

# MASTER PLAN 2014



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*The Adelaide Airport Master Plan 2014 was approved by the Commonwealth Minister for Infrastructure and Regional Development on 9 January 2015.*





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# FOREWORD

**Adelaide Airport Limited began operations in 1998, promising to modernise outdated infrastructure and put South Australia on the aviation map.**

It's been a long and challenging journey, but by any measure we've exceeded even the most lofty expectations.

Passenger numbers have almost doubled in the past 16 years. International patronage has more than tripled. In 2013 we were Australia's fastest growing capital city airport by some margin.

Our domestic and international terminals were once referred to as 'dilapidated' and a 'tin shed' respectively.

We now have a modern, flexible domestic and international terminal that has been ranked amongst the best in the world. Complementing this development has been construction of a new multi-level car park and state-of-the-art air traffic control tower.

Adelaide Airport has now emerged as one of the most significant economic precincts in South Australia, and is the State's largest single site employment precinct. We are also a critical transport hub creating new export opportunities and inbound tourism opportunities.

We have transitioned from an aviation and infrastructure facility to a broad-based economic activity node, encompassing a variety of aviation and non-aviation services, facilities and developments.

We have achieved growth that could barely be dreamed about in 1998. With that growth has come an expectation that we will continue to create facilities that meet and exceed the needs of our customers, stakeholders and shareholders.

As we look to the future, our goal is to stay a step ahead of these expectations. Our vision is to be a top tier Airport Business Centre in Asia Pacific, recognised for delivering exceptional outcomes to our customers, partners, shareholders and the community. We are already making progress, as demonstrated by AAL receiving international recognition from Airports Council International for both carbon accreditation and human resources excellence.

As a major economic and employment generator, the growth of our airport is inextricably linked to the development of our State.

Our ability to attract new airlines travelling to more destinations has a significant flow-on effect for our \$5 billion tourism industry, and complements the South Australian

Government's goals to increase visitor numbers and to play to our strengths such as our premium food and wine.

With this growth comes the responsibility to ensure any airport development is compatible with surrounding land uses and the considerations of the community and stakeholders.

To do this, we need to ensure through the master planning process that our aviation and non-aviation interests are integrated, connective, and are easy to access and navigate.

This Master Plan provides a detailed vision for the continued growth and development of the airport over the next 5 years, while also providing a strategic longer term view of potential changes over a 20-year planning horizon for both aeronautical and commercial activities.

This document does not dictate what will be built, but rather what can be built based on growth conditions and stakeholder considerations. In many respects it is the art of the possible, not probable.

While the Master Plan provides us with an opportunity to engage with the community, it is just one part of our ongoing consultation with the community and stakeholders. Adelaide Airport was one of the first in Australia to set up regular interaction with resident, business, government and stakeholder representatives to discuss all aspects of our operations, including aviation infrastructure, landside infrastructure, aircraft noise, land use, ground transport and the environment.

Beyond this, we are investing back into the community, by example, through improved educational opportunities, assisting the disadvantaged and marginal groups, while also supporting a vibrant cultural life in South Australia.

Ultimately this Master Plan seeks to provide, to the best of our current knowledge and forecasts, clarity and certainty on growing and developing Adelaide Airport in a well-planned and logical manner, which is consistent with our central role in the development of the State as a key infrastructure asset.

This document meets the requirements of Sections 70 to 72 and 76 to 77 of the *Airports Act 1996*, being the airport's primary planning document for the next 5 years.



**Mark Young**  
**Managing Director**  
**Adelaide Airport Limited**





# EXECUTIVE SUMMARY

## Adelaide Airport has experienced strong growth in aviation and infrastructure development since the previous 2009 Master Plan.

It has consistently been rated Australia's fastest growing capital city mainland airport for international services in recent years and has recorded steady growth in domestic traffic.

Adelaide Airport is Australia's fifth largest airport for domestic services and sixth largest for international services. Over 7.5 million passengers passed through the airport in the 2013 calendar year.

More than 7,480 tonnes of freight were exported by air loaded via Adelaide Airport in 2013, up 11.4% on the previous year.

