provisions of Clause 6.3 of Rockdale LEP place specific controls on developing land within areas directly affected by aircraft noise. That is, land in proximity to the airport site and within an ANEF contour of 20 or greater. The provision directs council to ensure the guidelines provided in Australian Standard AS 2021-2000 – Acoustics – Aircraft Noise Intrusion – Building Siting and Construction are incorporated in the design and construction of buildings that are affected by noise and vibration associated with airport operations.

4.2.6 Commercial and retail development in areas adjacent to Sydney Airport

As noted in section 11.5.6, for the first five years of the planning period, the Airports Act requires the Master Plan to include an analysis of how the proposed developments in the Master Plan fit within the planning schemes for commercial and retail development in the area that is adjacent to the airport.

Chapter 10 of the Master Plan (Commercial Development Plan) describes the type of commercial and retail development that may occur on the airport site over the planning period for the Master Plan, including the first five years.

Sydney Airport has a strong track record of delivering appropriate commercial activities/developments that enhance the passenger and other airport user needs. Sydney Airport's commercial planning activities comprise only 5.8% of allocated land. The majority of proposed future commercial development is expected to involve hotel accommodation for passengers, offices for aviation related businesses and general retail for passengers, their meeters and greeters, staff and related aviation service providers.

Therefore, having regard to the commercial and retail developments that are permitted by the various LEPs operating in areas adjacent to the airport (see section 4.2 above), and given the type of commercial and retail development Sydney Airport anticipates will occur on the airport site over the planning period (including the next five years), the proposed on-airport developments fit within the planning schemes for areas adjacent to the airport.

4.3 Consistency with relevant Section 117 directions

Table E4 Relevant Section 117 directions

Section 117 direction	Relevance/consistency
1. Employment and resources	
1.1 Business and industrial zones	<p>The objectives of this direction are to:</p> <ul style="list-style-type: none"> • Encourage employment growth in suitable locations • Protect employment land in business and industrial zones • Support the viability of identified strategic centres <p>The objectives of this direction are consistent with Sydney Airport's strategic direction for the airport to provide significant employment lands as presented in the Master Plan. The State Government has indicated the need to support and strengthen the nation's economic gateways (Sydney Airport and Port Botany) and this intent has been incorporated into the Master Plan. Accordingly, the Master Plan is generally consistent with this direction.</p>
1.2 Rural zones	Not relevant
1.3 Mining, petroleum production and extractive industries	Not relevant
1.4 Oyster aquaculture	Not relevant
1.5 Rural lands	Not relevant
2. Employment and heritage	
2.1 Environment protection zones	<p>The objective of this direction is to protect and conserve environmentally sensitive areas. Areas of the airport have been classified as environmentally sensitive and subsequently been acknowledged in Sydney Airport's Environment Strategy 2013 - 2018. Environmentally sensitive areas within the airport site are identified by EC1 (Environmental Conservation) zoning under the Master Plan. Within these zones, only land uses that are consistent with the environment protection standards applicable to the land are permitted. Accordingly, the Master Plan is generally consistent with this direction.</p>
2.2 Coastal protection	Not relevant
2.3 Heritage conservation	<p>The objective of this direction is to conserve items, areas, objects and places of environmental heritage significance and indigenous heritage significance. There are various local and state heritage items located on the airport site. Heritage conservation is covered in the environment (in Chapter 13). Sydney Airport's Environment Strategy 2013 - 2018 identifies the relevant heritage legislation and standards that apply to the airport. Land within the airport site is governed by the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). Sydney Airport is therefore required to comply with the provisions relating to heritage under the EPBC Act. Accordingly, the Master Plan is generally consistent with this direction.</p>
2.4 Recreation vehicle areas	Not relevant
3. Housing, infrastructure and urban development	
3.1 Residential zones	Not relevant
3.2 Caravan parks and manufactured home estates	Not relevant
3.3 Home occupations	Not relevant

3.4 Integrating land use and transport	<p>The objectives of this direction are to ensure that urban structures, building forms, land use locations, development designs, subdivision and street layouts achieve the following planning objectives:</p> <ul style="list-style-type: none"> • Improving access to housing, jobs and services by walking, cycling and public transport • Increasing the choice of available transport and reducing dependence on cars • Reducing travel demand including the number of trips generated by development and distances • Supporting efficient and viable operation of public transport services, and providing for the efficient movement of freight <p>Sydney Airport is serviced by a public bus, rail and taxi services and as such is consistent with the objectives of this direction. The airport site integrates land use and transport effectively and is serviced by public transport. The site also provides space and services required for private transport modes. In addition, through the strategic co-location of facilities and services within the site, the needs of airport patrons and the local workforce are adequately catered for, thereby reducing special-purpose trip generation. Accordingly, the Master Plan is generally consistent with this direction.</p>
3.5 Development near licensed aerodromes	<p>The objectives of this direction are:</p> <ul style="list-style-type: none"> • To ensure the effective and safe operation of aerodromes <ul style="list-style-type: none"> • To ensure that their operation is not compromised by development that constitutes an obstruction, hazard or potential hazard to aircraft flying in the vicinity • To ensure development for residential purposes or human occupation, if situated on land within the ANEF contours of between 20 and 25, incorporates appropriate mitigation measures so that the development is not adversely affected by aircraft noise <p>This direction aims for the effective and safe operation of aerodromes and for appropriate development in the vicinity of aerodromes.</p> <p>Sydney Airport is required to apply the Australian Standard 2021-2000 with respect to internal noise levels of proposed developments and does so as required. Accordingly, the Master Plan is generally consistent with this direction.</p>
3.6 Shooting ranges	Not relevant
4. Hazard and risk	
4.1 Acid sulphate soils	<p>The objective of this direction is to avoid significant environmental impacts from the use of land that has a probability of containing acid sulphate soils (ASS). The Department of Planning and Infrastructure's ASS risk maps show that there is a risk of ASS adjacent to the airport. The intent of this direction is to ensure that intensification of land uses does not occur on land with a probability of containing ASS. As most of Sydney Airport's land has been subject to extensive modification, such as land-filling and terrain flattening, the land is generally classified as 'disturbed terrain' and the provisions of this direction do not directly apply.</p> <p>Sydney Airport has a contaminated sites strategy that has been documented in the Sydney Airport Environment Strategy 2013 – 2018. Sydney Airport ASS is identified as an environmental management issue, which requires assessment as part of new developments and earthworks.</p>
4.2 Mine subsidence and unstable land	Not relevant.
4.3 Flood prone land	<p>The objectives of this direction are:</p> <ul style="list-style-type: none"> • To ensure that development of flood prone land is consistent with the NSW Government's flood prone land policy and the principles of the Floodplain Development Manual 2005 • To ensure that the provisions of an LEP on flood prone land is commensurate with flood hazard and includes consideration of the potential flood impacts both on and off the subject land <p>The airport site sits adjacent to the Cooks River and is identified as a flood planning area in accordance with Rockdale Council's flood planning map. The airport currently has flood planning measures in place to minimise and manage the impacts of flooding on airport operations. Accordingly, the Master Plan is generally consistent with this direction.</p>
4.4 Planning for bushfire protection	Not relevant.
5. Regional planning	
5.1 Implementation of regional strategies	Not relevant.
5.2 Sydney drinking water catchment	Not relevant.
5.3 Farmland of state and regional significance on the NSW Far North Coast	Not relevant.

5.4 Commercial and retail development along the Pacific Highway	Not relevant.
5.8 Second Sydney Airport Badgerys Creek	The objective of this direction is to avoid incompatible development in the vicinity of any future second Sydney Airport at Badgerys Creek. This direction gives guidance to local governments seeking to rezone land in areas surrounding the proposed second Sydney Airport site. This direction does not apply specifically to Sydney Airport.
6. Local plan making	
6.1 Approval and referral requirements	The objective of this direction is to ensure that LEP provisions encourage the efficient and appropriate assessment of development. This direction specifically applies to all councils in their preparation of a draft LEP and aims to minimise the inclusion of provisions that require the concurrence, consultation or referral of development applications to a minister or public authority. Notwithstanding, the national significance of Sydney Airport requires ongoing consultation and concurrence with the minister and public authorities to ensure that obstacle clearance areas are sufficient and that aviation practices are not compromised.
6.2 Reserving land for public purposes	Not relevant.
6.3 Site specific provisions	The objective of this direction is to discourage unnecessarily restrictive site specific planning controls. This direction is not specifically applicable to the operations of the airport or airport development proposals as the site is not strictly subject to the provisions of any state environmental planning instruments. Rather, the airport is required to demonstrate consistency, where possible, with state planning legislation. In this regard, the Master Plan has not incorporated any unnecessary restrictive planning controls. However land has been appropriately zoned for operational requirements. Accordingly, the Master Plan is generally consistent with this direction.
7. Metropolitan planning	
7.1 Implementation of the metropolitan plan for Sydney 2036	<p>The objective of this direction is to give legal effect to the vision, transport and land use strategy, policies, outcomes and actions contained in the metropolitan plan. Planning authorities are therefore required to ensure that planning proposals achieve the overall intent of the metropolitan plan.</p> <p>The metropolitan plan is the NSW Government's long-term strategic plan to maintain Sydney's role in the global economy and to plan for growth and change within the Sydney metropolitan area over the 25 year forecast period.</p> <p>Sydney Airport is designated as a specialised centre under the metropolitan plan, which emphasises the importance of promoting the role of the airport within the metropolitan economy and the global economic corridor.</p> <p>Sydney Airport and Port Botany are significant in that they provide the economic gateway to Sydney and the nation. The key economic role of Sydney Airport through the provision of employment and business opportunities is therefore emphasised within the metropolitan plan.</p>

4.4 Metropolitan planning

4.4.1 Metropolitan Plan for Sydney 2036

The Metropolitan Plan for Sydney 2036 (metropolitan plan) is the NSW Government's long-term strategic plan to maintain Sydney's role in the global economy and to plan for growth and change within the Sydney region over a 25 year period to 2036. The metropolitan plan was developed in 2010 and supersedes the 2005 Metropolitan Strategy – City of Cities (Metropolitan Strategy). The metropolitan plan builds on the strengths of the metropolitan strategy, with a focus on optimising coordination between state and local government to meet the aims of the plan.

The metropolitan plan recognises Sydney Airport as a specialised centre, which means its important role in the metropolitan economy should be promoted. In particular, the globalisation of the economy has resulted in a shift in demand for the types of goods and services to be provided in and around the airport. The metropolitan plan also recognises Sydney Airport's significant location within Sydney's global economic corridor (GEC). Economic corridors play a critical role for the metropolitan economy and the GEC in particular is a key driver of Sydney's wealth generation and will continue to be into the future. The GEC extends from Sydney Airport and Port Botany in the south to Sydney's Central Business District (CBD), North Sydney and Macquarie Park in the north. Employment and economic activity are concentrated along this corridor.

Strengthening the role of the economic corridor has been targeted through infrastructure upgrades to improve connectivity and through local planning to identify suitable land uses along the corridor, particularly in proximity of the airport. While the metropolitan plan has a vision for 770,000 new dwellings throughout Sydney's subregions, it recognises that the specialised centres of Port Botany and Sydney Airport would not be appropriate locations for new residential development. In addition, as Sydney Airport handles half of Australia's international air freight, the metropolitan plan recognises the opportunity to convert existing residential areas in proximity to the airport into industrial areas to support nearby freight industry. This would require investigating the suitability of locations near the airport (in terms of noise) over the medium to long term.

The metropolitan plan recognises the significant growth in airport activity forecast over the next 25 years and growth in passenger movements from 32 million in 2007 to 79 million by 2029. In addition, Sydney Airport and environs has an employment capacity target of +22,000 to 2036. The M5 Motorway is identified as an important link to the Sydney Airport Port Botany area which, with increased traffic movements to and from the airport and between the airport and the CBD, is already operating near capacity. Capacity issues would therefore need to be addressed in order to cater to increased airport activity generated by increased passenger and employee movements.

The metropolitan plan identifies future directions for strategic centres and summarises future directions for Sydney Airport and examples of NSW Government support for optimising the role and operations of the airport as follows:

Future directions:

- *Maintain international aviation gateway function for freight and passengers*
- *Work with federal and local governments to manage the impacts of on airport non-aviation development proposals*
- *Manage the impacts of airport freight and passenger growth on transport systems*
- *Protect and enhance strategic employment lands*
- *To ensure long-term demand for aviation infrastructure is met, the Federal and NSW Governments are preparing an aviation strategic plan for the Sydney region. A joint study has been established to prepare the plan which will identify options and strategies to meet the aviation capacity needs of the Sydney region. The joint study will also consider land transport infrastructure around Kingsford Smith Airport and the future use of the Commonwealth-owned Badgerys Creek site formerly earmarked for a second Sydney Airport*

Examples of State Government support:

- *Airport and port access strategy*
- *Strategic bus corridors 21, 29*
- *Potential improved road link from M5 to airport and Port Botany*

Furthermore, draft subregional strategies were developed as part of the 2005 metropolitan strategy and remain a key planning tool for councils to implement the metropolitan plan at the local level. Due to its location within three local government areas, Sydney Airport is identified in two subregional strategies – the Draft East Subregional Strategy (covering Botany Bay) and the South Subregional Strategy (covering Marrickville and Rockdale).

4.4.2 Draft Metropolitan Strategy for Sydney 2031

Draft Metropolitan Strategy for Sydney 2031 (released March 2013) builds on Metropolitan Plan Sydney 2036, providing an updated strategy for the growth of Sydney. The draft strategy collaborates with other state plans including the NSW Long Term Transport Master Plan and State Infrastructure Strategy.

The draft strategy promotes five key urban outcomes for Sydney: balanced growth; a liveable city; productivity and prosperity; healthy and resilient environment; accessibility and connectivity. Six new subregions are proposed, with Sydney Airport located within part of Central Subregion and South Subregion.

Under the strategy, Sydney Airport remains as a specialised precinct and the international and national gateway to the global economic corridor (GEC). The airport is therefore a key piece of economic infrastructure for the growth of global Sydney.

To support the on-going airport function, the draft strategy identifies strategic requirements to improve access and transport linkages.

4.4.3 Subregional strategies

4.4.3.1 Draft East Subregional Strategy

The Draft East Subregional Strategy identifies the important role the East Subregion plays in the provision of transport infrastructure through Sydney Airport and Port Botany. The strategy outlines the significant employment opportunities and the transportation of passengers and freight, facilitating trade and cooperatively assisting to maintain Sydney's role as a global city. The key directions of the Draft East Subregional Strategy, as they relate to Sydney Airport, are described below.

Economic gateway

A key direction of the Draft East Subregional Strategy is to support and strengthen the nation's economic gateways through the protection of strategic employment lands in the area around Sydney Airport and Port Botany. The significance of Sydney Airport and Port Botany, and particularly their adjacency, is such that they provide the economic gateway to Sydney and the nation. The role of Sydney Airport within the GEC by providing employment and business opportunities will be strengthened through the Master Plan.

Retail centres

The Draft East Subregional Strategy identifies the need to support the future role of retail centres within the subregion, particularly given the potential expansion of retail development within Sydney Airport. Notwithstanding, the strategy identifies Sydney Airport and environs as a specialised centre through its provision of employment opportunities, and subregional and metropolitan services. While it is important to reinforce existing retail centres, retail services within the airport provide fundamental services for airport employees and passengers.

Public transport access

The Draft East Subregional Strategy asserts the importance of strengthening east-west public transport access for commuters and exploring opportunities to strengthen the movements between subregions and bordering growth centres, such as Green Square. Green Square contains significant transport infrastructure that links Sydney's CBD and western Sydney with the airport. This infrastructure, however, is currently underutilised.

Mascot industrial area

The Mascot industrial area is identified as being of strategic importance and should be retained for industrial purposes. This land is located north east of the airport and is zoned predominantly for airport-related business.

This land accommodates a significant amount of activity generated by the airport, such as freight and logistics. The importance of maintaining this land for airport-related purposes is emphasised, a direction that is in line with the Master Plan. Periphery land uses provide a compatible interface and an appropriate transition to aviation activities and aviation support facilities.

The 2012 Master Plan designates land for the purposes of aviation activities, business development, freight and logistics as well as interim industrial and commercial land uses adjoining the East Subregion. These will support, encourage and complement the strategic employment lands adjoining Sydney Airport as well as significantly contribute to job creation and target realisation over the planning period.

4.4.3.2 Draft South Subregional Strategy

Sydney Airport has a key role to play within Sydney's South Subregion, which is emphasised in the key directions and actions under the Draft South Subregional Strategy.

Employment lands

The first key direction for the South Subregion is to retain strategic employment lands, specifically the older industrial areas around the airport. This surrounding industrial land is considered to be key employment land as it has good access to the airport, existing rail infrastructure and connecting arterial roads. This land is also considered important for its provision of significant residential support services, light industry and the opportunity to accommodate more intensive employment land uses.

The Draft South Subregional Strategy identifies the portion of the Sydney Airport site within the Marrickville LGA as a significant employment lands precinct and as such has classified it Category 1 – Land to be Retained for Industrial Purposes, with its key functions being freight and logistics. A Category 1 classification does not prevent sites from being intensified in their use or redeveloped to meet current industrial requirements, creating additional employment and economic benefits. It ensures these sites continue to accommodate primarily industrial and related uses, within what is generally permitted under the land use zoning.

Employment growth at Sydney Airport and environs

The second key direction for the South Subregion is to plan for employment growth at Sydney Airport and environs, including Cooks Cove, Wolli Creek and Turrella by improving connections between these areas and the airport and to protect employment lands around Sydney Airport and Port Botany. The Draft South Subregional Strategy outlines that planning needs to focus on integrating the functions between commercial centres within the airport environs by ensuring good access to adjacent subregions.

Sydney Airport – specialised centre

The Draft South and East Subregional Strategies both identify Sydney Airport and environs as a specialised centre that plays a vital economic and employment role, generating metropolitan wide benefits. Sydney Airport and environs is linked by corridors with other strategic centres, such as the Sydney CBD. These corridors are generally highly concentrated areas of activity.

The Master Plan has designated land for the purposes of aviation activities, business development, freight and logistics as well as interim industrial and commercial land uses adjoining the east subregion. These areas will support, encourage and compliment the strategic employment lands adjoining Sydney Airport as well as contribute to job creation and target realisation over the planning period.

4.4.3.3 Summary

The Draft East and South Subregional Strategies both provide employment capacity targets for the airport and environs. The East Subregion is expected to accommodate 14,300 jobs and the portion of Sydney Airport located within Rockdale LGA is identified to accommodate 4,000 jobs, with a total of 18,300 jobs to be provided by Sydney Airport and environs between 2001 and 2031. Both the East and South Subregional Strategies outline the need for an effective working relationship between Sydney Airport and commonwealth, state and local governments in order to manage growth of aviation and non-aviation activities at Sydney Airport.

These draft strategies highlighted the significance of Sydney Airport's role in the economy and this was quantified in employment and gross state product terms. Approximately 60,000 people are employed directly servicing airport-related activities, with 11,000 working at the airport. The airport has a direct annual contribution of \$6.6 billion in gross state product and represents 6% of the state economy and 2% of the national economy.

In preparation of the Master Plan, the relevant key directions and actions of the Draft East Subregional Strategy and the Draft South Subregional Strategy have been identified and considered in relation to Sydney Airport to ensure that the Master Plan is generally consistent with the relevant components of the metropolitan plan. The metropolitan plan emphasises the significance of Sydney Airport, together with Port Botany, as being the economic gateways to the nation. It is therefore important to maintain employment lands that surround the airport.

The draft East Subregional Strategy's key directions focus on strengthening existing centres, improving infrastructure and protecting tourism in the area. Direction 1 aims to protect the employment lands in the vicinity of the airport/ Botany Bay. The Master Plan supports this direction through the appropriate allocation of land use zones, in particular the creation and allocation of zones that facilitate job creation, while not reducing employment areas. Direction 4 raises concerns in relation to the growth of out-of-centre retail at the expense of existing retail centres and notes that this could occur following growth in the airport's retail facilities. Furthermore, it is stated that non-aviation related commercial and retail facilities should not be permissible within the airport due to the impact on transport and surrounding centres.

The airport is serviced by public and private transport in the form of rail and bus lines and the M5 Motorway. Therefore access to retail facilities is not considered to be a constraint. The impact of additional retail uses at the airport on the viability of established centres would be considered at the development application stage. Additionally there are a range of land uses that would be provided to service the local (airport) workforce as opposed to focusing on patronage from further afield.