Adelaide Airport continues to be a substantial contributor to the South Australian economy. Updated analysis undertaken to assist in the preparation of this Master Plan shows the airport's socio-economic benefit to South Australia is more than \$1.9 billion, which represents roughly 2.1% of Gross State Product.

Adelaide Airport remains the State's largest single site employment precinct, with approximately 6,200 people working within the airport precinct, and a further 2,500 directly employed as a result of the collective activities of the corporate community at the airport.

## About the Master Plan

The 2014 Adelaide Airport Master Plan is designed to provide all stakeholders – including airport users, Government, the local community and aviation interests with the confidence to plan for the future development of the airport and its surrounds. It seeks to provide a view of the ultimate development potential of the airport site.

The airport's forward planning is based on several detailed studies undertaken in recent years including assessment of the airport's socio-economic drivers, aviation traffic forecasts, runway capacity and road traffic access.

## Forecasts

International passenger numbers are forecast to grow by 5.8% per annum over the next 20 years. Domestic passenger numbers are expected to increase by 4.1% per annum and regional passenger numbers are forecast to similarly grow by 3.6% per annum over the same period.

The number of movements of all aircraft is predicted to increase by 3.0% per annum in the 20-year planning horizon.

Freight exports by air through Adelaide Airport are expected to increase by between 3.4% and 5.7% per annum over the next 20 years.

## Aviation and land use development

Based on AAL's forecasts, planning for the future airport development of aviation infrastructure will enable growth in aircraft and passenger movements in a well-planned and efficient manner. This refers to runways, taxiways and aprons for aircraft movements, and terminal capacity for processing passengers at forecast rates.

Work has already commenced in 2014 to expand the airport's southern apron to accommodate two additional Code C equivalent (B737, A320) bays. Subsequent apron expansion is planned to the north, which will include relocation of regional airlines, establishment of additional Code C gates and demolition of the former international terminal building.

Among the landside infrastructure projects being considered over the next five years are a hotel development adjacent to the terminal, expansion of the southern pier of the terminal, addition to the international baggage claim and arrivals hall, expansion of the main security checkpoint, larger retail space and airline lounges, construction of a new general aviation terminal, and additional international gates.

In the medium term (2020-2034) further apron expansion is expected to continue to the south and to the north-west of the terminal, and an extension of the multi-level short stay car park will be considered.

The Master Plan does not foreshadow any major runway development within the 20-year planning period.



## Aircraft Noise

AAL is acutely aware of the impact aviation-related activities, and particularly noise generated by these activities, can have on the local community. There is a broad range of programs in place to address aircraft noise around the airport, such as working with stakeholders to observe curfew arrangements, engaging with the local community, working with all levels of Government, consulting with airlines and investing in airport infrastructure that supports new-generation quieter aircraft.

The most effective means for reducing the impact of aircraft noise is through effective planning of land use for areas adjacent to the airport site. Other means include alternative runway allocations, adopted flight path procedures, restrictions of aircraft movements by aircraft type and aircraft operational procedures.

This Master Plan includes forecasts of noise levels resulting from the operation of the airport. As specified by the Commonwealth Government, the airport uses the computer-based Integrated Noise Model which produces Australian Noise Exposure Forecasts (ANEFs). AAL also uses an N70 map, which shows the number of noise events above 70 decibels caused by over-flying aircraft.

## Land Use Planning

The land use provisions in this document take into account, among other documents, *South Australia's Strategic Plan (2011)*, the *30-Year Plan for Greater Adelaide (2010)*, and the *City of West Torrens Vision 2025 – Strategic Directions Report*.

As the State's major gateway and arguably most significant employer, it is vital that any development on Adelaide Airport land proceed in a manner that is compatible with adjacent land uses and optimum development policies, without compromising the airport's operational integrity and economic viability. Conversely, it is important that development surrounding the airport does not compromise the operational integrity of airport operations, taking into account the specification of the National Airport Safeguarding Framework (NASF).

The airport is divided into seven precincts, and for each precinct the Master Plan contains Objectives and Desired Character Statements for future development, along with Principles of Development Control incorporating Envisaged and Non-Complying uses.

In changes since the 2009 Master Plan, the former Burbridge and Terminals precincts have been combined to form the larger Terminals & Business Precinct, and the Holdfast Precinct has been incorporated into the larger Morphett Precinct.