The key directions of the Draft South Subregional Strategy focus on developing employment and commerce while upgrading infrastructure in the region. Direction 1 encourages the growth of employment particularly light industry in close proximity to the airport and Botany Bay. Direction 2 aims to increase the number of jobs within the specialised centre incorporating the airport. These policies support the introduction of both the AD2 (Airport Terminal and Support Services) and BD1 (Business Development) zones in this section of the airport as they will implement the necessary land use controls to facilitate development for business purposes and thus generate employment. Additionally these

business areas will contribute to the growth of the employment hub centred on the airport / Botany Bay precinct in conjunction with the development of the light industrial area.

The Draft South Subregional Strategy identifies land in the Marrickville LGA abutting the northern perimeter of the airport for industrial uses associated with freight and logistics. Industrial zoning has been reflected in the Master Plan through zoning of the northern portion of the airport site as AD3 (Airport Logistics and Support) under the Master Plan. This zone facilitates freight logistics and other industrial and light industrial uses.

The Draft South Subregional Strategy notes that Kogarah may need to become a more distinctive specialised retail centre to distinguish itself from the larger retail offering available at Rockdale and Hurstville. This may, in turn, further distinguish Kogarah from the airport.

The Master Plan will provide the opportunity for the creation of economic precincts that will support, complement and encourage activity on adjoining and surrounding employment lands. These economic precincts will promote business activity and job generation and in this regard, are considered compatible with the metropolitan plan for Sydney and the relevant subregional strategies.

4.4.4 NSW Long Term Transport Master Plan

The NSW Long Term Transport Master Plan (LTTMP) was released in December 2012 and identifies strong growth to occur in numerous locations throughout metropolitan Sydney, including the Sydney Airport precinct. The LTTMP recognises the critical role of Sydney Airport as a gateway to Sydney that must be kept open and flowing. Addressing existing issues with traffic and access associated with Sydney Airport will be vital to ensuring the viability of aviation activities within Sydney Airport and surrounds, and enhancing its role as a specialised centre and part of Sydney's GEC.

The LTTMP recognises the corridor linking Sydney Airport to the CBD as one of Sydney's most important, providing access to Redfern, Central Station, Sydney CBD, and the East Hills Rail line which connects the airport to Central Station and the city loop. However, it also identifies existing capacity issues that are placing pressure on this corridor, which is only likely to grow with travel demand between Sydney Airport and the CBD anticipated to increase to 24,000 (morning peak) by 2031. With the implementation of the airport Master Plan, managing this growing demand will be essential to securing Sydney's economic growth and success.

In terms of traffic movements, Sydney Airport is already constrained as a result of increasing traffic capacities to and from the airport, particularly due to the mixing of traffic to and from the airport with through traffic to and from the CBD. Traffic congestion is also an issue along the Liverpool to Sydney Airport corridor, which will be exacerbated by high population growth forecast in Sydney's south-west. In addition, it is also anticipated that increasing capacities along the East Hills Rail Line will have further implications for the capacity of the rail system to cope with demand at Sydney Airport.

The LTTMP sets out long term plans to improve transport infrastructure and services to sustain growth in greater Sydney, including Sydney Airport and Port Botany. The LTTMP proposes to reduce congestion affecting Sydney Airport and Port Botany by targeting traffic pinch points, increasing rail services and investigating additional bus services to and from the airport, and improving the infrastructure that supports freight flows to and from Port Botany.

The Port Botany precinct, which includes Sydney Airport, is Sydney's second largest employment area after the CBD and is a key catalyst for surrounding employment activity and growth, with significant employment growth forecast to continue into the future. Improving connections to and from Sydney Airport and between key economic corridors is therefore vital to Sydney Airport's role within the GEC.

F

APPENDIX F

APPENDIX F COMPLIANCE WITH RELEVANT AIRPORT LEGISLATION

The following tables provide a checklist of relevant airport legislation and a reference to the relevant section of the Master Plan for compliance purposes.

Relevant statutory instrument	Requirement	Relevant section of Master Plan
AA s.70(1)	For each airport there must be a final master plan.	N/A
AA s.70(2)	The purposes of a final master plan for an airport are:	The entire Master Plan and appendices (including chapters 4, 11 and 15).
	(a) to establish the strategic direction for efficient and economic development at the airport over the planning period of the plan and	Chapter 11
	(b) to provide for the development of additional uses of the airport site and	Chapter 11
	(c) to indicate to the public the intended uses of the airport site and	Chapter 11
	(d) to reduce potential conflicts between uses of the airport site, and to ensure that uses of the airport site are compatible with the areas surrounding the airport and	Chapter 1, 7, 10, 11 and 13
	(e) to ensure that all operations at the airport are undertaken in accordance with relevant environmental legislation and standards and	Chapter 13 and the AES
	(f) to establish a framework for assessing compliance at the airport with relevant environmental legislation and standards and	Chapter 13 and AES (including Chapter 3)
	(g) to promote the continual improvement of environmental management at the airport.	Chapter 13 and the AES
AA s.71(1)	This section specifies the matters that must be set out in each draft or final master plan for an airport;	N/A
AA s.71(2)(a)	The master plan must specify Sydney Airport's development objectives for the airport.	The entire Master Plan and appendices (including Executive summary and Chapters 4 and 11)
AA s.71(2)(b)	The master plan must specify Sydney Airport's assessment of the future needs of civil aviation users of the airport, and other users of the airport, for services and facilities relating to the airport.	Chapters 3, 8 and 9
AA s.71(2)(c)	The master plan must specify Sydney Airport's intentions for land use and related development of the airport site, where the uses and developments embrace airside, landside, surface access and land planning/zoning aspects.	Chapters 4, 5, 6, 7, 8, 9, 10, 11
AA s.71(2)(d)	The master plan must specify an ANEF (in accordance with regulations, if any, made for the purpose of this paragraph) for the areas surrounding the airport.	Section 14.4
71(2)(da)	The master plan must specify flight paths (in accordance with regulations, if any, made for the purpose of this paragraph) at the airport.	Section 14.3
AA s.71(2)(e)	The master plan must specify Sydney Airport's plans, developed following consultations with the airlines that use the airport and local government bodies in the vicinity of the airport, for managing aircraft noise intrusion in areas forecast to be subject to exposure above the significant ANEF levels.	Section 14.2
AA s.71(2)(f)	The master plan must specify Sydney Airport's assessment of environmental issues that might reasonably be expected to be associated with the implementation of the plan.	Section 13.5
AA s.71(2)(g)	The master plan must specify Sydney Airport's plans for dealing with the environmental issues mentioned in paragraph (f) (including plans for ameliorating or preventing environmental impacts).	Section 13.6

Relevant statutory instrument	Requirement	Relevant section of Master Plan
AA s.71(2)(ga)	The master plan must specify, in relation to the first five years of the master plan, a plan for a ground transport system on the landside of the airport that details: (i) a road network plan and (ii) the facilities for moving people (employees, passengers and other airport users) and freight at the airport and (iii) the linkages between those facilities, the road network and public transport system at the airport and the road network and public transport system outside the airport and (iv) the arrangements for working with the state or local authorities or other bodies responsible for the road network and the public transport system and (v) the capacity of the ground transport system at the airport to support operations and other activities at the airport and (vi) the likely effect of the proposed developments in the master plan on the ground transport system and traffic flows at, and surrounding, the airport.	Chapter 7 and Appendix A
AA s.71(2)(gb)	The master plan must specify, in relation to the first five years of the master plan, detailed information on the proposed developments in the master plan that are to be used for: (i) commercial, community, office or retail purposes or (ii) for any other purpose that is not related to airport services.	Chapter 10
AA s.71(2)(gc)	The master plan must specify, in relation to the first five years of the master plan, the likely effect of the proposed developments in the master plan on: (ii) employment levels at the airport and (iii) the local and regional economy and community, including an analysis of how the proposed developments fit within the planning schemes for commercial and retail development in the area that is adjacent to the airport.	Chapter 2 (including Section 2.2), Chapter 11 (including Sections 11.4 to 11.6) and Appendix E
AA s.71(2)(h)	The master plan must specify an environment strategy that details: (i) Sydney Airport's objectives for the environmental management of the airport and (ii) the areas (if any) within the airport site which Sydney Airport, in consultation with state and federal conservation bodies, identifies as environmentally significant (iii) the sources of environmental impact associated with airport operations and (iv) the studies, reviews and monitoring to be carried out by Sydney Airport in connection with the environmental impact associated with airport operations and (v) the time frames for completion of those studies and reviews and for reporting on that monitoring; and (vi) the specific measures to be carried out by Sydney Airport for the purposes of preventing, controlling or reducing the environmental impact associated with airport operations and (vii) the time frames for completion of those specific measures and (viii) details of the consultations undertaken in preparing the strategy (including the outcome of the consultations) and (ix) any other matters that are prescribed in the regulations.	Chapter 13 and the AES
AA s.71(2)(j)	Such other matters(if any) as are specified in the regulations.	See below
AA s.71(6)	In specifying such an objective, the master plan must address: (a) the extent (if any) of consistency with planning schemes in force under New South Wales (NSW) law; and (b) if the draft or final master plan is not consistent with those planning schemes—the justification for the inconsistencies.	Chapter 11 (including Sections 11.4 to 11.6) and Appendix E
AA s.71(8)	In developing such plans, regard must be had to Australian Standard AS 2021–2000 (Acoustics – Aircraft Noise Intrusion – Building Siting and Construction) as in force or existing at that time.	Chapter 14

Relevant statutory instrument	Requirement	Relevant section of Master Plan
AA s.71A	<p>Draft or final master plan must identify proposed sensitive developments</p> <p>(1) A draft or final master plan must identify any proposed sensitive development in the plan.</p> <p>(2) A sensitive development is the development of, or a redevelopment that increases the capacity of, any of the following:</p> <ul style="list-style-type: none"> (a) a residential dwelling (b) a community care facility (c) a pre-school (d) a primary, secondary, tertiary or other educational institution (e) a hospital <p>(2A) A sensitive development does not include the following:</p> <ul style="list-style-type: none"> (a) an aviation educational facility (b) accommodation for students studying at an aviation educational facility at the airport (c) a facility with the primary purpose of providing emergency medical treatment and which does not have in-patient facilities (d) a facility with the primary purpose of providing in-house training to staff of an organisation conducting operations at the airport <p>(3) In this section:</p> <p>“aviation educational facility” means any of the following:</p> <ul style="list-style-type: none"> (a) a flying training school (b) an aircraft maintenance training school (c) a facility that provides training in relation to air traffic control (d) a facility that provides training for cabin crew (e) any other facility with the primary purpose of providing training in relation to aviation related activities <p>“community care facility” includes the following:</p> <ul style="list-style-type: none"> (a) a facility that provides aged care within the meaning given by the Aged Care Act 1997 (c) a retirement village within the meaning given by the Social Security Act 1991 (d) a facility that provides respite care within the meaning given by the Aged Care Act 1997. 	N/A
AA s.72(1)	The plan relates to a period of 20 years (the planning period).	The entire Master Plan and Appendices
AA s.72(2)	The environment strategy must relate to a period of five years.	AES
AA s.79(1A)	<p>The following persons must be advised, in writing, of the intention to give the minister the Master Plan:</p> <ul style="list-style-type: none"> (a) the minister with responsibility for town planning or use of land in NSW; (b) the NSW Department of Planning and Infrastructure; (c) each local government body with responsibility for an area surrounding the airport. 	Section 1.2
AA s.79(1B)	<p>The master plan must be accompanied by:</p> <ul style="list-style-type: none"> (a) a copy of the advice given under 79(1A) and (b) a written certificate signed on behalf of Sydney Airport, listing the names of those to whom the advice was given. 	Documents to accompany Master Plan

Relevant statutory instrument	Requirement	Relevant section of Master Plan
AA s.79(1)	<p>(1) After giving the advice under Subsection (1A), but before giving the minister the Master Plan, the company must also:</p> <p>(a) cause to be published in a newspaper circulating generally in the state in which the airport is situated, and on the airport's website, a notice:</p> <ul style="list-style-type: none"> (i) stating that the company has prepared a preliminary version of the draft plan and (ii) stating that copies of the preliminary version will be available for inspection and purchase by members of the public during normal office hours throughout the period of 60 business days after the publication of the notice and (iii) the place or places where the copies will be available for inspection and purchase and (iiia) in the case of a notice published in a newspaper—stating that copies of the preliminary version will be available free of charge to members of the public on the airport's website throughout the period of 60 business days after the publication of the notice and (iiib) in the case of a notice published in a newspaper—specifying the address of the airport's website and (iv) in any case—inviting members of the public to give written comments about the preliminary version to the company within 60 business days after the publication of the notice and <p>(b) make copies of the preliminary version available for inspection and purchase by members of the public in accordance with the notice and</p> <p>(c) make copies of the preliminary version available free of charge to members of the public on the airport's website:</p> <ul style="list-style-type: none"> (i) in a readily accessible format that is acceptable to the minister and (ii) in accordance with the notice. 	Section 1.3
AA s.79(2)	<p>If members of the public (including persons covered by Subsection 79(1A)) have given written comments about the preliminary version in accordance with the notice, the draft plan submitted to the minister must be accompanied by:</p> <p>(a) copies of those comments and</p> <p>(b) a written certificate signed on behalf of Sydney Airport:</p> <ul style="list-style-type: none"> (i) listing the names of those members of the public and (ii) summarising those comments and (iii) demonstrating that Sydney Airport has had due regard to those comments in preparing the draft plan and (iv) setting out such other information (if any) about those comments as is specified in the regulations. 	<p>Section 1.4, Appendix G and</p> <p>Documents to accompany the Master Plan</p>
AA s.80	<p>(1) This section applies if:</p> <ul style="list-style-type: none"> (a) an airport-lessee company gives the minister a Master Plan under Section 75, 76 or 78 and (b) before the publication under Section 79 of a notice about the plan, the company consulted (other than by giving an advice under Subsection 79(1A)) a person covered by any of the following subparagraphs: <ul style="list-style-type: none"> (i) a state government (ii) an authority of a state (iii) a local government body (iv) an airline or other user of the airport concerned (v) any other person <p>(2) The draft plan submitted to the minister must be accompanied by a written statement signed on behalf of the company:</p> <ul style="list-style-type: none"> (a) listing the names of the persons consulted and (b) summarising the views expressed by the persons consulted. 	Chapter 1 (including section 1.2) and Appendix G

Regulations

Relevant statutory instrument	Requirement	Relevant section of Master Plan
AR 1997 - 5.02(1)(a)	The master plan must specify any change to the OLS or PANS-OPS surfaces for the airport that is likely to result if development proceeds in accordance with the master plan. (OLS has customary use as an acronym for obstacle limitation surface. PANS-OPS is an acronym for procedures for air navigation systems operations.)	Section 12.7
AR 1997 - 5.02(1)(b)	The master plan must specify, for an area of the airport where a change of use of a kind described in Subregulation 6.07 (2) of the Airports (Environment Protection) Regulations 1997 (i.e. a change of use that affects the soil in an area of land and that necessitates greater environmental protection measures because the use will result in land being used in a way, or for a purpose, that will, or is reasonably likely to, cause greater harm to an aspect of the environment or to the health, safety, or in any respect, the welfare of, human beings) is proposed: (i) the contents of the report of any examination of the area carried out under regulation 6.09 of those regulations and (ii) Sydney Airport's plans for dealing with any soil pollution referred to in the report.	Section 11.3
AR 1997 - 5.02(2)	(2) For Section 71 of the Act, an airport master plan must, in relation to the landside part of the airport, where possible, describe proposals for land use and related planning, zoning or development in an amount of detail equivalent to that required by, and using terminology (including definitions) consistent with that applying in, land use planning, zoning and development legislation in force in the state or territory in which the airport is located.	Chapter 11 and Appendix E
AR 1997 - 5.02(3)	The master plan must address: (a) any obligation that has passed to Sydney Airport under the lease from the Commonwealth (b) any existing interests in the land leased from the Commonwealth.	Chapter 4 and Appendix E
AR 1997 - 5.02A	Contents of draft or final master plan—matters to be specified in environment strategy (1) For Subparagraphs 71 (2) (h) (ix) and (3) (h) (ix) of the Act, the matters in this regulation must be specified in an environment strategy. (2) The environment strategy must specify any areas within the airport site to which the strategy applies that the airport-lessee company for the airport has identified as being a site of indigenous significance, following consultation with: (a) any relevant indigenous communities and organisations and (b) any relevant Commonwealth or State body. (3) The environment strategy must specify the airport-lessee company's strategy for environmental management of areas of the airport site that are, or could be, used for a purpose that is not connected with airport operations. (4) The environment strategy must specify: (a) the training necessary for appropriate environment management by persons, or classes of persons, employed on the airport site by the airport-lessee company or by other major employers and (b) the training programs, of which the airport-lessee company is aware, that it considers would meet the training needs of a person mentioned in paragraph (a).	AES

Relevant statutory instrument	Requirement	Relevant section of Master Plan
AR 1997 - 5.02B	<p>Contents of draft or final master plan—things to be addressed in environment strategy</p> <p>(1) For Subsection 71 (5) of the Act, a draft or final master plan must address the things in this regulation.</p> <p>(2) In specifying its objectives for the airport under Subparagraph 71 (2) (h) (i) or (3) (h) (i) of the Act, an airport-lessee company must address its policies and targets for:</p> <ul style="list-style-type: none"> (a) continuous improvement in the environmental consequences of activities at the airport and (b) progressive reduction in extant pollution at the airport and (c) development and adoption of a comprehensive environmental management system for the airport that maintains consistency with relevant Australian and international standards and (d) identification, and conservation, by the airport-lessee company and other operators of undertakings at the airport, of objects and matters at the airport that have natural, indigenous or heritage value and (e) involvement of the local community and airport users in development of any future strategy and (f) dissemination of the strategy to sub-lessees, licensees, other airport users and the local community. <p>(3) In specifying under Subparagraph 71 (2) (h) (ii) or (3) (h) (iii) of the Act, the areas within the airport site it identifies as environmentally significant, an airport-lessee company must address:</p> <ul style="list-style-type: none"> (a) any relevant recommendation of the Australian Heritage Council and (b) any relevant recommendation of the Department of Environment regarding biota, habitat, heritage or similar matters and (c) any relevant recommendation of a body established in the state in which the airport is located, having responsibilities in relation to conservation of biota, habitat, heritage or similar matters. <p>(4) In specifying the sources of environmental impact under Subparagraph 71 (2) (h) (iii) or (3) (h) (iii) of the Act, an airport-lessee company must address:</p> <ul style="list-style-type: none"> (a) the quality of air at the airport site, and in so much of the regional airshed as is reasonably likely to be affected by airport activities and (b) water quality, including potentially affected groundwater, estuarine waters and marine waters and (c) soil quality, including that of land known to be already contaminated and (d) release, into the air, of substances that deplete stratospheric ozone and (e) generation and handling of hazardous waste and any other kind of waste and (f) usage of natural resources (whether renewable or non-renewable) and (g) usage of energy the production of which generates emissions of gases known as 'greenhouse gases' and (h) generation of noise. <p>(5) In specifying under Subparagraph 71 (2) (h) (iv) or (3) (h) (iv) of the Act the studies, reviews and monitoring that it plans to carry out, an airport-lessee company must address:</p> <ul style="list-style-type: none"> (a) the matters mentioned in Subregulation 5.02A (2) and Subregulations 5.02B (3) and (4); and (b) the scope, identified by the airport-lessee company, for conservation of objects and matters at the airport that have natural, indigenous or heritage value and (c) the approaches and measures identified by the airport-lessee company as its preferred conservation approaches and measures and (d) the professional qualifications that must be held by a person carrying out the monitoring and (e) the proposed systems of testing, measuring and sampling to be carried out for possible, or suspected, pollution or excessive noise and (f) the proposed frequency of routine reporting of monitoring results to the airport environment officer (if any) for the airport, or to the secretary. <p>(6) In specifying under Subparagraph 71 (2) (h) (vi) or (3) (h) (vi) of the Act, the measures that it plans to carry out for the purposes of preventing, controlling or reducing environmental impact, an airport-lessee company must address:</p> <ul style="list-style-type: none"> (a) the matters mentioned in Subregulations (2) to (4); and (b) the means by which it proposes to achieve the cooperation of other operators of undertakings at the airport in carrying out those plans. <p>(7) An airport-lessee company, in specifying the company's strategy for environmental management under Subregulation 5.02A (3), must address the matters in Subregulations (2) to (6).</p> <p>(8) In this regulation: "Department of Environment" means the department administered by the minister responsible for administering the Environment Protection and Biodiversity Conservation Act 1999.</p>	AES