AAL has established an Airport Planning Coordination Forum to develop ongoing strategic partnerships with Commonwealth, State and local governments. Forum members meet regularly to discuss issues and exchange information on airport planning, development and operations, and implications of development on surrounding areas.

## Ground Transport

As Adelaide Airport grows, it is critical that it considers ground transport demands within and adjacent to the airport. Accordingly, the Ground Transport Plan has been prepared to review existing traffic, access and parking conditions and to identify key transport infrastructure strategies.

Significant changes to the airport's ground transport facilities have occurred over the past five years, including construction of a multi-level short term car park, relocation of pick-up and drop-off zones, new taxi and bus parking areas, and associated re-alignment of the internal road network.

Ground transport planning considerations for the next five years include a State upgrade of the Sir Donald Bradman Drive / Sir Richard Williams Drive intersection at the airport's main entrance, an upgrade of the Sir Donald Bradman Drive / Sir Hubert Wilkins Avenue intersection, and a new Netley Precinct road connecting with Marion Road opposite Desmond Avenue. A new internal taxi access link connecting Airport East with the Terminals & Business Precinct is also under consideration.

Provision is made within the Master Plan for potential light rail links within the boundaries of the airport, allowing for multi-directional connectivity to the Adelaide CBD and the metropolitan area, while improvements to walking and cycling routes are also recommended.



## Environment

AAL is considered an aviation leader in regards to its vision and actions to protect the environment. Recent initiatives include facilitation of the Airport Stormwater Harvesting Scheme by SA Water, resurfacing of the entire runway and taxiway network with zero environmental incidents or complaints, and the establishment of a Clean Energy Partnership with the University of Adelaide's Centre for Energy Technology.

Through this Master Plan, the airport will continue to fulfil its vision for sustainable airport growth and development, ensure all identified environmental sustainability risks are appropriately managed, and build upon its past achievements.

Among AAL's goals for the next 5 years are to reduce electricity consumption per passenger by 10%, as well as reduce greenhouse emissions per passenger by 5%. It will further aim to reduce potable mains water consumption by 10%.

## Community and stakeholder engagement

In all of its planning activities, AAL seeks to consult and engage with the community and its stakeholders wherever possible. For example, it meets regularly with community, government and stakeholder representatives through the Adelaide Airport Consultative Committee.

The Master Plan forms a very important part of this engagement process. It presents a direct opportunity for the community and stakeholders to understand and provide feedback on the airport's planned activities for the next 5 years, and on its longer term vision up until 2034.