Relevant statutory instrument	Requirement	Relevant section of Master Plan
CASR 98 139.250 - 254	The airport must have a safety management system (SMS) that complies with the standards set out in the manual of standards (i.e. 'Manual of Standards (MOS) – Subpart 139.H' issued by the Civil Aviation Safety Authority (CASA) under Regulation 139.712, as in force from time to time).	Section 12.1
CASR 98 171	A SMS must be in place to protect navigation aid and radar restricted surfaces.	Section 12.7

G

APPENDIX G

APPENDIX G CONSULTATION MATERIALS AND RELATED INFORMATION

Section G1 Feedback received during initial consultations

Stakeholder	Summary of issues raised
Australian Government	
Airservices Australia	<ul style="list-style-type: none"> • Layout of airfield
Australian Customs and Border Protection Services	<ul style="list-style-type: none"> • ANEF-related issues
Civil Aviation Safety Authority	<ul style="list-style-type: none"> • Regulatory compliance issues
Department of Infrastructure and Transport	<ul style="list-style-type: none"> • Airfield capacity and impacts on implementation of the long term operating plan
Australian Quarantine Inspection Service	<ul style="list-style-type: none"> • Environmental issues associated with implementation of the development concept
Bureau of Meteorology	<ul style="list-style-type: none"> • Passenger processing arrangements and improvements in customer experience
Department of Sustainability, Environment, Water, Population and Communities	<ul style="list-style-type: none"> • Use of SmartGate technology
Office of Transport Security	<ul style="list-style-type: none"> • Preliminary Draft Master Plan (PDMP) needs to explain how operations during the curfew are regulated
Australian Federal Police	<ul style="list-style-type: none"> • Aircraft noise-related issues and the need to ensure these are clearly and transparently communicated in the PDMP
Department of Agriculture, Fisheries and Forestry	<ul style="list-style-type: none"> • Duplication of resources in both precincts
Ministers (various)	

Stakeholder	Summary of issues raised
NSW Government	
Department of Premier and Cabinet Transport for NSW Roads and Maritime Services Infrastructure NSW Department of Planning and Infrastructure Sydney Ports Corporation Destination NSW Office of Environment and Heritage Environment Protection Authority Bureau of Transport Statistics NSW Police Force NSW Trade and Investment Ministers (various)	<ul style="list-style-type: none"> • Positive response to the proposal to transform Sydney Airport into two integrated terminal precincts with international, domestic and regional services in each precinct • Road network within Sydney Airport's terminal precincts and linkages to the external road network (including traffic flows and performance of key intersections in the vicinity of the airport) • Public transport (including bus and train services, increasing the public transport mode share and the proposed public transport interchange) • Recommended actions in draft NSW Long Term Transport Master Plan and Infrastructure NSW's 20-year State Infrastructure Strategy and how they interact with the PDMP • RMS request for an inspection bay on Foreshore Drive • Environmental issues associated with implementation of the development concept (including stormwater run-off impacts, contaminated sites, ground-based noise impacts, air and water quality impacts, and soil and groundwater quality impacts) • Impacts of transporting hazardous goods to and from the airport • Aboriginal cultural heritage • Airspace protection surfaces • Consistency of PDMP and metropolitan planning strategies • Interface with surrounding land uses • Ground based noise attenuation • Threatened and migratory species under NSW and/or commonwealth environmental legislation and other international agreements • Feral animal management • Ongoing ecological assessment of airport site • Supply of appropriately zoned employment lands around the airport • Need to ensure noise metrics (other than the ANEF) are included in the PDMP • Draft ANEF 2033 has the potential to change permissible land uses in certain areas • Need to consider local environmental plans for the City of Botany Bay, City of Sydney, Randwick, Rockdale, Hurstville, Sutherland Shire, Marrickville and Leichhardt when preparing PDMP, particularly in relation to the accessibility and compatibility of land uses within and surrounding the airport • The impact of operating restrictions on capacity • Implications of the Commonwealth's response to the recommendations made in the joint study on aviation capacity in the Sydney region • Recognition that Sydney Airport will remain Sydney's main airport

Stakeholder	Summary of issues raised
<p>Local government</p> <p>Councils in the vicinity of Sydney Airport, including those affected by the ANEF: City of Botany Bay, Marrickville, Rockdale City, Sutherland Shire, City of Sydney, Randwick City, Leichhardt, Ashfield, City of Canada Bay, Lane Cove, Hunters Hill, Burwood, Hurstville City, Canterbury City and Kogarah City Councils.</p> <p>Other councils in the Sydney metropolitan area or regional organisations of councils</p>	<ul style="list-style-type: none"> • Positive response to the proposal to transform Sydney Airport into two integrated terminal precincts with international, domestic and regional services in each precinct • Aircraft noise-related issues, including noise impacts on residents and the need to ensure these are clearly and transparently communicated in the PDMP • Coordination of strategic planning with adjoining councils is needed • Impact of new ANEF on development opportunities around the airport • Road congestion in the vicinity of Sydney Airport and in the terminal precincts • Support for Sydney Airport's proposals to improve public transport access to the airport • Car parking related issues (including in airport car parks and in surrounding residential areas) • Importance of continued regional airline access to Sydney Airport • Importance of no change to curfew or aircraft movement cap • Environmental issues associated with implementation of the development concept • Implications of the Commonwealth's response to the recommendations made in the joint study on aviation capacity in the Sydney region • Non-aviation related commercial developments • Linkages to council biodiversity plans • Future development at Sydney Airport should be airport-related • Potential impact of second Sydney airport should be explained • Water quality monitoring in and around Port Botany and importance of contributing to the Botany Bay and Catchment Water Quality Improvement Plan • Community should be updated on progress with implementing PDMP
<p>Business and tourism industry groups</p> <p>Sydney Business Chamber</p> <p>Tourism & Transport Forum</p> <p>Infrastructure Partnerships Australia</p> <p>Business Events Sydney</p> <p>Australian Tourism Export Council</p> <p>Local hotel operators</p>	<ul style="list-style-type: none"> • Positive response to the proposal to transform Sydney Airport into two integrated terminal precincts with international, domestic and regional services in each precinct • Expectation that Sydney Airport will remain Sydney's main airport. • Support for Sydney Airport's proposals to improve public transport access to the airport • Importance of air freight to state economy • Proposed changes to road network around Sydney Airport

Stakeholder	Summary of issues raised
Community	
<p>Sydney Airport Community Forum</p> <p>Planning Coordination Forum</p> <p>Metropolitan Local Aboriginal Land Council</p> <p>Members of the Australian Parliament (various)</p> <p>Members of the NSW Parliament (various)</p> <p>Miscellaneous Rotary clubs</p> <p>Community open days (held in Alexandria, Arncliffe, Balmain, Bondi Junction, Chatswood, Chiswick, Eastlakes, Maroubra Junction, Miranda and St Peters)</p>	<ul style="list-style-type: none"> • Positive response to the proposal to transform Sydney Airport into two integrated terminal precincts with international, domestic and regional services in each precinct • ANEF-related issues, including assumptions that underpin modeling (eg. forecast mix of aircraft types, load factors and impact of varying flight paths) • Importance of providing readily available and easily understood aircraft noise information, including for use with the Transparent Noise Information Package • Impact on noise sharing arrangements under the Long Term Operating Plan and of a second Sydney airport • Importance of continued regional airline access to Sydney Airport • Importance of no change to curfew or aircraft movement cap • Support for Sydney Airport's proposals to improve public transport access to the airport • Implications of the Commonwealth's response to the recommendations made in the joint study on aviation capacity in the Sydney region • Implications of Commonwealth's consideration of high speed rail • Taxi access • Impact of port expansion on airport operations
Airlines	
<p>Virgin Australia</p> <p>Qantas</p> <p>Jetstar</p> <p>BARA</p> <p>Regional Express</p> <p>Air New Zealand</p> <p>Regional Aviation Association of Australia</p>	<ul style="list-style-type: none"> • Layout of airfield • Passenger and aircraft movement forecasts • Airfield capacity • Terminal layout and configuration • Passenger processing arrangements and improvements in customer experience • Need to improve ground transport access. Support for Sydney Airport's proposals to improve public transport access to the airport • Access to South East Sector • Car parking related issues (for employees and passengers) • Development staging issues • Air freight-related issues
Other aviation industry stakeholders	
<p>Qantas Freight (domestic and international)</p> <p>Menzies Aviation</p> <p>Toll Dnata</p> <p>DHL</p> <p>Qantas Freight</p>	<ul style="list-style-type: none"> • Freight requirements, including airside access and terminals • Forecast growth in freight task • Need to ensure appropriate areas are identified in the development concept

Section G2

Public notice of release of PDMP published in the Sydney Morning Herald and Daily Telegraph on 4 June 2013.

Public Exhibition of Preliminary Draft Master Plan 2013

Notice under s. 79(1) of the *Airports Act 1996*

Sydney Airport is preparing a new Master Plan to submit to the Australian Government by the end of 2013.

As part of the consultation process, a Preliminary Draft Master Plan (PDMP) has been prepared and is being publicly exhibited for comment.

It was prepared following consultation with airlines, other members of the aviation industry, key government agencies, local government, the tourism industry, the business sector and the local community.

The PDMP details Sydney Airport's vision for the operation and development of the airport that will enable the forecast growth in air travel for tourism and trade well beyond the 2033 planning period.

The PDMP is based on:

- No change to the curfew
- No change to the aircraft movement cap
- No change to noise sharing arrangements
- No change to access arrangements for regional airlines
- No new flight paths or runways

The PDMP will be on public exhibition from 5 June 2013 until 30 August 2013 and can be downloaded free of charge from www.sydneyairport.com.au.

Printed copies are also available for purchase for \$25 each (including GST and postage) from Sydney Airport by writing to the address shown below.

Copies of the PDMP will be available for inspection and purchase by members of the public during normal office hours throughout the exhibition period at Sydney Airport's Corporate Office,

Central Terrace Building, 10 Arrivals Court, Sydney International Airport.

Sydney Airport will undertake an extensive community and stakeholder consultation process. Copies of the PDMP will also be able to be viewed in various locations around Sydney Airport.

Regular Community Updates will be provided in local newspapers and a series of Community Information Sessions will be held. Please refer to the Sydney Airport website for further details.

Submitting your comments

Sydney Airport encourages you to read the PDMP and welcomes your feedback.

Comments will be accepted until **30 August 2013**. They should be in writing and must include your name and address. All submissions received will be carefully considered by Sydney Airport. The PDMP will then be revised where appropriate before it is submitted to the Australian Government for consideration.

Please forward your written comments to:

Mail – Mr Ted Plummer
Manager – Government and
Community Relations
Sydney Airport Corporation Limited
Locked Bag 5000
Sydney International Airport
NSW 2020

Email – masterplan@syd.com.au

Fax – (02) 8338 4931

For further information
please phone the
community information
line on **1800 252 040**
or Ted Plummer on
(02) 9667 6182.



The right future.
Starting now.

Section G3

Fact sheets

SYDNEY AIRPORT: FACT SHEET



Sydney Airport: A decade of investment and innovation

Sydney Airport is Australia's premier airport and major international gateway for passengers and freight.

To cater for growth and improve the airport experience for passengers over the past decade, over \$2 billion of investments and other initiatives have led to increased service levels, enhanced safety and security, delivered environmental improvements and increased capacity to meet demand.

T1 upgrade and expansion

The most significant project undertaken has been the upgrade and expansion of T1, completed in 2010.

Key features included:

- Redevelopment of 30,000sqm of the existing departures level
- The addition of 7,300sqm to the departures level for a new centralised passenger processing area, new retail, food and beverage outlets, additional moving walkways and passenger waiting areas
- New baggage handling systems for outbound and early checked baggage storage
- Upgrading the arrivals baggage system.



Boosting capacity at T2

T2 capacity was increased by nearly 30% in 2012.

The terminal can now accommodate up to an additional five aircraft as well as gate lounge facilities, amenities and aerobridge connections.



New car parks

The T1 Precinct has two new multi-storey car parks, the first completed in 2009 and the second in 2012. Together, these provide approximately 5,300 parking spaces for passengers and airport workers. Construction of a new car park in the T2/T3 Precinct is expected to be completed by 2014, which will provide around 900 additional parking spaces. The Long Term Car Park was also significantly expanded in 2012.

Sydney Airport has developed targeted customer initiatives using online offers and off-peak deals to satisfy different customer needs.

Runway and taxiway upgrades

The most significant resurfacing of Sydney Airport's main north-south runway in more than a decade was completed in 2011.

Runway safety – stop bar lights

Sydney Airport has installed 'stop bar lights' at all main taxiway entry points to its three runways. This \$25 million aviation safety initiative provides a valuable defence against aircraft inadvertently entering an active runway without Air Traffic Control clearance (above right).

Additional apron capacity

New apron capacity has been provided to allow additional aircraft parking in various locations around the airport.

Building a safer airport

To comply with Civil Aviation Safety Authority requirements, Sydney Airport invested over \$100 million to enlarge runway safety areas for each of the airport's three runways.

New generation aircraft

To be ready for the new generation of quieter, environmentally cleaner and more fuel efficient aircraft such as the A380, Sydney Airport invested \$120 million on new infrastructure including new gates and aerobridges and strengthened runway and taxiway pavements.

New hotel in T1 Precinct

The new four-star Rydges hotel in Sydney Airport's T1 Precinct opened for business in 2013. The hotel meets demand by international tourists and business travellers for convenient accommodation at Sydney Airport and will include conference facilities.

Water recycling

Sydney Airport's new water recycling plant (pictured below) was commissioned in 2009, now saving an average of 600,000 litres of drinking water every day.



More information

Please refer to the PDMP for more information on the issues identified in this Fact Sheet.

For further information, call our Community Information Line on **1800 252 040** or go to www.sydneyairport.com.au.



Sydney Airport Corporation Limited: ACN 002 570 800

SYDNEY AIRPORT: FACT SHEET



Sydney Airport: A major employer and economic driver

International trade and air routes are vital to Australia's continued national prosperity. Airports are an essential part of the transport networks on which all successful modern economies rely.

Sydney Airport acts as a major generator for a range of economic activity. Its close proximity only 8km from Sydney Central Business District also provides a unique advantage for business and tourism, major events and conference industries, over other state capitals.

For example, Sydney Airport:

- influences decisions by companies to locate their head offices in Sydney and improves their competitiveness
- attracts new investment to the NSW and Sydney economy
- retains existing companies and secures their expansion projects
- promotes exports through air freight and enhances the competitiveness of our economy through the provision of efficient passenger and freight services
- attracts new businesses, leisure activities and tourism-based incomes and creates new jobs.

Creating jobs and economic activity

A recent study by Deloitte Access Economics into the economic impact of Sydney Airport measured the airport's economic and social benefits. Sydney Airport generates or facilitates:

- **Jobs:** Direct and indirect employment of 283,700 jobs (equivalent to 8 per cent of NSW employment, including 160,000 direct jobs (28,000 directly on airport) – average wages for airport workers are about 13 per cent higher than the NSW average
- **Economic activity:** Direct and indirect economic contribution of \$276 billion (equivalent to 6 per cent of the NSW economy and 2 per cent of the Australian economy)
- **Household income:** Direct and indirect contribution of \$13.2 billion
- **Taxes:** Direct and indirect taxes, including:
 - Substantial income tax and GST revenues to the Australian Government
 - Substantial payroll taxes to the NSW Government
 - Annual contributions, in lieu of rates, to the City of Botany Bay, Rockdale City and Marrickville Councils.



It is forecast that the economic activity generated or facilitated by Sydney Airport will increase from \$276 billion in 2012 to over \$42 billion in 2033. Total employment will increase from 283,700 jobs in 2012 to over 400,000 by 2033.

A relatively small activity at the airport can have a potentially large positive economic impact.

For example, an additional daily A380 service to Sydney from China would, over a year, contribute an estimated:

- \$388 million to the Australian economy
- \$233 million to Australia's household income
- 5,000 jobs (4,000 of which would be in NSW).

Supporting tourism

Sydney Airport has an unmatched route network which includes 46 international, 23 domestic and 26 regional destinations.

Sydney's status as a global city, in turn, supports this route network and the development of Sydney Airport and related businesses. The availability of direct flights to a wide network of destinations also significantly strengthens the competitiveness of the Sydney and NSW tourism industry.



Through its partnership agreement with Destination NSW and closer ties with Tourism Australia, Sydney Airport will continue to work in collaboration with the Australian and NSW Governments to grow tourism and the visitor economy.

Air freight

Air freight is a vital economic activity that contributes significantly to global business and to the NSW and Australian economies. It is a critical component of the airline industry, part of a value chain that includes airports, related trucking and logistics services, manufacturing and consumer operations and other support industries.

Sydney Airport is Australia's largest international and domestic air freight hub. In 2011, Sydney Airport handled around 530,000 tonnes of air freight (of which almost 400,000 tonnes was international air freight), which was 52 per cent more than Australia's second largest air freight hub, Melbourne Airport.

It is estimated that around 80 per cent of air freight is carried in passenger aircraft, making it vitally important to the economics of our airlines' passenger services.

The volume of freight handled by Sydney Airport is projected to double over the period to 2033 to over one million tonnes.

More information

Please refer to the PDMP for more information on the issues identified in this Fact Sheet.

For further information, call our Community Information Line on **1800 252 040** or go to www.sydneyairport.com.au.



Sydney Airport Corporation Limited: ACN 002 570 800

Section G3

Fact sheets continued

SYDNEY AIRPORT: FACT SHEET



Aviation and climate change

Sydney Airport's global commitment

The Intergovernmental Panel on Climate Change estimated in 2007 that aviation accounts for only around 2% of global carbon dioxide emissions, with most of that relating to in-flight emissions from aircraft. However, with airline travel becoming more popular this contribution could possibly reach 5% by 2050.

Aviation's challenge is to retain the many positive benefits that aviation provides, while reducing or eliminating its negative environmental impacts.

The signing in April 2008 of the *Global Aviation Industry Commitment to Action on Climate Change* by aviation industry leaders (including Sydney Airport) is an important demonstration of the industry's worldwide commitment to introducing technological, operational and efficiency advances that will reduce aviation's contribution to climate change.

Sydney Airport is committed to working with organisations across the aviation industry to target carbon-neutral growth by 2020, as a step towards a carbon-free future for aviation.

Sydney Airport has implemented a range of initiatives aimed at reducing its carbon footprint.

The aviation industry as a whole is also working to reduce carbon emissions:

- Encourage the development and introduction of new technologies, including cleaner fuels
- Further optimise the fuel efficiency of fleets and the way aircraft are flown
- Improve the efficiency of air routes and air traffic management



Energy and Carbon Strategy 2013+

Most of the energy consumed by airports is electricity used in passenger terminals for heating, cooling and lighting.

Electricity and natural gas consumption make up over 98% of greenhouse gases accounted for in Sydney Airport's carbon footprint which, in 2010-11, was measured to be 95,593 tonnes.

Sydney Airport has developed an *Energy and Carbon Strategy 2013+*, which sets out targets for responsible energy use and reduction of carbon emissions.

Key initiatives for the future include:

- Sydney Airport is planning for a trigeneration facility within the airport with initial feasibility assessments being considered. Trigeneration is the simultaneous production of three forms of energy: (low carbon) electricity, heating and cooling. Benefits include reduced greenhouse gas emissions
- Continued investment in fixed electrical ground power for aircraft, reducing emissions and noise and improving local air quality (pictured on first page)
- Encouraging the use of more sustainable forms of transport to access the airport, including public transport and cycling.
- Other sustainable energy saving and related initiatives, including the use of solar hot water and LED lighting

Improved fuel efficiency

The fuel efficiency of today's modern jets is 70% better than it was with early jets.

Improved fuel efficiency means lower greenhouse gas emissions and a reduced contribution to climate change. And fuel efficiency will improve, as we've seen with the A380 and the soon-to-arrive B787 which Boeing claims uses 20% less fuel than any other airplane of its size.

The use of alternative fuels is also important. Many airlines and aircraft manufacturers around the world are exploring the use of renewable bio-fuels (in a way that does not impact food supplies) and synthetic fuels.

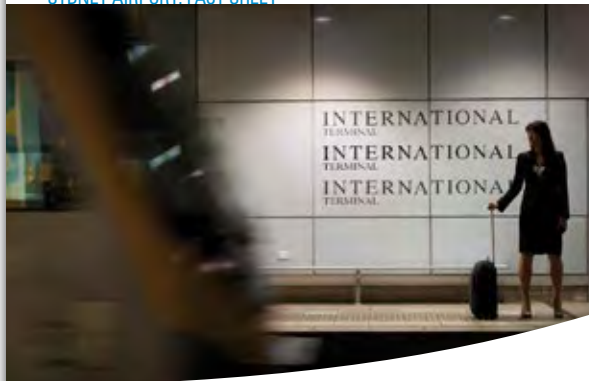
More information

Please refer to the PDMP for more information on the issues identified in this Fact Sheet. For further information, call our Community Information Line on **1800 252 040** or go to www.sydneyairport.com.au.



Sydney Airport Corporation Limited: ACN 002 518 803

SYDNEY AIRPORT: FACT SHEET



Getting to and from Sydney Airport

Ensuring passengers, visitors and airport workers can get to and from Sydney Airport efficiently and in a timely manner is vitally important.

To facilitate this, Sydney Airport is committed to enabling a range of reliable, sustainable and cost effective transport options.

The Preliminary Draft Master Plan (PDMP) includes a number of projects to significantly improve road traffic capacity in and around the airport. In particular, proposed works to intersections around the T2/T3 precinct, proposed road works within the T1 precinct and the creation of public transport facilities will reduce congestion and improve traffic flows in and around the airport (see over page).

Sydney Airport is also committed to increasing the use of public transport. Currently, public transport journeys account for 17% of total trips to Sydney Airport. This has been increasing by one percentage point per annum over the last five years and is anticipated to continue to increase at that rate to 2018. The NSW Government has committed to additional train capacity on the airport line in peak periods to facilitate this transition.

Infrastructure NSW's State Infrastructure Strategy announced in October 2012, includes a range of recommendations, that would address the commuter, freight and airport-related traffic in the vicinity of the airport, including:

- Constructing WestConnex, which expands and links the M4 and M5 East Motorways
- Fixing road pinch points in the Port Botany and Sydney Airport precinct
- Reducing rail fares to the airport stations
- Adding new bus routes to Sydney Airport
- Enhancing the capacity of the freight rail lines, which will divert some freight traffic from road to rail.

Finally, additional car parking facilities will be provided across the airport to service growing demand over the 20-year planning period.



Improving the road network in and around Sydney Airport's passenger terminal precincts will significantly improve traffic flow, reduce congestion and make it easier for passengers to get to and from the airport

T1 Precinct (present day)



T1 Precinct (by 2018)



Changes to the internal road network in the T1 Precinct – including creating a new through road and exit – will reduce traffic congestion and make it easier for motorists to enter, move through and exit the precinct.

T2/T3 Precinct (present day)



T2/T3 Precinct (by 2018)



A new one-way ring road in the T2/T3 Precinct will provide a dedicated entry and exit roadway, reduce traffic congestion and make it easier for motorists to enter, move through and exit the precinct.

More information

Please refer to the PDMP for more information on the issues identified in this Fact Sheet.

For further information, call our Community Information Line on **1800 252 040** or go to www.sydneyairport.com.au.



Sydney Airport Corporation Limited: ACN 002 518 803

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Fact sheets continued

SYDNEY AIRPORT: FACT SHEET



Managing noise: The benefits of new generation quieter aircraft

For most of the world's major airports – including Sydney – aircraft noise has been a long standing issue.

Sydney Airport is committed to working with the community, governments and the aviation industry to manage and mitigate aircraft noise impacts, especially in areas close to the airport or under flight paths.

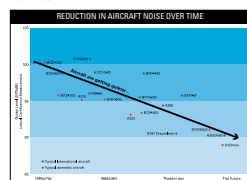
In the 1960s, after Sydney Airport's curfew was introduced, the most common jet aircraft was the Boeing 707. Early jet engines were extremely noisy, fuel guzzling and environmentally dirty.

Today, domestic and international aircraft in Australian skies are some of the most modern in the world. With new generation quieter aircraft continuing to replace older noisier aircraft, noise impacts from aircraft using Sydney Airport will continue to improve, helping to offset increased movements.

Sydney Airport's Preliminary Draft Master Plan (PDMP) is based on:

- No change to the curfew or movement cap
- No change to noise sharing arrangements

- No new flight paths or runways
- No change to access arrangements for regional airlines.



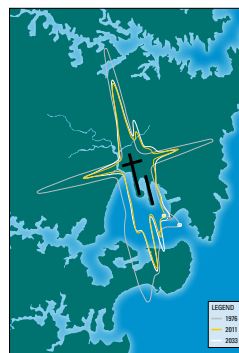
Aircraft built today are about 75% quieter than they were 40 years ago. The aviation industry is working to reduce this even more.

The chart on this page illustrates the effect of the new generation quieter aircraft.

Three noise exposure contours are shown:

- 1976 (when the fleet was comprised of older, noisy jet aircraft)
- 2011 (when new generation quieter aircraft are being progressively introduced)
- 2033 (when new generation quieter aircraft will dominate the fleet).

Since 1976, the area of land within this noise contour has decreased by 1,150 hectares or 35.6%, despite the increase in air traffic.



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However, Sydney Airport recognises that aircraft noise can still be an issue of concern for people living in areas outside these noise contours. As such, noise management needs to occur in affected areas close to and further away from the airport.

The PDMP includes other aircraft noise charts to illustrate forecast impacts in these areas.

Sydney Airport and the responsible government regulatory authorities are working hard to manage and mitigate the impacts of aircraft noise.

For Sydney Airport, this includes:

- Continuing to provide and maintain the necessary on-airport infrastructure that allows noise sharing to be implemented
- Investing in infrastructure to support new quieter aircraft – \$120 million already invested to accommodate the A380, with more to follow
- Working closely with the Australian, NSW and local governments – to ensure appropriate planning policies are in place to discourage inappropriate development in noise-affected areas
- Consulting and engaging with the local community and airlines that use Sydney Airport – including the Sydney Airport Community Forum.

More information

Please refer to the PDMP for more information on the issues identified in this Fact Sheet. For further information, call our Community Information Line on **1800 252 040** or go to www.sydneyairport.com.au.



SYDNEY AIRPORT: FACT SHEET



Sydney Airport: Planning for growth and improving the passenger experience

As Australia's major international gateway, Sydney Airport's vision is to deliver a world-class airport experience and foster growth for the benefit of Sydney, NSW and Australia.

Over \$2 billion of investments and other initiatives during the past decade have increased service levels, enhanced safety and security, delivered environmental improvements and increased capacity to meet demand.

The Preliminary Draft Master Plan (PDMP) shows how Sydney Airport will build on this investment, **without any change to the curfew, aircraft movement cap or access arrangements for regional airlines.**

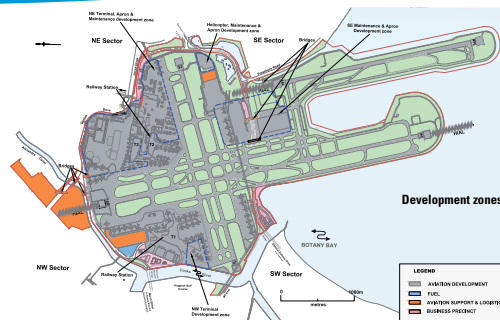
Aviation activity forecasts

The forecast passenger numbers, aircraft movements and air freight volumes for 2033 shown in the PDMP provide the fundamental basis for future planning.

A comparison between 2012 and the aviation activity forecast for 2033 is shown below.

	2012	2033 - Forecast (existing 2009 Master Plan)	2033 - Forecast (PDMP)
International, domestic and regional passengers (millions)	36.9	78.9	74.3
Fixed wing aircraft movements	321,630	427,400	409,500
Air freight (tonnes)	737,000	1,077,000	1,011,000

This shows that, as a consequence of the Global Financial Crisis (GFC), the forecast number of passengers in 2033 is less than the forecast in the existing Master Plan. Though higher than today, aircraft movements at the end of 2033 are also below the forecasts for 2029 in the existing Master Plan, again as a result of the GFC.



Master Plan development concept

The development concept for Sydney Airport shown in the PDMP (and above) improves the passenger experience, optimises the efficiency of the airport, maximises capacity and establishes the strategic direction of the airport. It has in-built flexibility and adaptability and can therefore meet the future needs of the constantly evolving aviation industry.

The development concept emerged from extensive initial consultation with stakeholders to understand their requirements and priorities. There has been a particular emphasis on improving the airport experience for airline passengers.

In summary, the development concept:

- Creates integrated terminals for international, domestic and regional passenger operations
- Provides for the development of engineering precincts which may accommodate multiple airlines in the long term
- Creates transport interchanges, well located to the terminal precincts, to facilitate fast, affordable and reliable access to multiple transport options
- Includes a number of road improvement projects to reduce traffic congestion
- Incorporates water and energy efficiencies into the new terminal developments.

Once complete, the development concept will:

- Significantly improve the airport experience for airline passengers
- Improve the door-to-door passenger experience, by improving traffic flows on roads in and around both terminal precincts
- Improve passenger connectivity by reducing inter-precinct transfers
- Enhance airport efficiency
- Increase the apron, terminal and airfield capacity of the airport, particularly for large aircraft such as the A380
- Retain many of the existing freight and fuel facilities adjacent to the terminal precincts
- Maximise flexibility across the day, week and year to meet changing demand
- Embed flexibility and adaptability into the development concept to allow it to respond to the changing aviation environment.

More information

Please refer to the PDMP for more information on the issues identified in this Fact Sheet. For further information, call our Community Information Line on **1800 252 040** or go to www.sydneyairport.com.au.



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Fact sheets continued

SYDNEY AIRPORT: FACT SHEET



Sydney Airport: Planning for the future

Sydney Airport is preparing a new Master Plan to submit to the Australian Government by the end of 2013.

As part of the consultation process, a Preliminary Draft Master Plan (PDMP) has been prepared and is being publicly exhibited for comment. It was prepared following consultation with airlines, other members of the aviation industry, key government agencies, local government, the tourism industry, the business sector and the local community.

The PDMP details Sydney Airport's vision for the operation and development of the airport that will enable the forecast growth in air travel for tourism and trade well beyond the 2033 planning period. It is a vision that will significantly improve the airport experience for airline passengers – 37 million in 2012 growing to more than 74 million by 2033.

The PDMP is based on:

- No change to the curfew
- No change to the aircraft movement cap
- No change to noise sharing arrangements
- No change to access arrangements for regional airlines

- No new flight paths or runways

Over \$2 billion of investments and other initiatives during the past decade have increased service levels, enhanced safety and security, delivered environmental improvements and increased capacity to meet demand. Continued investment will further increase airport efficiency, ensuring Sydney Airport continues to connect Sydney to other global cities and many other parts of Australia.

There will also be significant investments to reduce traffic congestion in and around the passenger terminal precincts.

With aircraft becoming environmentally cleaner, quieter and more fuel-efficient, the noise impacts of aircraft flying to Sydney have reduced significantly over the past decades. This trend will continue as new generation quieter aircraft continue to replace older noisier aircraft.



In consultation with the NSW Government, Sydney Airport has developed innovative ground transport solutions that will significantly improve access to the airport and road traffic flow around it.

In the Airport Environment Strategy, more than 100 actions and initiatives are outlined that together will minimise Sydney Airport's impact on the environment and support its objective of sustainable growth.

Your opportunity to comment

Talking with members of the community and other stakeholders and hearing their views about the PDMP is important to Sydney Airport.

Sydney Airport will consult the community across Sydney and NSW, local government, Australian and NSW Government agencies, airlines and others in the aviation industry, business and the tourism industry.

The PDMP will be on public exhibition until **30 August 2013**.

You can download the PDMP free of charge from www.sydneyairport.com.au. Copies will be available for viewing in various locations around Sydney Airport. There will be regular Community Updates in local newspapers and a series of Community Information Sessions will be held. Please refer to the Sydney Airport website for further details.

Have your say

Sydney Airport encourages you to read the PDMP and welcomes your feedback.

Comments should be in writing and include your name and address.

All comments received will be carefully considered by Sydney Airport. The PDMP will then be revised where appropriate before it is submitted to the Australian Government for consideration.

Please forward your written submission by 30 August 2013 to:

Mail
Mr Ted Plummer
Manager – Government and Community Relations
Sydney Airport Corporation Limited
Locked Bag 5000
Sydney International Airport NSW 2020

Email: masterplan@syd.com.au

Fax: (02) 8338 4931

More information

Please refer to the PDMP for more information on the issues identified in this Fact Sheet. For further information, call our Community Information Line on **1800 252 040** or go to www.sydneyairport.com.au.



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SYDNEY AIRPORT: FACT SHEET



Sustainable water management

With nearly 37 million passengers using Sydney Airport in 2012, the airport is one of NSW's biggest water users. Major uses include:

- Restroom and toilet facilities within the terminals
- Cooling towers (for air-conditioning)
- Construction and maintenance activities
- Vehicle washing facilities.

Sustainable water use and security of water supply are a priority for Sydney Airport, which is committed to securing alternative non-potable water supplies where feasible.

Recycled Water System

Sydney Airport has invested in a water recycling system in the T1 precinct, an initiative supported by the NSW Government. Wastewater is collected, treated using biological and chemical methods, then recirculated and reused throughout the precinct for toilet flushing and in cooling towers.

In 2012, the plant was saving an average of 600,000 litres of drinking water every day. The plant has additional capacity and is planned to be expanded.

Water Savings Action Plan

In 2012, Sydney Airport developed a new Water Savings Action Plan. The Plan identifies

opportunities where water can be used more efficiently and where alternative water sources can replace drinking water.

Sydney Airport extracts groundwater for irrigation purposes under a licence issued by the NSW Government. This avoids having to use drinking water for landscaping purposes.

Surface Water Quality

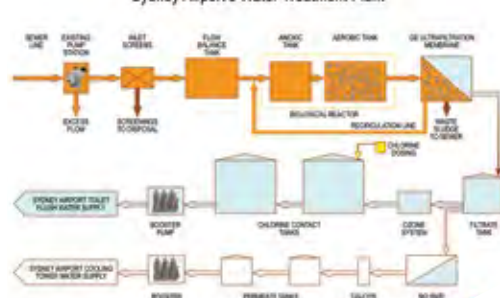
Sydney Airport is almost entirely surrounded by waterways, with Botany Bay to the south, the Sydney Airport Wetlands to the east, Alexandra Canal to the north and Cooks River to the west.

Various activities on the airport have the potential to impact on water quality in these waterways, including:

- Spills from aircraft servicing and maintenance
- Stormwater run-off
- Construction and maintenance activities
- Bulk liquids and hazardous materials storage
- Fire training exercises



Sydney Airport's Water Treatment Plant



To minimise the impact of airport operations on water quality in adjacent waterways, Sydney Airport conducts stormwater quality monitoring, works closely with airport tenants, operators and contractors to manage activities that have the potential to impact water quality and continues to identify opportunities to improve water quality.

Sydney Airport has a number of mechanisms in place to manage water quality. These include:

- Gross pollutant traps
- Dedicated spill response vehicle and provision of spill control kits on all aircraft parking aprons
- Pollution control flame traps on all aprons where aircraft refuelling or maintenance takes place
- Emergency stop gates on stormwater discharge points.

Sustainable Development

As part of the terminal redevelopment envisaged under the development concept in the Preliminary Draft Master Plan (PDMP), Sydney Airport aims to adopt forward thinking strategies that translate sustainable development principles and commitments to reality. A holistic approach will be taken, integrating green technologies, design and operations with a focus on sustainable energy, water and materials outcomes.

In addition to initiatives that secure a cleaner energy supply (such as trigeneration) and sustainable water supply (such as use of recycled water), Sydney Airport will pursue innovative opportunities that deliver smarter environmental and efficiency solutions across the airport.

More information

Please refer to the PDMP for more information on the issues identified in this Fact Sheet. For further information, call our Community Information Line on **1800 252 040** or go to www.sydneyairport.com.au.



Sydney Airport Corporation Limited, ACN 002 518 808

Section G3

Fact sheets continued

SYDNEY AIRPORT: FACT SHEET



Sydney Airport Environment Strategy

Sydney Airport's Preliminary Draft Master Plan (PDMP) includes a new Environment Strategy, which will provide the strategic direction for the management of ground-based environmental issues at Sydney Airport from 2015 to 2018.

As one of Australia's single most important pieces of infrastructure, Sydney Airport is a major employer and economic driver in the region, Sydney and the nation as a whole. It makes a direct and indirect contribution of \$276 billion to the economy, equivalent to 6% of the NSW economy.

The Environment Strategy and Master Plan are the key documents for ensuring these economic benefits are delivered in an environmentally responsible and sustainable manner.

A wide range of ground-based environmental matters are addressed in the new Environment Strategy. These are:

Sustainability and Environmental Management
– developing and operating Sydney Airport in a sustainable manner

– implementing systems to assist with continual environmental improvement.

Climate Change and Energy Management

– reducing energy and carbon emissions by continuing to implement cost-effective energy efficiency opportunities and cleaner energy usage.
– a trigeneration plant supplying cleaner energy is being planned, with possible reductions of up to 50% of greenhouse gas emissions.

Water Management

– building on existing water recycling and reuse initiatives by continuing to explore water efficiency opportunities, as outlined in Sydney Airport's Water Savings Action Plan. The recycled water plant at T1 will be expanded.



Air Quality

– completing air quality monitoring within the airport boundary and identifying opportunities to reduce pollution.

Ground-based Noise

– continuing to increase the use of fixed electrical ground power units to minimise the use of noisier on-aircraft auxiliary power units. This also improves air quality and reduces carbon emissions.

Ground Transport

– continuing to encourage the use of sustainable transport options (including public transport and cycling). These are outlined in the Ground Transport Plan included in the PDMP. Sydney Airport will continue to advocate to the NSW Government that bus and train services to and from Sydney Airport need to be improved.

Biodiversity and Conservation Management

– continuing to implement the successful program to enhance the environmentally significant Sydney Airport Wetlands, including weed and carp control, native fish restocking and revegetation works.

Heritage

– reviewing and updating Sydney Airport's Heritage Management Plan. A Heritage Interpretation Strategy will be finalised and its implementation commenced.

Waste and Resource Management

– building on existing recycling initiatives by continuing to implement innovative waste minimisation options identified in Sydney Airport's Waste and Resource Recovery Strategy.

Soil and Land Management

– continuing to minimise the potential for soil contamination and actively managing acid sulfate soils.

Spills Response and Hazardous Materials

– implementing best-practice environmental controls for prevention and management of spills and release of hazardous materials.

More information

Please refer to the PDMP for more information on the issues identified in this Fact Sheet. For further information, call our Community Information Line on **1800 252 040** or go to www.sydneyairport.com.au.



Sydney Airport Corporation Limited: ACN 002 578 803

SYDNEY AIRPORT: FACT SHEET



Sydney Airport Wetlands

Located in close proximity to the Sydney CBD, the Botany Wetlands are the largest freshwater wetland in the metropolitan area and provide a precious haven for native wildlife.

On the northern side of Botany Bay in Sydney's Eastern Suburbs, the Wetlands' catchment extends from Moore and Centennial Parks in the north, south through Eastlakes and The Lakes Golf Courses before eventually flowing into Botany Bay next to Sydney Airport.

Although extensively altered in the 1800s to provide water for expanding local industries and a drinking water supply for colonial Sydney, they remain highly valued to this day for a range of environmental, social and economic reasons, including flood mitigation, wildlife habitat, cultural heritage and recreation.

The wetlands cover an area of 58 hectares, consist of 11 interconnected ponds and stretch over four kilometres. They are listed on the NSW State Heritage Register and are classified as significant in the Directory of Important Wetlands in Australia.

Sydney Airport manages the section of the Botany Wetlands known as the Mill Pond, Engine Ponds East and West and the Mill Stream. Collectively, these are known as the 'Sydney Airport Wetlands'.