# ABBREVIATIONS

AACC	Adelaide Airport Consultative Committee	GA	General Aviation
AAL	Adelaide Airport Limited	GBCA	Green Building Council of Australia
ABC	Airport Building Controller	GDP	Gross Domestic Product
ABS	Australian Bureau of Statistics	GIS	Geographic Information System
ACCC	Australian Competition and Consumer Commission	GSP	Gross State Product
ACI	Airports Council International	GTP	Ground Transport Plan
AEO	Airport Environment Officer	GWTP	Glenelg Wastewater Treatment Plant
AEP	Airport Emergency Plan	ICAO	International Civil Aviation Organisation
AFP	Australian Federal Police	INM	Integrated Noise Model
ANEC	Australian Noise Exposure Concept	ISCA	Infrastructure Sustainability Council Australia
ANEF	Australian Noise Exposure Forecast	ISO 14001	Australian and International Environmental Management Standard
ANEI	Australian Noise Exposure Index	IVS	International Visitor Survey
ANO	Aircraft Noise Ombudsman	JOSF	Joint Oil Storage Facility
APCF	Airport Planning Coordination Forum	JUHI	Joint User Hydrant Installation
APU	Auxiliary Power Unit	LAHSO	Land and Hold Short Operations
AQIS	Australian Quarantine and Inspection Service	MFY	Murray F Young and Associates
ARFF	Aviation Rescue and Fire Fighting	MVA	Megawatt Volt Amperes
AsA	Airservices Australia	NABERS	National Australian Built Environment Rating System
ASR	Aquifer Storage and Recovery	NASAG	National Airports Safeguarding Advisory Group
AST	Above Ground Storage Tank	NASF	National Airports Safeguarding Framework
AVSTATS	Aviation Statistics supplied by BITRE	NVS	National Visitor Survey
BITRE	Bureau of Infrastructure Transport and Regional Economics	OLS	Obstacle Limitation Surface
CAGR	Compound Annual Growth Rate	PANS-OPS	Procedures for Air Navigation Services – Aircraft Operations
CASA	Civil Aviation Safety Authority	PCB	Polychlorinated Biphenyls
CASR	Civil Aviation Safety Regulations	PCCZ	Patawalonga Creek Conservation Zone
CBD	Central Business District	PFOA	Per-fluoro-octanoic Acid
CEMP	Construction Environmental Management Plan	PFOS	Per fluoroocane sulfonate
CO <sub>2</sub> e	Carbon Dioxide Equivalents	PSZ	Public Safety Zone
dB	Decibel	RET	Rapid Exit Taxiway
DIRD	Department of Infrastructure and Regional Development (Commonwealth)	RPT	Regular Public Transport
DPA	Development Plan Amendment	Rx/Tx	Receivers/Transmitters
DPTI	Department of Planning, Transport and Infrastructure (State)	SCATS	Sydney Coordinated Adaptive Traffic System
EIS	Environmental Impact Statement	SQMIP	Stormwater Quality Management and Improvement Plan
EMP	Environmental Management Plan	T1	Terminal 1 Adelaide Airport
EMS	Environmental Management System	TCZ	Tapleys Conservation Zone
EPA	Environment Protection Authority (SA)	TFI	Tourism Futures International
EPBC	<i>Environment Protection and Biodiversity Conservation Act 1999</i>	TRA	Tourism Research Australia
EPNL	Effective Perceived Noise Level	TWI	Trade Weighted Index
FAC	Federal Airports Corporation	UST	Underground Storage Tank

# GLOSSARY

## Aerodrome/Airport

A defined area on land or water (including any buildings installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft.

## Airport Control Service/Air Traffic Control

Airspace management provided by Airservices Australia.

## Airport Emergency Plan

A plan developed by the Airport Operator to co-ordinate all agencies and their individual Airport Emergency Procedures, state or supporting area plans for dealing with an airport emergency.

## Airport Emergency Procedures (Standard Operating Procedures)

Agency procedures for meeting the Airport Emergency Plan.

## Airline Operator

The operator of a Regular Public Transport air service.

## Airport Operator

The airport operator is the person(s) or organisation whose name appears on the licence document and/or in aeronautical aviation publication Enroute Supplement Australia. (For the purposes of this Master Plan, Adelaide Airport Limited, ACN-075176653 is the airport operator at Adelaide Airport.)

## Air Side

The movement area of an airport, adjacent terrain and buildings or portions thereof, access to which is controlled, consistent with Section 9 of the *Aviation Transport Security Act 2004*.

## Apron

The part of an airport used for: (a) the purpose of enabling passengers to board, or disembark from aircraft; (b) loading cargo onto, or unloading cargo from, aircraft; and/or (c) refuelling, parking or carrying out maintenance on aircraft.

## Aviation-Related Support Industry

Includes aircraft hangars, catering services, freight terminals, car rental and valet facilities, car parking, vehicle storage, taxi holding area amenities, fuel depots and hydrants, storage facilities, warehousing, offices, engineering support, and maintenance activities, passenger terminals and aviation educational establishments.

## Aviation Security

A combination of measures and human and material resources intended to safeguard civil aviation against acts of unlawful interference.

## Brand Outlet Centre

A shopping centre in which is located one or more discount retail outlets used by retailers to centralise the distribution and sale of excess or damaged stock, test limited amounts of new product and provide inventory control together with associated support retail activities such as fast food, restaurants and ancillary retailing and services, either as independent shops or as alternative activities within the Brand Outlet shops themselves. Normally this would involve a shop, or group of shops, with a floor area exceeding 500 m<sup>2</sup>, that offers discount clothing, sporting goods and personal effects by retail.

## Bulky Goods Retailing

Includes premises that are used for the display, sale and rental of automotive parts, camping and recreational supplies, curtains and fabrics, homewares, hardware, stationary and office supplies and that do not sell food stuffs, personal effects or clothing (other than sold incidentally to the primary purpose of the shop) and retail showrooms and service trade premises.

## Categorised Airport

An airport that has been identified by the DIRD through an instrument signed by the Secretary and issued pursuant to Section 28 of the *Aviation Transport Security Act 2004* as being an airport requiring the implementation of specific aviation security measures through a Transport Security Program.

## Control Tower

A unit established to provide air traffic control service to airport traffic.

## Event Activities

An event to be held on airport land such as a circus, live entertainment activity or outdoor deck-chair or drive-in cinema.





## Freight and Distribution Centre

Generally office/warehousing premises used for storage, but can also focus upon the regular handling of goods within the facility itself for regular and contract distribution by courier or truck to other specific destinations, on other transport services such as aircraft, rail or heavy road transport.

## Handling Agent

An organisation which provides an airline with services such as, but not necessarily confined to, engineering support, passenger handling, operational and ramp services and the supply of consumable items.

## In flight

In flight commences when the last external door of the aircraft is closed in preparation for the first movement of the aircraft for the purpose of taking off; or if the aircraft moves before all doors are closed for the purpose of taking off, when it first so moves, until the first external door of the aircraft is opened after the aircraft comes to rest.

## Land Side

That area of an airport and buildings to which the public normally has access, consistent with Section 9 of the *Aviation Transport Security Act 2004*.

## Manoeuvring Area

Those parts of an airport used for the take-off, landing and taxiing of aircraft, excluding aprons.

## Movement Area

That part of an airport used for the surface movement of aircraft, including manoeuvring areas and aprons.

## Prohibited Area

In relation to an airport, means any part of the airport upon or in relation to, which is posted a notice to the effect that access to that part of the airport is prohibited, and purporting to have been posted with the authority of the Chief Executive of the Airport Operator.

## Regular Public Transport Service

A service consisting of Regular Public Transport aircraft operations, as prescribed in the Civil Aviation Regulations.

## Regulatory Signs

A sign, which advises of any law, regulation or restriction which it would be an offence to disregard.

## Retail Showroom

Premises used primarily for the sale, display or offer by retail of furniture, floor coverings, computers, electrical goods and appliances, lighting, outdoor furniture and white goods.

## Runway-Related Activities/Facilities

Activities and facilities include runways, taxiways, aprons, clearways, compass swing and engine run-up areas, glide path facilities, helicopter landing, parking and servicing, landing equipment, radar and all aircraft navigational aids.

## Secretary

The Secretary of the Department of Infrastructure and Regional Development.

## Soil Treatment Facility

A facility that allows for silt and soil to be removed from watercourses to be stockpiled, tested and safely removed from the site.

## Sterile Area

In relation to an aerodrome, a landside security zone in the aerodrome to which persons, vehicles and goods are not permitted access until given clearance, in relation to aviation security, made under Section 32 of the *Aviation Transport Security Act 2004*.

## Transport Security Program

A written plan prepared by an Airport Operator that details security measures and procedures for the airport as approved by the Office of Transport Security.





# 1

## INTRODUCTION





# INTRODUCTION

## 1.1 Airport Master Planning

Adelaide Airport is located approximately six kilometres west of the Adelaide CBD. It is the major gateway to the State of South Australia and the south central region of Australia for passengers and freight.

The airport site was selected in the early 1940s with construction commencing after World War II. The airport opened to domestic Regular Public Transport (RPT) services in February 1955 and has been progressively developed to meet the growing aviation needs of South Australia.

Since privatisation of the airport in 1998, master planning of Adelaide Airport has been undertaken in five-yearly increments. Master Plans have been prepared by AAL and subsequently approved by the Commonwealth Government in 1999, 2004 and 2009.

Pursuant to Section 70 of the *Airports Act 1996*, every Commonwealth-owned privately leased airport within Australia requires a Master Plan that meets the following:

- a) to establish the strategic direction for efficient and economic development at the airport over the planning period of the plan;
- b) to provide for the development of additional uses of the airport site;
- c) to indicate to the public the intended uses of the airport site;
- d) to reduce potential conflicts between uses external to the airport site, and to ensure that uses on the airport site are compatible with the areas surrounding the airport;
- e) to ensure that all operations at the airport are undertaken in accordance with relevant environmental legislation and standards;
- f) to establish a framework for assessing compliance at the airport with relevant environmental legislation and standards; and
- g) to promote the continual improvement of environmental management at the airport.