Despite the airport and its immediate surroundings having been highly modified over the last century or more, the Wetlands are considered an environmentally significant area under Commonwealth airports legislation. They provide important habitat for a range of native flora and fauna species including reptiles, fish and birds. A number of migratory birds protected under international conservation agreements can also be found there.



White-faced heron

Carp removal

There are various pressures on the wetlands including pollution caused by stormwater run-off, sewage overflows and upstream catchment activities. The overriding need to protect aircraft from wildlife hazards and to manage impacts caused by introduced pest species also requires constant attention.

To address these pressures and associated impacts and to improve the quality and ecological function of the wetlands, Sydney Airport has developed a Management Plan for the Wetlands, which provides a framework to assist with addressing these often competing issues. Sydney Airport is also implementing a Wetlands Enhancement Program. In recent years, a number of important initiatives have been completed, including:

• Installation of a gross pollutant trap to remove litter from stormwater run-off into the ponds

• Installation of a fish ladder to allow movement of native fish from Botany Bay upstream into the Wetlands
• A comprehensive survey of fish species
• Revegetation of a section of the East Engine Pond with native plant species.

Other activities carried out on a regular basis include:

• Removal of aquatic and terrestrial weeds
• Control of pest animals, including rabbits, foxes and carp
• Stocking with native fish.

More information

Please refer to the PDMP for more information on the issues identified in this Fact Sheet. For further information, call our Community Information Line on **1800 252 040** or go to www.sydneyairport.com.au.



Fish ladder



Sydney Airport Corporation Limited: ACN 002 578 803

Section G3

Frequently asked questions brochure



Q: How are Sydney Airport and the broader aviation industry addressing climate change issues?

A: The signing in 2008 of the *Global Aviation Industry Commitment to Action on Climate Change* by aviation industry leaders (including Sydney Airport) was an important demonstration of the industry's worldwide commitment to introducing technological, operational and efficiency advances to reduce aviation's contribution to climate change. Sydney Airport is committed to working with organisations across the aviation industry to target carbon-neutral growth by 2020, as a step towards a carbon-free future for aviation.

Airports are relatively large consumers of energy, most of which is electricity used in airport terminals for heating, cooling and lighting. Electricity and natural gas consumption make up over 98 per cent of greenhouse gases accounted for in Sydney Airport's carbon footprint which, in 2010-11, was measured to be 95,593 tonnes. Sydney Airport has developed an *Energy and Carbon Strategy 2013*, which sets out targets for responsible energy use and reduction of carbon emissions.

Key initiatives being considered for the future include:

- Sydney Airport is planning for a tri-generation facility within the airport with initial feasibility assessments being considered. Benefits include reduced greenhouse gas emissions
- Continued investment in fixed electrical ground power for aircraft, reducing emissions and noise and improving local air quality
- Other sustainable energy saving and related initiatives, including the use of solar hot water and LED lighting
- Encouraging the use of more sustainable forms of transport to access the airport, including public transport and cycling.

Q: Where can I find out more about the PDMP?

A: The PDMP will be on public exhibition until **Friday 30 August 2013**. Sydney Airport is undertaking extensive community consultation with all key stakeholders including local government, Australian and NSW Government agencies, the aviation industry, business and community groups, as well as the broader community.

Copies of the PDMP and other related documents and information can be downloaded from www.sydneyairport.com.au. Copies will also be made available for public inspection in a number of locations around the airport. Regular Community Updates will be provided in local newspapers, and a series of Community Information Sessions will be held in public venues around the airport to allow people to view the documents, and have any questions answered by Sydney Airport representatives.

For further information, refer to the Sydney Airport website, phone the community information line on **1800 252 040** or email to masterplan@syd.com.au.



FREQUENTLY ASKED QUESTIONS



Preliminary Draft Master Plan

Q: Why does Sydney Airport need a new Master Plan?

A: Every five years, Australia's major airports – including Sydney Airport – are required to prepare and submit to the Australian Government for approval a 20-year Master Plan. Sydney Airport's existing Master Plan was approved in 2009. A new Master Plan is now being prepared for the period 2013 to 2033.

The new Master Plan outlines the strategic direction for the airport's development over the next 20 years. It includes development objectives, an assessment of the future needs of airlines and other airport users, a land use zoning plan, forecast changes in the number of airline passengers, flights and the volume of air freight, information about aircraft noise and the plans for dealing with any environmental issues associated with implementing the new Master Plan.

For the first five years of the 20-year planning period, the Master Plan includes a ground transport plan (which includes initiatives to reduce traffic congestion and encourage public transport) and an environment strategy (which includes sustainability initiatives).





Q: What steps are involved in preparing a Master Plan?

A: As part of the process of preparing a new Master Plan, Sydney Airport has first prepared and is now publicly exhibiting a Preliminary Draft Master Plan (PDMP). The public exhibition period for the PDMP began on 5 June 2013 and concludes on **Friday 30 August 2013**.

As part of the consultation process, Sydney Airport invites the community and other stakeholders to view the PDMP and make a submission. After considering submissions, the PDMP will be revised where appropriate and submitted as a Draft Master Plan to the Australian Government for consideration.

Q: What has Sydney Airport done to implement the existing 2009 Master Plan?

A: To cater for growth, Sydney Airport has been implementing the existing 2009 Master Plan. Over \$2 billion of investments and other initiatives during the past decade have led to increased service levels, enhanced safety and security, delivered environmental improvements and increased capacity to meet demand.

Development projects and other initiatives in the existing 2009 Master Plan that have been or are being implemented include:

- New water recycling plant (2009)
- T1 Departures level upgraded and expanded (2010)
- New runway safety areas (2008–2010)
- Runways and taxiways upgraded (2011 and 2013)
- Additional capacity and improvements at T2 delivered (2012)
- New car parks at T1 and T2/T3 (2009, 2012 and 2013)
- New hotel in T1 Precinct (2013)
- New apron capacity to provide additional aircraft parking (2012 and 2013)

Q: How is the new Master Plan different to the existing 2009 Master Plan?

A: The main difference between the existing 2009 Master Plan and the proposed new Master Plan is how the airport's passenger terminals will be used in the future.

Today, the airport is divided into two terminal precincts, with international services operating from T1 and domestic/regional services operating from T2/T3. The new Master Plan would see the phased development of Sydney Airport, transforming it into two integrated terminal precincts, **combining international, domestic and regional services under the one roof**. This transformation would improve the passenger experience, enhance airport efficiency, boost capacity and reduce traffic congestion on roads in and around the passenger terminals.

Q: Is air travel forecast to increase over the next 20 years?

A: As Sydney, NSW and Australia grow over the next 20 years, more people will choose to fly and demand for air travel will increase. Passenger numbers are forecast to gradually increase from 36.9 million in 2012 to 74.3 million in 2033 (average annual growth of 3.4%). Aircraft numbers are also forecast to gradually increase from 321,700 in 2012 to 409,500 in 2033 (average annual growth of 1.2%). Air freight is forecast to grow from 615,278 tonnes in 2012 to 1,011,312 tonnes in 2033 (average annual growth of 2.4%).

As a consequence of the Global Financial Crisis, forecast passenger and flight numbers in 2033 are less than the forecasts for 2029 shown in the existing Master Plan.

Q: How will Sydney Airport accommodate forecast growth in air travel?

A: Sydney Airport will accommodate forecast growth in air travel because airport infrastructure and facilities – passenger terminals, freight facilities, taxiways, hangars, aircraft parking and car parking – will all be progressively upgraded and expanded. The road network in and around Sydney Airport's passenger terminals will also be significantly upgraded to reduce traffic congestion.

At Sydney and around the world, the increasing use of new generation larger aircraft like the A380 means new aircraft can carry more passengers per flight than the older aircraft they are replacing. This makes aviation more efficient.

This is why in the period between 2000 and 2012, the number of passengers passing through Sydney Airport's terminals increased by just over 50% and the number of passenger aircraft flights increased by only around 10%.

The PDMP is based on:

- No change to the curfew
- No change to the aircraft movement cap
- No change to noise sharing arrangements
- No change to regional airline access arrangements
- No new flight paths or runways.

Q: Will growth in air travel at Sydney Airport create jobs and deliver economic growth?

A: Sydney Airport is one of Australia's single most important pieces of infrastructure and is a **major generator of jobs and economic growth**. A recent study by Deloitte Access Economics found that the airport generates or facilitates:

- Direct and indirect employment of 283,700 jobs (equivalent to 8% of NSW employment), including 160,000 direct jobs (28,000 directly on airport)
- Direct and indirect economic contribution of \$276 billion (equivalent to 6% of the NSW economy and 2% of the Australian economy)

It is forecast that the economic activity generated or facilitated by the airport will increase to over \$42 billion in 2033 and total employment will increase to over 400,000 by 2033.

Section G3

PDMP information brochure

Getting to and from Sydney Airport

Ensuring passengers, visitors and airport workers can get to and from Sydney Airport efficiently and in a timely manner is vitally important.

To facilitate this, Sydney Airport is committed to enabling a range of reliable, sustainable and cost effective transport options.

The PDMP includes a number of projects to significantly improve road traffic capacity in and around Sydney Airport. In particular, proposed works to the intersections around the T2/T3 precinct, proposed road works within the T1 precinct and the creation of public transport facilities in both precincts will reduce congestion and improve traffic flows in and around the airport when compared to today.

Sydney Airport consulted NSW Government transport agencies when developing these projects. Sydney Airport is also committed to increasing the use of public transport.



Have your say

The PDMP will be on public exhibition until **30 August 2013**. Sydney Airport encourages you to read the PDMP and welcomes feedback.

Where can I see the PDMP?

You can download the PDMP free of charge from www.sydneyairport.com.au and copies are available for viewing in various locations around the airport. Look out for regular Community Updates in local newspapers. Community Information Sessions will be held in a number of public venues in the vicinity of Sydney Airport or under flight paths during the public exhibition period. You are invited to attend these sessions to find out more about the PDMP or have your questions answered by airport representatives. Please refer to the Sydney Airport website for further details or call our Community Information line on 1800 252 040 for further details.

How do I make a submission?

Submissions should be in writing and include your name and address.

All submissions received will be carefully considered by Sydney Airport. The PDMP will then be revised where appropriate before it is submitted to the Australian Government for consideration.

Please forward your written submission by **30 August 2013** to:

Mr Ted Plummer
Manager – Government and Community Relations
Sydney Airport Corporation Limited,
Locked Bag 5000
Sydney International Airport
NSW 2020

Email: masterplan@syd.com.au

Fax: (02) 8338 4931

Community Information
line **1800 252 040**



Sydney Airport Corporation Limited. ACN 082 578 809

SYDNEY AIRPORT



Preliminary Draft Master Plan 2033

There is a new Master Plan being prepared for Sydney Airport

Find out more at www.sydneyairport.com.au



Planning for the future

Sydney Airport is preparing a new Master Plan to submit to the Australian Government by the end of 2013.

As part of the consultation process, a Preliminary Draft Master Plan (PDMP) has been prepared and is being publicly exhibited for comment.

Over \$2 billion of investments and other initiatives during the past decade have improved the passenger experience, enhanced safety and security, delivered environmental improvements and increased capacity to meet demand.

The PDMP builds on this investment, **without any change to the curfew, aircraft movement cap or access arrangements for regional airlines.**

In summary, the PDMP:

- Creates integrated passenger terminals for international, domestic and regional passenger operations
- Improves roads in and around the terminal precincts to reduce traffic congestion
- Provides for the development of aircraft engineering precincts
- Creates transport facilities, well located to the passenger terminals to facilitate fast, affordable and reliable access to multiple transport options
- Incorporates water and energy efficiencies in the new passenger terminal developments.



Commitment to the environment

The PDMP includes a new Environment Strategy, which will provide the strategic direction for the management of ground-based environmental impacts at Sydney Airport from 2013 to 2018.

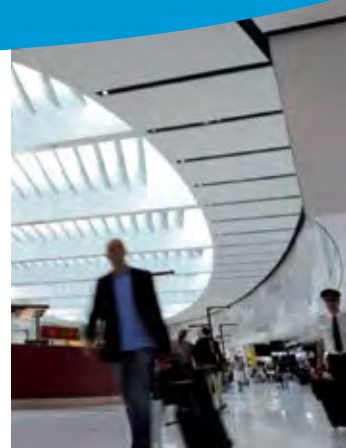
Already our recycled water treatment plant in the T1 precinct saves an average of 600,000 litres of drinking water every day. The roll out of fixed electrical ground power for aircraft is reducing ground-based noise, carbon emissions and improving air quality.

New generation quieter aircraft

Sydney Airport is committed to working with the community, governments and the aviation industry to manage and mitigate the impact of aircraft noise, especially in areas close to the airport or under flight paths. The PDMP is based on:

- No change to the curfew
- No change to the aircraft movement cap
- No change to noise sharing arrangements
- No new flight paths or runways
- No change to access arrangements for regional airlines.

With new generation quieter aircraft replacing older noisier aircraft, the noise impact of aircraft flying to Sydney Airport will continue to improve, helping to offset increased movements.



Aviation forecasts

The forecast passenger numbers, aircraft movements and air freight volumes for 2033 shown in the PDMP provide the fundamental basis for planning.

While higher than today, passenger and aircraft movements in 2033 are forecast to be below those for 2029 in the existing Master Plan.

Economic significance

Sydney Airport is one of Australia's single most important pieces of infrastructure.

The airport generates or facilitates 283,700 jobs including 160,000 direct jobs (28,000 directly on airport) and a direct and indirect economic contribution of \$27.6 billion (equivalent to 6% of the NSW economy).

Section G3

Summary brochure of Preliminary Draft Master Plan



Have your say

Sydney Airport encourages you to read the PDMP and welcomes your feedback.

Comments should be in writing and include your name and address.

All comments received will be carefully considered by Sydney Airport. The PDMP will be revised where appropriate before it is submitted to the Australian Government for consideration.

Please forward your written submission by 30 August 2013 to:

Mr Ted Plummer
Manager – Government and Community Relations
Sydney Airport Corporation Limited
Locked Bag 5000
Sydney International Airport NSW 2020

Email: masterplan@syd.com.au
Fax: (02) 8338 4931

For further information, please phone the Community Information line on **1800 252 040**.



Sydney Airport Corporation Limited: ACN 052 578 809

SYDNEY AIRPORT



Preliminary Draft Master Plan

2033 Summary

Sydney Airport's Preliminary Draft Master Plan is based on:

- No change to the curfew
- No change to the aircraft movement cap
- No change to noise sharing arrangements
- No new flight paths
- No new runways
- No change to regional airline access arrangements





Chief Executive Officer's Foreword

Sydney Airport is preparing a new Master Plan to submit to the Australian Government by the end of 2013.

As part of the consultation process, I am delighted to present this summary of Sydney Airport's Preliminary Draft Master Plan (PDMP).

It was prepared following consultation with airlines, other members of the aviation industry, key government agencies, local government, the tourism industry, the business sector and the local community.

Sydney Airport is located just 8km from the CBD, and less than 10km from the iconic Sydney Harbour and southern beaches. This location gives our city and state a unique advantage when attracting the international business and tourism markets to Australia.

The PDMP details our vision for the operation and development of Sydney Airport that will enable the forecast growth in air travel for tourism and trade well beyond the 2033 planning period. It is a vision that will significantly improve the airport experience for airline passengers – 37 million in 2012 growing to more than 74 million in 2033.

Comments received while preparing the last 2009 Master Plan and feedback we've received since from our airline partners, the community and other stakeholders have informed the preparation of this PDMP.

Over \$2 billion of investments and other initiatives during the past decade have led to increased service levels, enhanced safety and security, delivered environmental improvements and increased capacity to meet demand. Continued investment will ensure that Sydney remains a global city with Sydney Airport connecting Sydney to other global cities and many other parts of Australia.

With aircraft becoming environmentally cleaner, quieter and more fuel-efficient, the noise impacts of aircraft flying to and from Sydney have reduced significantly over recent decades. This trend will continue as new generation, quieter aircraft continue to replace older noisier aircraft.

Sydney Airport consulted NSW Government transport agencies when developing innovative ground transport solutions that will significantly improve access to the airport and reduce traffic congestion.

Sydney Airport will also continue to advocate for improved public transport to the airport.

I encourage you to view the PDMP and we welcome any comments you wish to make.



Kerrie Mather
Chief Executive Officer

The Master Plan Development Concept for Sydney Airport

Planning for growth

The development concept for Sydney Airport in 2033 shown in the PDMP improves the passenger experience, optimises airport efficiency, maximises capacity and establishes the airport's strategic direction for the next 20 years. It also contains a number of road improvements in and around the passenger terminal precincts to reduce traffic congestion.

The development concept emerged from extensive initial consultation with stakeholders to understand their requirements and priorities. There has been a particular emphasis on improving the airport experience for airline passengers.

In summary, the development concept creates integrated terminals for international, domestic and regional passenger operations. It also creates transport interchanges, well located to the terminal precincts, to facilitate fast, affordable and reliable access to multiple transport options.

Once complete, the development concept will:

- Significantly improve the airport experience for airline passengers
- Improve traffic flows on roads in and around the airport
- Improve passenger connectivity by reducing inter-precinct transfers and, where such transfers remain necessary, making increased use of the existing airside transfer corridor
- Enhance airport efficiency
- Increase the apron, terminal and airfield capacity of the airport, particularly for large aircraft such as the A380
- Retain many of the existing freight and fuel facilities adjacent to the terminal precincts

As the needs of the aviation industry sometimes change rapidly, the development concept embeds principles of flexibility and adaptability to ensure those needs can be met appropriately.



Development zones

LEGEND

- AVIATION DEVELOPMENT
- FUEL
- AVIATION SUPPORT & LOGISTICS
- PASSENGER PRECINCT

Section G3

Summary brochure of Preliminary Draft Master Plan continued

Aviation forecasts

The forecast passenger numbers, aircraft movements and air freight volumes for 2033 shown in the PDMP (and below) provide the fundamental basis for future planning.

A comparison between 2012 and the aviation activity forecasts for 2033 is shown below. This shows that, as a consequence of the Global Financial Crisis (GFC), the forecast number of passengers in 2033 is below the forecast in the existing Master Plan. Though higher than today, aircraft movements by 2033 are also forecast to be below the forecast for 2029 in the existing Master Plan, again as a result of the GFC.

Economic significance

Sydney Airport is one of Australia's single most important pieces of infrastructure. The airport generates or facilitates:

- **Jobs.** Direct and indirect employment of 283,700 jobs, including 160,000 direct jobs (28,000 directly on airport)
- **Economic activity.** Direct and indirect economic contribution of \$276 billion (equivalent to 6% of the NSW economy and 2% of the Australian economy)
- **Taxes.** Direct and indirect taxes, including:
 - Substantial income tax and GST revenues to the Australian Government
 - Substantial payroll taxes to the NSW Government
 - Annual contributions, in lieu of rates, to Botany Bay, Rockdale and Murrumbidgee Councils.

Economic activity is forecast to increase to over \$42 billion by 2033 and total employment will increase to over 400,000 by 2033.

Sydney Airport also underpins growth in the tourism industry and the hundreds of thousands of jobs it generates. Through its new partnership agreement with Destination NSW and



closer ties with Tourism Australia, Sydney Airport will continue to work in collaboration with the Australian and NSW Governments to grow tourism and the visitor economy.

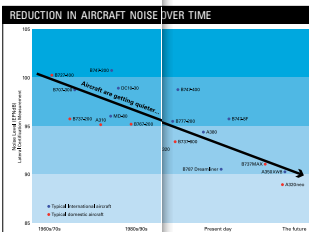
Sustainability, climate change and environmental management

Sydney Airport and the broader aviation community are working together to reduce environmental impacts.

This includes meeting voluntary global commitments for reducing carbon emissions, whilst continuing to deliver the benefits of fast, reliable, safe and efficient air travel.

The PDMP includes a new Airport Environment Strategy, which will provide the strategic direction for the management of ground-based environmental impacts at Sydney Airport from 2013 to 2018.