Section 71 of the Act outlines the contents required within the final Master Plan.

This Master Plan has been prepared in accordance with the Act, and is the fourth iteration prepared by AAL. This Master Plan continues the process of forward planning for the development of the airport site and infrastructure to ensure adequate aviation facilities are available to all airport stakeholders. The Adelaide Airport Master Plan applies to the planning period from 2014 to 2034 and fulfils the requirements of Sections 72 and 76 of the Act – being the airport's primary planning document for the next 5 years.

Furthermore, the Master Plan provides a detailed plan for the continued development for the airport over the next 5 years and a 20-year strategic view for the longer-term development of the airport lands for both aeronautical and commercial development. This Master Plan presents a concept for the long-term development of Adelaide Airport as the key aviation infrastructure asset of South Australia, and specifically provides detailed strategies and plans for the period covering the next five years.

The Master Plan is divided into 11 chapters, covering aviation development and forecasts, aircraft noise modelling and land use planning, plus a Ground Transport Plan and an Airport Environment Strategy, which fulfil the requirements under Sections 71(2)(ga) and (h) of the Act.

## 1.2 Background

The Adelaide Airport site has been developed significantly since privatisation in 1998. Major projects include the construction of Terminal 1, the multi-level car park, the pedestrian plaza, a major enhancement of the internal road system, a newly opened state-of-the-art control tower and upgrading of service facilities. Adelaide Airport has won numerous awards during this time for the standard of design and build of these projects and also for the quality of passenger service.

In addition, several major commercial precincts have been developed on the land surrounding the aviation operations.

The locality of the Adelaide Airport site is depicted in Figure 1.1 below, including also the other airports present in the Adelaide Metropolitan area.

Careful planning has enabled new airport infrastructure to be developed in a well-planned and logical manner. These plans have been gradually developed and publicly exhibited in a series of Master Plans released by the airport over the past 16 years.

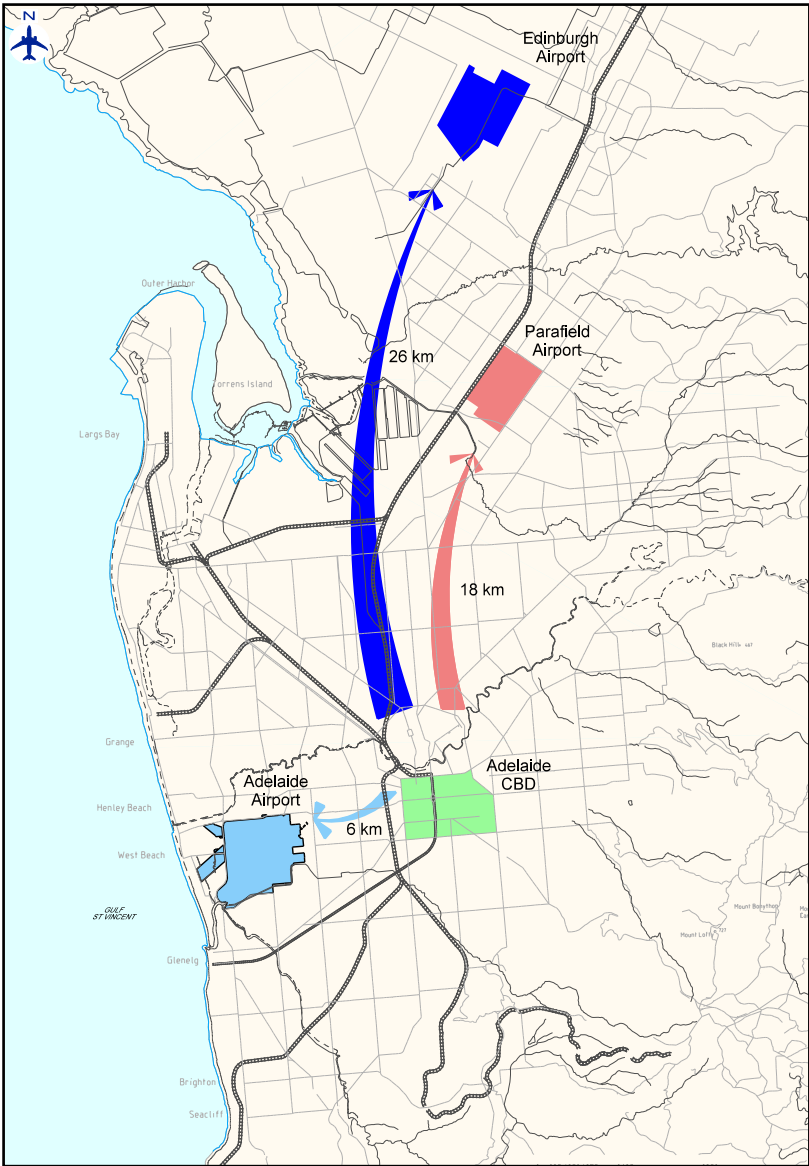


Figure 1.1 Adelaide Airport Locality Map

## 1.3 Contents of the Master Plan

The contents required of a Master Plan are detailed under Section 71 of the Act and are detailed in Appendix A – Master Plan Requirements under the Legislation, as noted previously.

In addition to the requirements under the Act, *the Airports Regulations 1997* also contain requirements for airport Master Plans (Regulations 5.02, 5.02A and 5.02B). These requirements relate to:

- specifying any change to the OLS or PANS-OPS surfaces for the airport concerned that is likely to result if development proceeds in accordance with the Master Plan;
- for an area of an airport where a change of use of a kind described in sub-regulation 6.07 (2) of the *Airports (Environment Protection) Regulations 1997* is proposed, specifying:
  - (i) the contents of the report of any examination of the area carried out under regulation 6.09 of those Regulations; and
  - (ii) the airport-lessee company's plans for dealing with any soil pollution referred to in the report;
- 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;
- a draft or final Master Plan must:
  - (i) 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 *Airports (Transitional) Act 1996*; and
  - (ii) address any interest to which the relevant airport lease is subject under subsection 22 (3) of the Act, or subsection 26 (3) of the *Airports (Transitional) Act 1996*; and
- Matters to be specified or addressed in the Airport Environment Strategy as delineated in Section 71(2)(h)(ix) and Section 71(5) of the Act and *Airports Regulations 1997* (Regulations 5.02A and 5.02B).

The requirements of the *Airports Regulations 1997* are also outlined in Appendix A with references to the relevant sections of the Master Plan.

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# THE MASTER PLAN

# 2



# THE MASTER PLAN

## 2.1 Purpose of the Master Plan

A Master Plan provides the airport operator, the Commonwealth, State and Local Governments, the local community, aviation industries and interests, commercial users, stakeholders, and the broader metropolitan community and investors with confidence to plan for the future development of the airport and its surrounds.

It provides the basis for planning aviation activities, land and commercial development, environmental management and infrastructure delivery in an integrated and timely manner.

The implementation of the planned infrastructure activities and the triggers to their implementation are addressed in detail in Chapter 11 – Development Program. Anticipated developments in the first 5 years of this master planning period are discussed in some detail; developments anticipated in the following 15 years up until 2034 are described in less detail; and, in some areas, ultimate planning options are included.

If approved by the Minister for Infrastructure and Regional Development, the Master Plan remains in force for a period of five years unless AAL is directed by the Minister to replace the Plan, or decides to submit a new Master Plan. A new Master Plan is also required if there is a significant change to the endorsed ANEF for the airport.

This regular master planning review process forms a comprehensive regime for the ongoing regulation of activities on the airport through consultation with key stakeholders, various levels of government, the airline industry, the airport and local communities.