	2012	2029 Forecast (existing 2008 Master Plan)	2033 Forecast (PDMP)
International, domestic and regional passengers (millions)	36.9	78.9	74.3
Fixed wing aircraft movements	321,630	427,400	409,500
Air freight (tonnes)	737,000	1,077,000	1,011,000

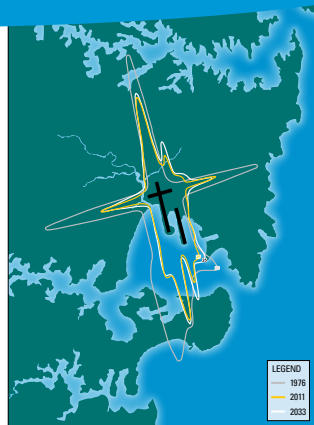


Key initiatives include:

- The recycled water treatment plant in the T1 precinct – which already saves an average of 600,000 litres of drinking water every day – will be expanded
- A trigeneration facility is being planned, with initial feasibility assessments being considered. Benefits include a reduction in greenhouse gas emissions
- Continued investment in fixed electrical ground power for aircraft, reducing emissions and noise
- Other sustainable energy saving initiatives – including the use of solar hot water and LED lighting.

The benefits of new generation quieter aircraft

For most of the world's major airports – including Sydney – aircraft noise has been a long standing issue.



Sydney Airport is committed to working with the community, governments and the aviation industry to manage and mitigate aircraft noise impacts, especially in areas close to the airport or under flight paths.

Domestic and international aircraft in Australian skies are some of the most modern in the world. With new generation quieter aircraft continuing to replace older noisier aircraft, noise impacts from aircraft using Sydney Airport will continue to improve, helping to offset increased movements.

Sydney Airport's PDMP is based on:

- No change to the curfew
- No change to the aircraft movement cap
- No change to noise sharing arrangements
- No new flight paths or runways
- No change to regional airline access arrangements.

Aircraft built today are about 75% quieter than they were 40 years ago. The aviation industry is working to reduce this even more.

The chart on this page illustrates the effect of the new quieter aircraft, by comparing three noise exposure contours: one from 1976 (when the fleet comprised older noisier jets), one from 2011 (when new generation quieter aircraft are being introduced), and a forecast for 2033. The area of land within this noise contour has decreased by 1,150 hectares or 36% since 1976.

However, Sydney Airport recognises that aircraft noise can still be an issue of concern for people living in areas outside these contours. As such, noise management needs to occur in affected areas close to and further away from the airport.

The PDMP contains a range of charts that illustrate forecast aircraft noise impacts in areas around the airport.

Getting to and from Sydney Airport

Ensuring passengers, visitors and airport workers can get to and from Sydney Airport efficiently and in a timely manner is vitally important.

To facilitate this, Sydney Airport is committed to enabling a range of reliable, sustainable and cost effective transport options.

The development concept shown in the PDMP includes a number of projects to significantly improve road traffic capacity in and around Sydney Airport. In particular, proposed works to intersections around the T2/T3 precinct, proposed road works within the T1 precinct and the creation of public transport facilities in both precincts will reduce congestion and improve traffic flows in and around the airport when compared to today.

Sydney Airport consulted NSW Government transport agencies when developing these projects.

Sydney Airport is also committed to increasing the use of public transport. Currently, public transport journeys account for 17% of total trips to Sydney Airport. This has been increasing by one percentage point per annum over the last five years and is anticipated to continue to increase at that rate to 2018.

The NSW Government has committed to additional train capacity on the airport line in peak periods to facilitate this further.

The Infrastructure NSW *First Things First* recommendations announced in October 2012 include a range of investments to address the commuter, freight and airport-related traffic in the vicinity of the airport, including:

- Constructing WestConnex, which expands and links the M4 and M5 East Motorways and will provide commuters with alternative routes that avoid the airport precinct
- Fixing road pinch points in the Port Botany and Sydney Airport precinct
- Reducing rail fares to the airport stations
- Adding new bus routes to Sydney Airport
- Enhancing the capacity of the freight rail lines, which will divert some freight traffic from road to rail

Finally, additional car parking facilities will be provided across the airport to service growing demand over the next 20 years.



Sydney Airport Experience Centre

Sydney Airport is planning to develop an Experience Centre that members of the community can visit to find out more about the airport and the aviation industry. Visitors will be taken on an engaging journey behind the scenes of one of the world's busiest airports.

The Experience Centre will invite visitors to explore the history, operational challenges, environmental initiatives and future vision for the airport through a series of engaging and informative installations.

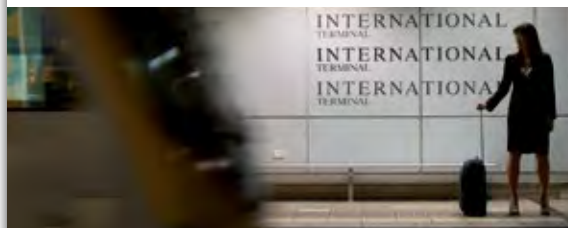
Community and stakeholder consultation

Talking with members of the community and other stakeholders and hearing their views about the PDMP is important to Sydney Airport.

Sydney Airport will consult the community across Sydney and NSW, local government, Australian and NSW Government agencies, the aviation industry, business and tourism groups.

The PDMP will be on public exhibition until 30 August 2013.

You can download the PDMP free of charge from www.sydneyairport.com.au. Copies will be available for viewing in various locations around Sydney Airport. There will be regular Community Updates in local newspapers and a series of Community Information Sessions will be held. Please refer to the Sydney Airport website for further details.



Section G4

Exhibition poster



Have your say

Preliminary Draft Master Plan 2033

Sydney Airport is preparing a new Master Plan to submit to the Australian Government by the end of 2013.

As part of the consultation process, a Preliminary Draft Master Plan (PDMP) has been prepared and is being publicly exhibited for comment.

Over \$2 billion of investments and other initiatives during the past decade have improved the passenger experience, enhanced safety and security, delivered environmental improvements and increased capacity to meet demand.

The PDMP builds on this investment, **without any change to the curfew, aircraft movement cap or access arrangements for regional airlines.**

HAVE YOUR SAY
Sydney Airport would like to hear your views about our future plans.

The PDMP will be on public exhibition until **30 August 2013**. Sydney Airport encourages you to read the PDMP and welcomes feedback.

You can download the PDMP free of charge from www.sydneyairport.com.au. There will be a series of Community Information Sessions held during the public exhibition period. Please refer to the Sydney Airport website for further details.

HOW DO I MAKE A SUBMISSION?


Submissions should be in writing and include your name and address. All submissions received will be carefully considered by Sydney Airport. The PDMP will then be revised where appropriate before it is submitted to the Australian Government for consideration.

Please forward your written submission by **30 August 2013** to:
Mr Ted Plummer
Manager – Government and Community Relations
Sydney Airport Corporation Limited,
Locked Bag 5000
Sydney International
Airport NSW 2020
masterplan@syd.com.au
Fax: (02) 8338 4931
Community Information line **1800 252 040**



Sydney Airport
The right future.
Starting now.

Submission form



Delivery Address:
Locked Bag 5000
SYDNEY INTERNATIONAL AIRPORT NSW 2020

**No stamp required
if posted in Australia**

POSTAGE

**MR TED PLUMMER
MANAGER - GOVERNMENT AND COMMUNITY RELATIONS
SYDNEY AIRPORT CORPORATION LIMITED
Reply Paid 86475
SYDNEY INTERNATIONAL AIRPORT NSW 2020**


SECOND FOLD HERE

SENDER DETAILS

Name: _____

Address: _____

FIRST FOLD HERE



Sydney Airport
The right future.
Starting now.

Sydney Airport Preliminary Draft Master Plan 2033

Sydney Airport is preparing a new Master Plan to submit to the Australian Government by the end of 2013.

As part of the consultation process, a Preliminary Draft Master Plan (PDMP) has been prepared and is being publicly exhibited for comment.

The PDMP details Sydney Airport's vision for the operation and development of the airport that will enable the forecast growth in air travel for tourism and trade well beyond the 2033 planning period.

The PDMP is based on no change to the curfew, no change to the aircraft movement cap, no change to noise sharing arrangements, no change to access arrangements for regional airlines and no new runways.

The PDMP is on public exhibition until **30 August 2013**. It can be downloaded from www.sydneyairport.com.au.

Sydney Airport encourages you to read the PDMP and welcomes your feedback.

Please complete the form below and send it back by **30 August 2013** (no stamp required). Alternatively, you can make an online submission by visiting the website.

All comments received will be carefully considered by Sydney Airport. The PDMP will then be revised where appropriate before it is submitted to the Australian Government for consideration.

For further information, please phone the Community Information line on **1800 252 040**.

Surname: _____

First Name: _____

Street Address: _____

Suburb: _____ **State:** _____ **Postcode:** _____

Comments: _____

PLEASE ATTACH ADDITIONAL SHEETS IF NECESSARY

THANK YOU FOR YOUR TIME, WE VALUE YOUR COMMENTS.

Section G5

Community updates (English language newspapers)

No. 1



SYDNEY AIRPORT COMMUNITY UPDATE

Preliminary Draft Master Plan

Sydney Airport is preparing a new Master Plan to submit to the Australian Government by the end of 2013. As part of the consultation process, a Preliminary Draft Master Plan (PDMP) has been prepared and is being publicly exhibited for comment.

The PDMP details Sydney Airport's vision to significantly improve the airport experience for airline passengers and accommodate forecast growth.

The PDMP is based on:

- No change to the curfew
- No change to the aircraft movement cap
- No change to noise sharing arrangements
- No change to access arrangements for regional airlines
- No new flight paths or runways.

Improving transport access

The PDMP includes a number of projects to significantly improve road capacity around Sydney Airport's passenger terminals, as well as the creation of public transport facilities. This will improve traffic flow and reduce congestion in and around the airport.

Managing aircraft noise

Aircraft built today are about 75% quieter than they were 40 years ago. With new generation quieter aircraft like the A380 continuing to replace older noisier aircraft, noise impacts from aircraft using Sydney Airport will continue to improve, helping to offset increased movements.

Consultation

The PDMP is on public exhibition until

30 August 2013. It can be downloaded from www.sydneyairport.com.au. Copies are available for viewing in various locations around Sydney Airport. There will be regular Community Updates in local newspapers and a series of Community Information Sessions will be held. Please refer to the Sydney Airport website for further details.

Submitting your comments

Sydney Airport encourages you to read the PDMP and welcomes your feedback. Comments should be in writing and include your name and address. All comments received will be considered by Sydney Airport. The PDMP will then be revised where appropriate before it is submitted to the Australian Government for consideration.

Please forward your written submission by 30 August 2013 to:

Mail: Mr Ted Plummer, Manager – Government & Community Relations
Sydney Airport Corporation Limited
Locked Bag 5000
Sydney International Airport NSW 2020
Email: masterplan@syd.com.au
Fax: (02) 8338 4931

For further information, please phone the Community Information line on **1800 252 040**.



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No. 2



SYDNEY AIRPORT COMMUNITY UPDATE

Preliminary Draft Master Plan

Sydney Airport is preparing a new Master Plan to submit to the Australian Government by the end of 2013. As part of the consultation process, a Preliminary Draft Master Plan (PDMP) has been prepared and is being publicly exhibited for comment.

The PDMP details Sydney Airport's vision to significantly improve the airport experience for airline passengers and accommodate forecast growth.

The PDMP is based on:

- No change to the curfew
- No change to the aircraft movement cap
- No change to noise sharing arrangements
- No change to access arrangements for regional airlines
- No new flight paths or runways.

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Sydney Airport Corporation Limited
Locked Bag 5000
Sydney International Airport NSW 2020
Email: masterplan@syd.com.au
Fax: (02) 8338 4931

For further information, please phone the Community Information line on **1800 252 040**.



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No. 3



SYDNEY AIRPORT COMMUNITY UPDATE

Preliminary Draft Master Plan

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The PDMP details Sydney Airport's vision to significantly improve the airport experience for airline passengers and accommodate forecast growth.

The PDMP is based on:

- No change to the curfew
- No change to the aircraft movement cap
- No change to noise sharing arrangements
- No change to access arrangements for regional airlines
- No new flight paths or runways.

Improving transport access

The PDMP includes a number of projects to significantly improve road capacity around Sydney Airport's passenger terminals, as well as the creation of public transport facilities. This will improve traffic flow and reduce congestion in and around the airport.

Managing aircraft noise

Aircraft built today are about 75% quieter than they were 40 years ago. With new generation quieter aircraft like the A380 continuing to replace older noisier aircraft, noise impacts from aircraft using Sydney Airport will continue to improve, helping to offset increased movements.

Commitment to the environment

The PDMP includes a new Environment Strategy which contains more than

100 actions to improve sustainability, climate change and environmental outcomes at Sydney Airport.

Consultation

The PDMP is on public exhibition until **30 August 2013.** It can be downloaded from www.sydneyairport.com.au. Copies are also available for viewing in various locations around Sydney Airport.


Submitting your comments

Sydney Airport encourages you to read the PDMP and welcomes your feedback. Comments should be in writing and include your name and address. All comments received will be considered by Sydney Airport. The PDMP will then be revised where appropriate before it is submitted to the Australian Government for consideration.

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Sydney Airport Corporation Limited
Locked Bag 5000
Sydney International Airport NSW 2020
Email: masterplan@syd.com.au
Fax: (02) 8338 4931

For further information, please phone the Community Information line on **1800 252 040**.



The right future. Starting now.

The Land



SYDNEY AIRPORT COMMUNITY UPDATE

Preliminary Draft Master Plan

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The PDMP details Sydney Airport's vision to significantly improve the airport experience for airline passengers and accommodate forecast growth.

The PDMP is based on:

- No change to the curfew
- No change to the aircraft movement cap
- No change to noise sharing arrangements
- No change to access arrangements for regional airlines
- No new flight paths or runways.

Supporting regional communities

Sydney Airport recognises the importance of its existing network of regional air services to local communities.

Over the past 20 years, regional traffic has grown at Sydney Airport with a 221% increase in passenger numbers.

Sydney Airport is proud of the service it provides to regional communities, including an extensive route network during the peak hours, facilitating connectivity with international and domestic routes, and lower airport charges than almost all other airports in the Sydney regional route network.

The PDMP is based on **no change to access arrangements for regional airlines.**

Improving transport access

The PDMP includes a number of projects to significantly improve road capacity around Sydney Airport's passenger terminals, as well as the creation of public transport facilities. This will improve traffic flow and reduce congestion in and around the airport.

Consultation

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Email: masterplan@syd.com.au
Fax: (02) 8338 4931

For further information, please phone the Community Information line on **1800 252 040**.



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Section G6

Community language newspapers

Arabic



Chinese



Greek



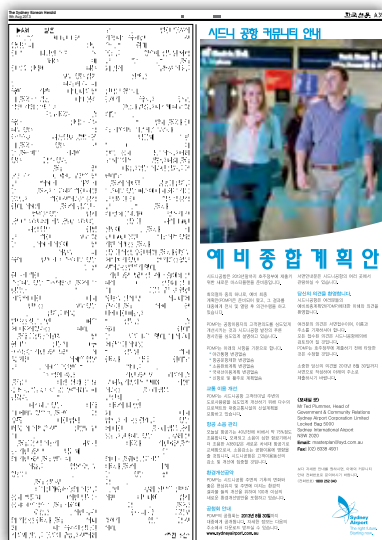
Indonesian



Italian



Korean



Spanish



Vietnamese



Section G7

Community information session notifications

COMMUNITY INFORMATION SESSIONS

Sydney Airport Preliminary Draft Master Plan

Sydney Airport is preparing a new Master Plan to submit to the Australian Government by the end of 2013.

As part of the consultation process, a Preliminary Draft master Plan (PDMP) has been prepared and is being publicly exhibited for comment.

The PDMP is based on no change to the curfew, aircraft movement cap, noise sharing arrangements flight paths or access arrangements for regional airlines.

Sydney Airport invites you to come along to one of our Community Information Sessions to learn more about the PDMP (details below). Airport representatives will be on hand to explain details of the PDMP and answer any questions you may have.

The PDMP is on public exhibition until **30 August 2013**. Sydney Airport encourages you to view the PDMP and welcomes your feedback.

For further information, call our Community Information Line on **1800 252 040** or visit our website www.sydneyairport.com.au.

- **Marrickville Metro** (the Food Court, 34 Victoria Road, Marrickville) on Wednesday 19 June 2013 (9am to 5.30pm)
- **Orange Grove Markets** (Cnr Perry Street & Balmain Road, Leichhardt) on Saturday 22 June 2013 (8am to 1pm)
- **Broadway Shopping Centre** (Ground Floor, Bay Street, Broadway) on Wednesday 26 June 2013 (10am to 7pm)
- **Eveleigh Markets** (243 Wilson Street, Darlington, near Redfern Station) on Saturday 29 June 2013 (8am to 1pm)



COMMUNITY INFORMATION SESSIONS

Sydney Airport Preliminary Draft Master Plan

Sydney Airport is preparing a new Master Plan to submit to the Australian Government by the end of 2013.

As part of the consultation process, a Preliminary Draft master Plan (PDMP) has been prepared and is being publicly exhibited for comment.

The PDMP is based on no change to the curfew, aircraft movement cap, noise sharing arrangements flight paths or access arrangements for regional airlines.

Sydney Airport invites you to come along to one of our Community Information Sessions to learn more about the PDMP (details below). Airport representatives will be on hand to explain details of the PDMP and answer any questions you may have.

The PDMP is on public exhibition until **30 August 2013**. Sydney Airport encourages you to view the PDMP and welcomes your feedback.

For further information, call our Community Information Line on **1800 252 040** or visit our website www.sydneyairport.com.au.

- **Hurstville Library** (Exhibition Room) Cnr Queens Road & Dora Street, Hurstville on Saturday 13 July 2013 (9.30am to 4pm)
- **Pacific Square Shopping Centre** Anzac Parade, Maroubra Junction on Wednesday 24 July 2013 (9am to 5.30pm)
- **Eastgate Shopping Centre** (near Deli Fresco) Spring Street, Bondi Junction on Saturday 27 July 2013 (9am to 5.30pm)





APPENDIX H

APPENDIX H **DICTIONARY**

Term	Definition
ABC	Airport building controller
ACA	Airport Co-ordination Australia Pty Limited
ACI / DKMA	Airports Council International / DKMA
ADSB	Automatic dependant surveillance broadcast
Advertisement	A sign, notice, device or representation in the nature of an advertisement visible from any public place or public reserve or from any navigable water.
Advertising structure	A structure used or to be used principally for the display of an advertisement.
AEO	Airport Environmental Officer
AEPR	Airport Environment Protection Regulations
AER	Airport Environment Report
AES	Airport Environment Strategy
AFP	Australian Federal Police
Aircraft maintenance facility	A building or place used for the repair and fitting of accessories to aircraft or vehicles associated with airport operations, and includes work involving body building, panel building, panel beating, spray painting or chassis restoration.
Airport	A place used for the landing, taking off, parking, maintenance or repair of aeroplanes, and includes associated buildings, installations, facilities and movement areas and any heliport that is part of the airport.
ALC	Airport lessee company
Amusement centre	A building or place (not being part of a pub or registered club) used principally for playing: (a) Billiards, pool or other like games, or (b) Electronic or mechanical amusement devices, such as pinball machines, computer or video games and the like
ANEC	Australian noise exposure concept
ANEF	Australian noise exposure forecast
ANEI	Australian noise exposure index
Animal boarding or training establishment	A building or place used for the boarding, keeping, dog training for border security purposes or caring of animals for commercial purposes, and includes an ancillary veterinary hospital.
Aprons	Aprons are defined areas for the safe parking of aircraft. The transfer of passengers and freight between aircraft and terminal facilities as well as servicing and maintenance of aircraft in between flights takes place on aprons.
APU	Auxiliary power unit
AQMS	Air quality monitoring system
ARFF	Airport rescue and fire fighting
ASA	Airservices Australia
ASC	Airport Strategic Consulting Pty Limited
ASMGCS	Advanced surface movement guidance and control system
ASS	Acid sulphate soils
AT-VASIS	At-visual approach slope indicator systems
ATC	Air traffic control
ATI	Aerodrome technical inspection

Australian noise exposure concept (ANEC)	A set of contours based on hypothetical aircraft operations at an airport in the future. In this Master Plan, ANECs have been used to model the impact of the new generation of quieter aircraft such as the A380 and B787. As ANEC maps are based on hypothetical assumptions and may not have been subject to review or endorsement, they have no official status and cannot be used for land use planning purpose. An ANEC however, can be turned into an ANEF.
Australian noise exposure forecast (ANEF)	A set of contours showing forecast of future aircraft noise levels. The ANEF is fundamentally a tool for land use planning, and is used in Australian Standard 2021 to define areas where construction of certain building types is "acceptable", "conditionally acceptable" and "unacceptable". At ANEF values less than 20, all building types are considered "acceptable", and hence 20 ANEF is the lowest-valued contour generally shown on ANEF charts. ANEF maps are subject to review and endorsement by Airservices Australia.
Australian noise exposure index (ANEI)	A set of contours calculated using ANEF techniques and based on historical data that shows the average noise exposure for a given period such as a year. Airservices Australia publishes the quarterly and annual ANEI for Sydney Airport.
Aviation activity	Any activity for the arrival, departure, movement or operation of aircraft and includes aircraft aprons, helipads, heliports, runways, taxiways and the like.
Aviation support facility	Any aircraft maintenance facility, engine-run area, ground support equipment, airline catering, airline office, transport depot and associated ground-base activities necessary for the orderly and efficient operation of aviation activity.
BARA	Board of Airline Representatives of Australia Inc.
BHS	Baggage handling system
BITRE	Bureau of Infrastructure, Transport and Regional Economics
BOM	Bureau of Meteorology
Building identification sign	A sign that identifies or names a building and that may include the name of a building, the street name and number of a building, and a logo or other symbol, but that does not include general advertising of products, goods or services.
Bulky goods premises	<p>A building or place used primarily for the sale by retail, wholesale or auction (or for the hire or display of) bulky goods, being goods that are of such a size or weight as to require:</p> <ul style="list-style-type: none"> (a) a large area for handling, display or storage, or (b) direct vehicular access to the site of the building or place by members of the public for the purpose of loading or unloading such goods into or from their vehicles after purchase or hire <p>and including goods such as floor and window supplies, furniture, household electrical goods, equestrian supplies and swimming pools, but does not include a building or place used for the sale of foodstuffs or clothing unless their sale is ancillary to the sale or hire or display of bulky goods.</p>
Business identification sign	<p>A sign:</p> <ul style="list-style-type: none"> (a) that indicates: <ul style="list-style-type: none"> • the name of the person or business, and • a the nature of the business carried on by the person at the premises or place at which the sign is displayed, and (b) That may include the address of the premises or place and a logo or other symbol that identifies the business
Business premises	<p>A building or place at or on which:</p> <ul style="list-style-type: none"> (a) an occupation, profession or trade (other than an industry) is carried on for the provision of services directly to members of the public on a regular basis, or (b) a service is provided directly to members of the public on a regular basis (c) And may include, without limitation, premises such as banks, post offices, hairdressers, dry cleaners, food and drink premises, travel agencies, internet access facilities, medical centres, betting agencies and the like, but does not include sex service premises
CAEP	Committee on Aviation Environmental Protection (ICAO)
CAGR	Compound annual growth rate
CAO	Civil aviation order
CAPA	CAPA Centre for Aviation

Car park	A building or place primarily used for the purpose of parking motor vehicles, including any manoeuvring space and access thereto, whether operated for gain or not and may include valet parking services and car wash facilities/services.
CASA	Civil Aviation Safety Authority
CASR	Civil Aviation Safety Regulations
CAST	Comprehensive airport simulation technology computer program
CBD	Central business district
CCTV	Closed circuit television
CDA	Continuous descent approach
CEO	Chief executive officer
Child care centre	<p>A building or place used for the supervision and care of children that:</p> <ul style="list-style-type: none"> (a) provides long day care, pre-school care, occasional child care or out-of-school-hours care, and (b) does not provide overnight accommodation for children other than those related to the owner or operator of the centre <p>but does not include:</p> <ul style="list-style-type: none"> (c) a building or place used for home-based child care, or (d) an out-of-home care service provided by an agency or organisation accredited by the NSW Office of the Children's Guardian, or (e) a baby-sitting, playgroup or child-minding service that is organised informally by the parent of the children concerned, or (f) a service provided for fewer than 5 children (disregarding any children who are related to the person providing the service) at the premises at which at least one of the children resides, being a service that is not advertised (g) a regular child-minding service that is provided in connection with a recreational or commercial facility (such as a gymnasium), by or on behalf of the person conducting the facility, to care for children while the children's parents are using the facility, or (h) a service that is concerned primarily with the provision of: <ul style="list-style-type: none"> (i) Lessons or coaching in, or providing for participation in, a cultural, recreational or religious or sporting activity, or (ii) Private tutoring, or (i) a school, or (j) a service provided at exempt premises (within the meaning of Section 200 of the Children and Young Persons (Care and Protection) Act 1998), such as hospitals, but only if the service is established, registered or licensed as part of the institution operation on those premises
Code	<p>Australia has adopted ICAO methodology of using a code system, known as the Aerodrome Reference Code, to specify the standards for individual aerodrome facilities which are suitable for use by aeroplanes within a range of performances and sizes.</p> <p>Ascending letters indicate increasing aircraft size, for example a Boeing 737 or Airbus A320 is a Code C aircraft, a Boeing 747-400 or Airbus A330 is a Code E aircraft and the Airbus A380 is a Code F aircraft.</p>
Convenience store	Premises used for the purposes of selling small daily convenience goods such as foodstuffs, personal care products, newspapers and the like to provide for the day-to-day needs of people who live or work in the local area, and may include ancillary services such as a post office, bank or dry cleaning but does not include restricted premises (eg brothels). Convenience store has the same definition of "neighbourhood shop" (per the NSW LEP Standard definition).
CTO	Cargo terminal operator
DA	Development application

Development	<p>For the purposes of this Master Plan means:</p> <ul style="list-style-type: none"> (a) constructing buildings or other structures, (b) altering the structure of buildings or other structures, (c) undertaking, constructing or altering earthworks (whether or not in relation to buildings or other structures), (d) undertaking, constructing or altering engineering works, electrical works or hydraulic works (whether or not in relation to buildings or other structures), (e) demolishing, destroying, dismantling or removing: <ul style="list-style-type: none"> (i) Buildings or other structures, or (ii) Earthworks, or (iii) Engineering works, or (iv) Electrical works, or (v) Hydraulic works (f) undertaking land clearing
DGPS	Differential GPS
DIRD	Department of Infrastructure and Regional Development
DME	Distance measuring equipment
DMP	Draft Master Plan
DOM	Domestic
DVOR	Doppler very-high frequency omni range
Earthworks or engineering works	<p>Means:</p> <ul style="list-style-type: none"> (a) runways, taxiways and aprons, (b) surface car parks (c) retaining walls (d) dams (e) roads (f) railways (g) pipelines (h) tunnels
Educational establishment	<p>A building or place used for education (including teaching), being:</p> <ul style="list-style-type: none"> (a) a school, or (b) a tertiary institution, including a university or a TAFE establishment that provides formal education and is constituted by or under an Act
EMP	Environmental management plan
EMS	Environmental management system
Entertainment facility	A theatre, cinema, musical hall, concert hall, dance hall and the like, but does not include a pub, nightclub or registered club.
Environmental facility	A building or place that provides for the recreational use or scientific study of natural systems and including walking tracks, seating, shelters, board walks, observation decks, bird hides or the like, and associated display structures.
Environmental protection works	Works associated with the rehabilitation of land towards its natural state or any work to protect land from environmental degradation, and includes bush regeneration works, wetland protection works, erosion protection works, dune restoration and the like.
EPA	NSW Environment Protection Authority
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW)
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999

Existing leases	All existing leases and interests in the land at the time the head lease was granted which are in effect as of the date of the Master Plan.
FAA	Federal Aviation Administration (USA)
FBO	Fixed base operator
FEGPU	Fixed electrical ground power unit
Flight path movement maps	These maps provide an indication of where aircraft fly and how many overflights there are over a particular period
FOD	Foreign object damage/foreign object debris
Food and drink premises	<p>Premises that are used for the preparation and retail sale of food or drink (or both) for immediate consumption on or off the premises, and includes any of the following:</p> <ul style="list-style-type: none"> (a) a restaurant or cafe (b) take away food and drink premises (c) a pub (d) a small bar
Freight handling and transport facility	A facility used principally for the bulk handling of goods for transport by road, rail, air or sea including any facility for the loading and unloading of vehicles, aircraft, vessels or containers used to transport those goods and for the parking, holding, servicing or repair of those vehicles, aircraft or vessels or for the engines or carriages involved.
FTE	Full time equivalent
Function centre	A building or place used for the holding of events, functions, conferences and the like, and includes convention centres, exhibition centres and reception centres, but does not include an entertainment facility.
GA	General aviation
Gate	Physical location where passengers depart/arrive at terminal to access aircraft – either directly for contact stands or via bus or walking for remote stands.
GBAS	Ground based augmentation system
GDP	Gross domestic product
GEC	Global economic corridor
GLS	Global landing systems
GNSS	Global navigation satellite systems
GPS	Global positioning system
GSE	Ground support equipment
GSP	Gross state product
H5N1	H5N1 bird flu
Health care professional	Any person registered under an Act for the purpose of providing health care.
Helipad	A place not open to the public used for the taking off and landing of helicopters.
Heliport	<p>A place open to the public used for the taking off and landing of helicopters whether or not it includes:</p> <ul style="list-style-type: none"> (a) a terminal building, or (b) facilities for the parking, storage or repair of helicopters
Heritage conservation management plan	A document that details the heritage significance of an item, place or heritage conservation area and identifies conservation policies and management mechanisms that are appropriate to enable that significance to be retained.
Heritage impact statement	<p>A document consisting of:</p> <ul style="list-style-type: none"> (a) a statement demonstrating the heritage significance of a heritage item, archaeological site, place of Aboriginal heritage significance or other heritage conservation area, and (b) an assessment of the impact that proposed development will have on that significance, and (c) proposals for measures to minimise that impact

Heritage item	A building, work, archaeological site, tree, place or Aboriginal object described in an inventory of heritage items that is available at the head office of Sydney Airport.
Heritage significance	Archaeological, architectural, cultural, historical, natural or aesthetic value, scientific or social value.
HIA	Heritage impact assessment
HIAL	High intensity approach lighting
Hotel or motel accommodation	A building or place (whether or not licensed premises under the Liquor Act 2007 in accordance with the Airports (Control of On-Airport Activities) Regulations 1997 Part 1A): (a) comprising rooms or self-contained suites, and (b) that may provide meals to guests or the general public and facilities for the parking of guests' vehicles but does not include backpackers accommodation, a boarding house, bed & breakfast accommodation or farm stay accommodation.
HVAC	Heating, ventilation, and air conditioning systems
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
ILS	Instrument landing systems
IMC	Instrument meteorological conditions
IMF	International Monetary Fund
Industrial retail outlet	A building or place that: (a) is used in conjunction with an industry (including a light industry) but not in conjunction with a warehouse or distribution centre, and (b) is situated on the land on which the industry is carried out, and (c) is used for the display or sale (whether by retail or wholesale) of only those goods that have been manufactured on the land on which the industry is carried out. but does not include a warehouse or distribution centre.
Industry	Means the manufacturing, production, assembling, altering, formulating, repairing, renovating, ornamenting, finishing, cleaning, washing, dismantling, transforming, processing, recycling, adapting or servicing of, or the research and development of, any goods, substances, food, products or articles for commercial purposes, and includes any storage or transportation associated with any such activity.
INM	Integrated noise model
IWI	Illuminated wind indicators
Jet Base	Qantas Jet Base located in the North East Sector of the airport adjacent to Terminal 3.
Joint Study	Joint Study on aviation capacity in the Sydney region, Australian and NSW Governments, 2012
JOSF	Joint oil storage facility near T2 (now decommissioned)
JUHI	Joint user hydrant installation. An unincorporated joint venture currently comprising BP, Caltex, ExxonMobil, Shell and Qantas.
JWG	Transport for NSW and Sydney Airport joint working group
Kiosk	Retail premises used for the purposes of selling food, light refreshments and other small convenience items such as newspapers, films and the like.
KPI	Key performance indicator
LAAS	Local area augmentation systems
Landscape and garden supplies	A building or place used for the storage and sale of landscaping supplies such as soil, gravel, potting mix, mulch, sand, railway sleepers, screenings, rock and the like, and/or a building or place the principal purpose of which is the retail sale of plants and landscaping and gardening supplies and equipment. It may, if ancillary to the principal purpose for which the building or place is used, include a restaurant or cafe and the sale of any of the following: outdoor furniture and furnishings, barbeques, shading and awnings, pools, spas and associated supplies, and items associated with the construction and maintenance of outdoor areas; pets and pet supplies and/or fresh produce.

LCC	Low cost carrier
LED	Light emitting diode
LEP	Local environmental plan
LGA	Local government area
Light industry	A building or place used to carry out an industrial activity that does not interfere with the amenity of the neighbourhood by reason of noise, vibration, smell, fumes, smoke, vapour, steam, soot, ash, dust, waste water, waste products, grit or oil, or otherwise, and includes high technology industry.
Liquid fuel depot and distribution facility	Storage and distribution premises that are used for the bulk storage and distribution of petrol, oil, petroleum or other inflammable liquid for aircraft and airport vehicles.
LTOP	Long Term Operating Plan
LTOP IMC	Long Term Operating Plan implementation and monitoring committee
LTTMP	Long Term Transport Master Plan (NSW Government)
MAGS	Movement area guidance sign
Manoeuvring areas	That part of the aerodrome to be used for the take-off, landing and taxiing of aircraft, excluding aprons.
Marina	<p>A permanent boat storage facility (whether located wholly on land, wholly on the waterway or partly on land and partly on the waterway) together with any associated facilities, including any:</p> <ul style="list-style-type: none"> (a) facility for the construction, repair, maintenance, storage, sale of hire of boats, and (b) facility for providing fuelling, sewage pump-out or other services for boats, and (c) facility for launching or landing boats, such as slipways or hoists, and (d) associated car parking, commercial, tourist or recreational or club facility that is ancillary to a boat storage facility, and (e) associated single mooring
MDP	Major development plan
Medical centre	Business premises used for the purpose of providing health services (including preventative care, diagnosis, medical or surgical treatment, counselling or alternative therapies) to outpatients only, where such services are principally provided by health care professionals, and may include the ancillary provision of other health services.
Mixed use development	A building or place comprising 2 or more different land uses, identified as permissible in the zone.
MLAT	Multilateration
MMR	Multi mode receivers
MOS	Manual of standards
Movement areas	That part of the aerodrome to be used for the take-off, landing and taxiing of aircraft, consisting of the manoeuvring area and the aprons.
N70	Noise events louder than 70dB(A)
N70 contours	These are one of a number of alternative noise descriptors. N70 refers to the number of noise events louder than 70dB(A) over a particular period. The level of 70dB(A) has been chosen because it is equivalent to the single event level of 60dB(A) specified in the Australian Standard AS2021 as the indoor design sound level for normal domestic areas in dwellings. An external single event noise level will be attenuated by approximately 10dB(A) by the fabric of a house with the windows open. An internal noise level of 60dB(A) is likely to interfere with conversation or with listening to radio or television. Airservices Australia publish regular N70 contour charts which will be able to be compared to the chart shown in the Master Plan.
Navigational aids	Any aircraft surveillance equipment, control towers, radars, visual and non-visual navigation aids and the like.
NE sector	North East Sector (of the airport)
NFPMS	Noise and flight path monitoring system
NG	New generation

NMT	Noise monitoring terminal
NPI	National pollutant inventory
NSW	New South Wales
NSWDPI	New South Wales Department of Planning and Infrastructure
NW Sector	North West Sector (of the airport)
O&D	Origin and destination
OECD	Organisation for economic co-operation and development
OEH	NSW Office of Environment and Heritage
Office premises	A building or place used for the purpose of administrative, clerical, technical, professional or similar activities that do not include dealing with members of the public at the building or place on a direct and regular basis, except where such dealing is a minor activity (by appointment) that is ancillary to the main purpose for which the building or place is used.
OLS	Obstacle limitation surface
OTS	Office of Transport Security
PANS-OPS	Procedures for air navigation services – aircraft operations
PAPIS	Precision approach path indicator system
Parking space	A space dedicated for the parking of a motor vehicle, including any manoeuvring space and access to it, but does not include a car park.
Passenger transport facility	A building or place used for the assembly or dispersal of passengers by any form of transport, including public transport and facilities required for parking, manoeuvring, storage or routine servicing of any vehicle that uses the building or place.
PCA	Preconditioned air
PDMP	Preliminary Draft Master Plan
Precision approach runway, category I	An instrument runway served by instrument landing systems (ILS) or microwave landing systems (MLS) and visual aids intended for operations with a decision height not lower than 60m (200ft) and either a visibility not less than 800m or a runway visual range not less than 550m.
PRM	Precision runway monitor
Pub	Licensed premises under the Liquor Act 1982, the principal purpose of which is the sale of liquor for consumption on the premises, whether or not the premises include hotel or motel accommodation and whether or not food is sold on the premises, but excludes gaming facilities.
Public administration building	A building or facility used for offices, administrative, training, equipment storage, or other like purposes by the Crown, a statutory body, a council or an organisation established for public purposes, and includes police station, customs, aviation rescue and fire fighting services and the like.
RAAF	Royal Australian Air Force
RBP	Representative busy period
Recreation area	A place used for outdoor recreation that is normally open to the public, and includes: (a) a children's playground, or (b) an area used for community sporting activities, or (c) a park, reserve or garden or the like (d) and any ancillary buildings but does not include a recreation facility (indoor), recreation facility (major) or recreation facility (outdoor).
REF	Review of environmental factors
Registered club	A registered club means a club that in accordance with the requirements of the Airports (Control of On-Airport Activities) Regulations 1997, holds licence under the Liquor Act 2007.
REP	Regional environmental plan
RESA	Runway end safety area

Research station	A building or place for the principal purpose of agricultural, environmental, fisheries, forestry, meteorological, minerals, scientific or soil data collection or research and includes any associated facility to education, training, administration or accommodation.
Respite	A respite hour is a whole clock hour where there are no aircraft movements over a particular area in that hour.
Restaurant	A building or place the principal purpose of which is the preparation and serving, on a retail basis, of food and drink to people for consumption on the premises, whether or not liquor, takeaway meals and drinks or entertainment are also provided.
RET	Rapid exit taxiway
Retail premises	A building or place used for the purpose of selling items by retail, or for hiring or displaying items for the purpose of selling them by retail or hiring them out, whether the items are goods or materials (or whether also sold by wholesale).
RMO	Runway modes of operation
RMS	Roads and Maritime Services (NSW)
RNP	Required navigation performance
Road	A public road or a private road within the meaning of the Roads Act 1993 and includes a classified road
RPK	Revenue per passenger kilometre
RPT	Regular public transport
RTA	Roads and Traffic Authority (now Roads and Maritime Services)
Runway	A paved strip on which aeroplanes land and take off.
Runway strips	Runway strips are areas surrounding a runway and are provided to reduce the risk of damage to aircraft running off runways and also to provide obstacle-free airspace for aircraft flying over the area during takeoff or landing operations
Runways	<p>Runways are the defined areas provided for the landing and taking-off of aircraft. Sydney Airport has three runways, which are identified by international convention by a two-part designator derived from the direction in which the aircraft is flying:</p> <ul style="list-style-type: none"> Runway 16R/34L is the main north-south runway Runway 16L/34R is the shorter parallel north-south runway Runway 07/25 is the east west runway. <p>Runways 16R and 16L are used by aircraft landing or taking off towards the south. 16 approximates to a compass bearing of 160°. The R and L designators refer to right and left respectively when viewed from the direction in which the aircraft is flying. This serves to distinguish between the respective runways.</p> <p>Runway 34L is used by aircraft landing or taking off towards the north. 34 approximates to a compass bearing of 340°.</p> <p>Runway 34R is used by aircraft landing towards the north and taking off to the north-east and east.</p> <p>Runway 07 is used by aircraft landing or taking off towards the east. 07 approximates to a compass bearing of 70°.</p> <p>Runway 25 is used by aircraft landing or taking off towards the west. 25 approximates to a compass bearing of 250°.</p>
RWTP	Recycled water treatment plant
Rwy	Runway
SACF	Sydney Airport Community Forum
SARS	Severe acute respiratory syndrome
Self-storage units	Storage premises that consist of individual enclosed compartments for storing goods or materials (other than hazardous or offensive goods or materials).
SEPP	State environmental planning policy

Service station	A building or place used for the sale by retail of fuels and lubricants for motor vehicles, whether or not the building or place is also used for any one or more of the following: (a) the ancillary sale by retail of spare parts and accessories for motor vehicles (b) the cleaning of motor vehicles (c) installation of accessories (d) inspecting, repairing and servicing of motor vehicles (other than body building, panel beating, spray painting or chassis restoration) (e) the ancillary retail selling or hiring of general merchandise or services or both
SE Sector	South East Sector (of the airport)
Sewage reticulation system	A building or place used for the collection and transfer of sewage to a sewage treatment plant or water recycling facility for treatment, or transfer of the treated waste for use or disposal, including associated: (a) Pipelines and tunnels, and (b) Pumping stations, and (c) Dosing facilities, and (d) Odour control works, and (e) Sewage overflow structures, and (f) Vent stacks
SHA	Strategic highway assignment model (Roads and Maritime Services)
Shop	Premises that sell merchandise such as groceries, personal care products, clothing, music, homewares, stationery, electrical goods or the like or that hire any such merchandise, and includes a convenience store but does not include food and drink premises or restricted premises.
SIDS	Standard instrument departures
Signage	Any sign, notice, device, representation or advertisement that advertises or promotes any goods, services or events and any structure or vessel that is principally designed for, or that is used for, the display of signage, and includes: (a) Building identification signs, and (b) Business identification signs, and (c) Advertisements, but does not include traffic signs or traffic control facilities
SIS	State infrastructure strategy
SMP	Stormwater management plan
SMR	Surface movement radar
SMS	Safety management system
SODPROPS	Simultaneous opposite direction parallel runway operations. A noise sharing procedure where aircraft depart and arrive over Botany Bay. Runway 16L is used for departures and Runway 34L is used for arrivals. This can only be operated in good weather conditions with low winds.
SQID	Stormwater quality improvement device
SREP	Sydney Regional Environmental Plan
SSR	Secondary surveillance radar
Stand	Physical location of an aircraft parking position for either passenger or cargo aircraft.
STARS	Standard arrival routes
Storage premises	A building or place used for the storage of goods, materials, plant or machinery for commercial purposes and where the storage is not ancillary to any business premises or retail premises on the same parcel of land.

Structures	Means: (a) Bridges (b) Fences (c) Towers and pylons (d) Tents and other temporary structures
SW Sector	South West Sector (of the airport)
SWSOOS	Southern and western suburbs ocean outfall sewer
SYD consent	Sydney Airport Corporation Limited's written consent, as required under Regulation 2.03(4) of the Airports (Building Control) Regulations.
T-VASIS	T-visual approach slope indicator systems
T1	Terminal 1 (international terminal – common user)
T2	Terminal 2 (domestic terminal – common user)
T3	Terminal 3 (Qantas domestic terminal)
TAAM	Total airport and airspace modeler
Takeaway food and drink premises	Food and drink premises that are predominantly used for the preparation and sale of food or drink (or both) for immediate consumption away from the premises.
TAR	Terminal area radar
Taxiway	A paved strip used by aircraft in taxiing to and from a terminal or runway
Taxiways	Taxiways are defined paths providing for the safe and expeditious surface movement of aircraft between runways and aprons. Due to its traffic levels, Sydney Airport has a complex taxiway system including rapid exit taxiways (RETs). RETs enable aircraft, after landing, to vacate runways at higher speeds, thus reducing runway occupancy time.
TBus	Sydney Airport terminal transfer shuttle bus service between T1 and T2/T3.
TCU	Terminal control unit
Temporary structure	Includes a booth, tent or other temporary enclosure (whether or not part of the booth, tent or enclosure is permanent), and also includes a mobile structure.
TFI	Tourism Futures International
TfNSW	Transport for New South Wales
Thresholds	Points on the runway from which the landing distance available to an aircraft is measured. A threshold is determined with reference to the obstacle-free approach gradient required for the particular category of runway. Where there is no obstacle infringement, the threshold and runway end normally coincide. Where obstacles infringe the approach surface it is necessary to displace the threshold to achieve the required obstacle-free gradient. A number of Sydney Airport's runways have displaced thresholds.
TLOF	Helicopter touch down and lift off area
Tourist or visitor accommodation	A building or place that provides temporary or short-term accommodation on a commercial basis, and includes hotel or motel accommodation, serviced apartments, bed and breakfast accommodation and backpackers' accommodation.
Transfer corridor	Provision of an area for the facilitation of inter-terminal transfers of passengers and baggage.
Transport depot	A building or place used for the parking or servicing of motor powered or motor drawn vehicles used in connection with a passenger transport undertaking, business, industry or shop.
Trigeneration plant	A plant that simultaneously provides electricity, heating, and cooling.
TSP	Transport security program
ULD	Unit load devices
UST	Underground storage tanks

Utility undertaking	<p>Any of the following undertakings carried on, or permitted to be carried on by authority of any government department or under the authority of or in pursuance of any commonwealth or state Act:</p> <p>(a) railway, road transport, water transport, air transport, wharf or river undertakings</p> <p>(b) undertakings for the supply of water, hydraulic power, electricity or gas or the provision of sewerage or drainage services, and</p> <p>a reference to a person carrying on a utility undertaking includes a reference to a council, electricity supply authority, government department, corporation, firm or authority carrying on the undertaking.</p>
Vehicle sales or hire premises	A building or place used for the display, sale (whether by retail or wholesale) or hire of motor vehicles, caravans, boats, trailers, agricultural machinery and the like, whether or not accessories are sold or displayed there.
VET	Visitor Economy Taskforce (NSW)
VIP	Very important person
VOR	Very high frequency omnidirectional range
WAM	Wide area multilateration system
Warehouse or distribution centre	A building or place used mainly or exclusively for storing or handling items (whether goods or materials) pending their sale or distribution, but from which no retail sales are made.
Waterway or foreshore management activities	<p>Activities comprising:</p> <p>(a) riparian corridor and bank management, including erosion control, bank stabilisation, re snagging, weed management, revegetation and the creation of foreshore access ways,</p> <p>(b) in-stream management or dredging to rehabilitate aquatic habitat or to maintain or restore environmental flows or tidal flows for ecological purposes, and</p> <p>(c) Coastal management and beach nourishment, including erosion control, dune or foreshore stabilisation works, headland management, revegetation activities and foreshore access ways.</p>
WestConnex	A proposed motorway to link the M4 motorway to the M5 East motorway at Sydney Airport.
Wholesale supplies	The display, sale or hire of goods or materials by wholesale only to businesses that have an Australian business number registered under the A New Tax System (Australian Business Number) Act 1999 of the Commonwealth.
Works depot	A building or place used for the storage (but not sale or hire) of plant, machinery or other goods (that support the operations of an existing undertaking, including construction) when not required for use. This includes ancillary temporary office facilities and amenities supporting such a depot.
WWG	Wildlife working group at Sydney Airport



APPENDIX I

APPENDIX I MASTER PLAN PREPARATION, CONSULTATION AND USE OF INDEPENDENT EXPERTS

1.0 Introduction

This appendix sets out the process by which key elements of the Master Plan have been prepared.

In order to produce a robust Master Plan that firmly establishes the strategic direction for the efficient and economic development of the airport, Sydney Airport has engaged leading independent experts and undertaken an extensive stakeholder consultation process to ensure that the new development proposal has been fully explored, concerns identified and alternatives considered.

All of the independent experts engaged by Sydney Airport are internationally recognised in their respective fields with many years of experience.

As noted in Chapter 1, Community Consultation and Engagement, Sydney Airport's approach to consultation when preparing the Master Plan has exceeded the statutory requirements of the Airports Act 1996, and is consistent with the Australian Government's suggested approach for effective consultation, as outlined in the Airport Development Consultation Guidelines (2007). The consultation process for the Master Plan commenced in December 2011 when Sydney Airport announced a New Vision for the airport. The feedback received during the extensive consultation undertaken during 2012 and the first half 2013 has informed the preparation of the Master Plan. Following the public exhibition period between June and August, Sydney Airport has given due regard to all the submissions received, and has undertaken additional work and made adjustments throughout the Master Plan where appropriate.

In addition, in order to confirm the quality and outcomes of the work carried out by the independent experts, Sydney Airport has engaged additional experts to undertake peer reviews. As a further check in the preparation of the Master Plan, Sydney Airport has worked closely with both federal and state government technical experts to test the assumptions used in the various analyses, to ensure that Sydney Airport has the capacity to meet the forecast growth in airport activity over the planning period.

The use of independent experts and the high level of consultation achieved are clearly demonstrated in the development of:

- Airport traffic forecasts
- Airport traffic schedule
- Aircraft stand demand and design
- Airfield modelling and design
- The ANEF (Australian noise exposure forecast)
- Ground transport vehicle forecasts
- Ground transport modelling and design

For each of the above elements of the Master Plan, **Table I1** provides a summary of the independent consultants engaged, consultation undertaken, and peer reviews performed.

Table I1 Independent experts and consultation of particular Master Plan elements

Master Plan element	Independent expert(s)	Consultation	Peer reviewer(s)
Airport traffic forecasts	Tourism Futures International (TFI)	Airline Network Planners	CAPA
Airport traffic schedule	Airbiz	TFI, ACA, Airline Network Planners	—
Aircraft stand demand and design	Airbiz	Airline Airport Planners	Landrum & Brown (L&B)
Airfield modelling and design	Airbiz	Airservices, CASA, BARA, Airline Pilots	Airservices; L&B
ANEF	Airbiz (& Wilkinson Murray)	Airservices, Department of Infrastructure and Regional Development, Airport Noise Ombudsman	Marshall Day, Airservices
Ground transport vehicle forecasts	AECOM, TfNSW	TfNSW and RMS	—
Ground transport modelling design	AECOM	TfNSW and RMS	—

2.0 Master Plan Element

2.1 Airport traffic forecasts

The annual forecasts that appear in the Master Plan were prepared by Tourism Futures International (TFI). TFI is a research-oriented company specialising in the future of aviation, travel and tourism. TFI has been very active in the consulting area for over 20 years, undertaking projects for airports, airlines and tourism organisations in Australia, New Zealand and the Pacific as well as in Asia and the Middle East. TFI has produced forecasts for:

- Sydney Airport's previous approved master plans
- All of the larger and many regional airports in Australia, including all of the capital city airports.
- Auckland, Wellington, Dunedin and a number of smaller airports in New Zealand
- Airports across Asia including Hong Kong and major airports in India

The forecasts were prepared in an iterative manner in consultation with key airlines and their representatives to review assumptions and issues. TFI has stated that these consultations were the most extensive that TFI has been involved with, and provided TFI with detailed airline input to the development of the forecast. The airline consultation and inputs included:

- Detailed input that airlines provided to Sydney Airport as part of the New Vision discussions
- Meetings during the preparation of the draft forecasts and additional meetings following the preparation of the draft forecasts
- Discussion of methodology, assumptions and the draft forecasts. This included discussions of passenger demand, aircraft types, seating densities, load factors, frequencies, peak and off-peak operations, turnaround times, belly-hold freight and other factors
- Meetings with the Board of Airline Representative of Australia (BARA), the Regional Airlines Association of Australia (RAAA), and the network development teams of Virgin Australia, Qantas Group airlines (Qantas, QantasLink and Jetstar), Regional Express Group (Rex) and Air New Zealand

Following delivery of the draft forecasts they were peer-reviewed by CAPA Centre for Aviation. CAPA, established in 1990, is the leading provider of independent aviation market intelligence, analysis and data services, covering worldwide developments.

2.2 Airport traffic schedule

In consultation with TFI, Airbiz has taken the annual forecasts and prepared the representative day forecast schedules. Schedules were prepared for selected years, including 2018 (+ five years) and 2033 (+ 20 years). As a result of working closely with TFI, the schedules prepared by Airbiz have a high level of input from each of the major international, domestic and regional airlines serving Sydney Airport. Consultation was also undertaken with Airport Co-ordination Australia (ACA) and the Qantas Group.

Airbiz is an independent international aviation consultancy specialising in various aspects of aviation business including strategic planning, simulation and modeling, airport operations, terminal design, traffic projections, route development, and planning. The Airbiz team consists of airport and terminal planners, business analysts, aviation marketing specialists, project facilitators, simulation experts and creative strategists. The company provides expert advice to airport owners, operators, investors, airlines, government agencies and other aviation stakeholders. Airbiz has offices throughout Australia, New Zealand and Canada. With over 30 years' experience in the aviation industry the Airbiz team has successfully completed over 2,000 projects in 50 countries, on five continents. In recent years, Airbiz has undertaken studies for all the first and second level airports in the region.

2.3 Aircraft stand demand and design

From the representative 'busy day' forecast schedules, Airbiz has prepared aircraft stand and terminal passenger demand forecasts for assessing facility requirements.

Following the public exhibition of the PDMP, Sydney Airport engaged Airbiz to undertake a sensitivity analysis to understand how the development plan responds to the level of demand (particularly in relation to aircraft gauge). This analysis has demonstrated that the development plan is able to respond to a wide range of demand forecasts and as a result is 'future-proofed'.

Sydney Airport also engaged Landrum & Brown to peer review the aircraft stand demand and terminal design. L&B confirmed that the development plan included sufficient aircraft stands to meet the forecast demand.

L&B is a global leader in airport and aviation planning. The company is the oldest privately owned consultancy dedicated solely to the needs of the commercial aviation community, focusing on environmental and airport planning solutions. L&B's team of qualified and experienced professionals has established a strong reputation for delivering innovative aviation planning solutions to clients in markets as diverse as North America, Europe, the Middle East, India, Greater China, Asia and Australasia.

2.4 Airfield modelling and design

From the representative busy day forecast schedules, Airbiz has also prepared runway demand forecasts for assessing facility requirements. The airfield model was prepared using the comprehensive airport simulation technology (CAST) fast time simulation model. The model is a gate to gate real time simulator of aircraft movements. The CAST simulation model was structured around the 2033 Master Plan plan for the airfield movement area layout, the 2033 representative busy day forecast schedule, and weather assumptions facilitating maximum runway capacity in all runway modes of operation. Aircraft runway allocations in the airfield model are in accordance with parameters provided by Airservices Australia.

This model confirmed that the Master Plan development concept for the airfield layout is capable of efficiently handling the predicted traffic volumes. The modelling was reviewed by Airservices Australia, CASA, BARA, Qantas and Virgin.

The development concept for the airfield was prepared on the basis of being compliant with the Civil Aviation Safety Authority's manual of standards (MOS) Part 139 – Aerodromes.

As noted in Section 2.3, following the public exhibition of the PDMP, Sydney Airport engaged Airbiz to undertake a sensitivity analysis to understand how the development plan responds to the level of demand (particularly in relation to aircraft gauge). This analysis has demonstrated that the development plan is able to respond to a wide range of demand forecasts and as a result is 'future-proofed'.

Sydney Airport also engaged Landrum & Brown to peer review the Airfield Model and Airfield Design. L&B confirmed that the proposed airfield developments and operational improvements provide sufficient capacity and capability to meet demand.

2.5 Australian noise exposure forecast (ANEF)

The Airports Act 1996 requires that the Master Plan contains an Australian noise exposure forecast (ANEF). This document is the official forecast of future noise exposure patterns around the airport, and it constitutes the contours on which land planning authorities (ie. local councils) base their controls.

The ANEF 2033 for Sydney Airport is based on the traffic forecasts developed by TFI and schedules developed Airbiz. Wilkinson Murray prepared the ANEF 2033 document as a sub-consultant to Airbiz.

Sydney Airport also employed Marshall Day to peer review the ANEF 2033 prior to consultation with the state government and local councils.

Wilkinson Murray is an international firm which provides acoustical and air quality consulting services. The firm was originally formed as Carr and Wilkinson in 1962 and has operated in its current form since 1976. Wilkinson Murray's clients are primarily from government, transportation, manufacturing, resources and construction and the company is currently involved in major projects throughout Australia, Asia and Africa.

Marshall Day is a firm of acoustic consultants and noise control engineers with a proud history as an innovative, creative and specialist acoustic consultancy at an international and local level. Marshall Day was established in 1981 and has offices across Australia. The company's experience encompasses building acoustics, planning and resource consents, environmental noise, industrial and marine noise control, and structural dynamics and vibration analysis.

In accordance with the Airports Act 1996, Sydney Airport provided the NSW Department of Planning and Infrastructure and the 15 councils in the vicinity of Sydney Airport with an opportunity to comment on the draft ANEF 2033 and paid due regard to all issues raised. Following this consultation, the draft ANEF 2033 was endorsed by Airservices Australia for technical accuracy in December 2012 before being included in the Preliminary Draft Master Plan.

In addition, during the process, Sydney Airport consulted extensively with Airservices Australia, the Department of Infrastructure & Regional Development, and the Airport Noise Ombudsman.

In order to provide the community with relevant and accurate information about noise impacts in a way that can be easily understood, Wilkinson Murray has also prepared the following noise descriptors – flight path movement charts and frequency-based aircraft noise charts.

2.6 Ground transport vehicle forecasts

The ground transport vehicle forecasts were prepared by AECOM, a global professional services company providing transportation services.

To forecast demand for ground access, AECOM used the projected passenger movements (from aircraft arrivals and departures) from the airport passenger forecasts undertaken by TfI. The passenger movements were plotted by time of day of arrivals to and departures from the airport, so that the distribution of peak activity at each terminal was understood.

A comprehensive survey of over 14,000 passengers, visitors and staff was jointly commissioned by Sydney Airport and TfNSW in June 2012. This survey provided information on the journeys people took to and from the airport, including how they travelled, and their origin and destination. Using this data, mode share proportions dependent on passenger type (ie. international/domestic and arriving/departing) were applied to passenger volumes to generate movements by mode. Vehicle occupancy rates were then applied to generate traffic volumes. Staff, freight, logistics, and commercial traffic were also included.

The demand model was calibrated to 2012 observed data so that it provided a clear representation of existing conditions. As a result, the demand model provided a suitable basis from which future year demands for 2018 and 2033 could be derived.

In preparing the vehicle forecasts, Sydney Airport and AECOM worked closely with Transport for NSW (TfNSW) and Roads and Maritime Services (RMS). In particular, TfNSW provided the regional traffic forecasts which set a baseline for traffic to and from the airport as well as a baseline for traffic through the airport precinct.

AECOM provides transportation modelling and design services in more than 100 countries and has been ranked No. 1 in Transportation globally for 10 consecutive years. AECOM's transportation division has been operating in Australia for over 30 years, during which time it has delivered strategic and detailed transportation modelling and design services for private and government projects.

Specifically relevant to this work for Sydney Airport, AECOM has completed ground access planning for airports including Melbourne, Brisbane and the Gold Coast, and has performed transport studies and modelling for major NSW transport projects including the Sydney CBD corridor modelling and the Port Botany Transport Improvement Plan. The AECOM team assembled for this work included leading transport planners, strategic modellers, simulation specialists, urban planners, aviation specialists and civil engineering specialists. AECOM has extensive Australian and international teams who were drawn upon to ensure the global skills and experience were applied to this work.

2.7 Ground transport modelling and design

As noted in Section 2.6, Sydney Airport engaged in a collaborative working relationship with TfNSW and RMS to assess the transport access needs of the airport and the wider network around the airport. Sydney Airport will continue to work with TfNSW and RMS to further refine the proposals with an aim to achieve optimal outcomes.

Using the demand model outputs received from Sydney Airport, RMS incorporated the forecasts into their standard road model. The RMS model considers population and employment growth in the metropolitan area as well as future road network changes. RMS provided the resultant traffic outputs for the area surrounding Sydney Airport so that an assessment of local infrastructure changes could be made.

AECOM has undertaken detailed micro-simulation traffic modelling (using Commuter software) for the roads in the vicinity of the airport. Likewise for the demand model, the traffic simulation model was developed to replicate observed conditions in 2012. This again resulted in a platform from which future year models could be developed.

Subsequently, assessment of road infrastructure and operational changes required to support the short and long term demands was undertaken to ensure the final solution could effectively accommodate the forecast traffic movements.

Modelling shows that planned road changes in the Terminal 1 (T1) and Terminal 2/Terminal 3 (T2/T3) precincts, together with NSW Government initiatives outside the airport boundary, will deliver improved traffic flow around the precinct with increased capacity for traffic throughput.

Ground transport modelling undertaken by AECOM demonstrates that the proposed strategy and the state government initiatives, including the WestConnex motorway system, have the ability to meet the forecast traffic demands around the airport beyond the 2033 horizon of the Master Plan.

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APPENDIX J

APPENDIX J BIBLIOGRAPHY

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