## 2.2 Background Studies

The Adelaide Airport Master Plan is based on several detailed studies undertaken in recent years concerning airport planning, runway and terminal development, land use planning, and environmental and socio-economic issues. These studies include:

- *Final Adelaide Airport Master Plan 2009* and associated planning and development documents which identified the future orderly development of Adelaide Airport to allow it to perform its continuing aviation role and management by the leasehold ownership of AAL;
- *Assessment of the Socio-Economic Drivers of Adelaide Airport on the Community of South Australia* prepared by Hudson Howells, October 2013/March 2014;
- *Traffic Forecasts for Adelaide Airport* prepared by Airbiz and Tourism Futures International, March 2014;
- *Adelaide Airport Limited Runway Capacity Analysis* prepared by Aerodrome Design Pty Ltd, 2009 and updated by Airbiz, 2014; and
- *Road Traffic Access Studies* prepared by Murray F Young and Associates in 2007 and updated in 2013.

These and other background documents are listed in the references section of the Master Plan.



## 2.3 Regulatory Framework

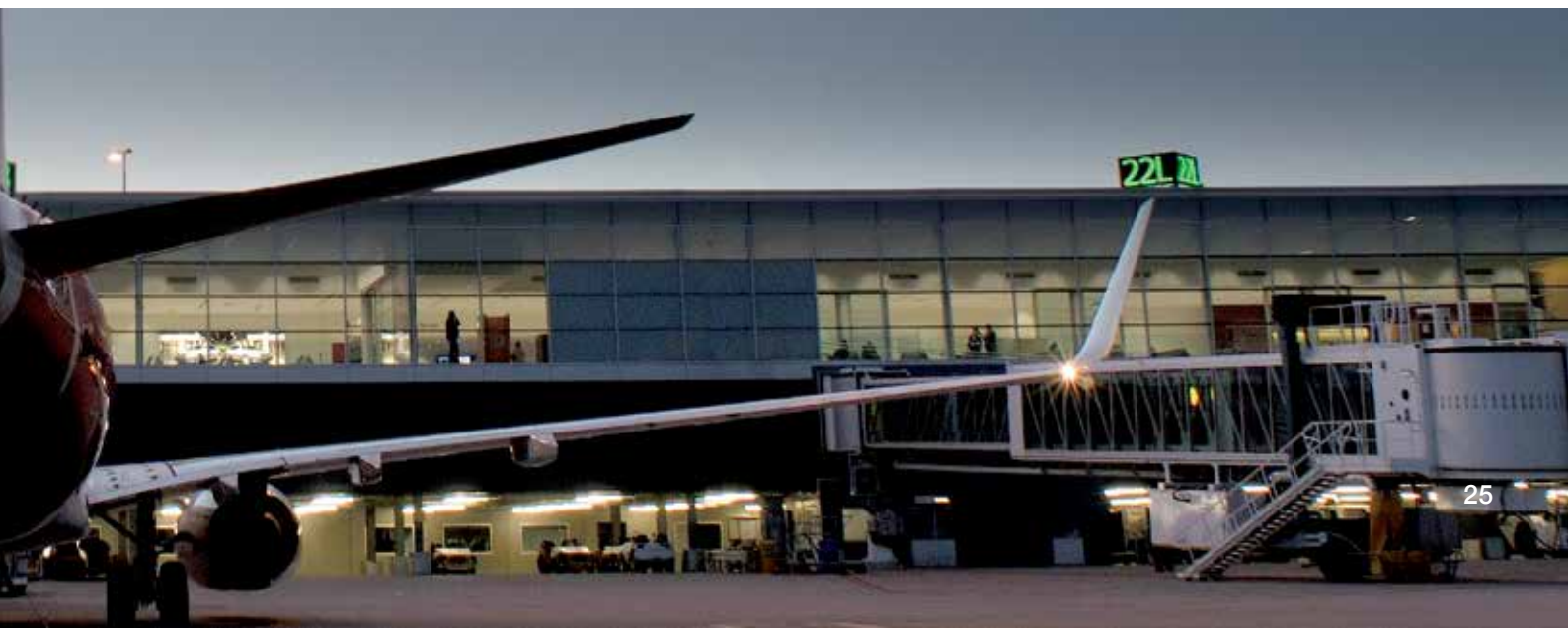
The specific areas that are subject to ongoing Commonwealth laws pursuant to the Act and Regulations include:

- Environmental Management;
- Land Use Planning and Development Controls;
- Building and Construction Approvals; and
- Pricing and Quality of Service Monitoring.

The Department of Infrastructure and Regional Development (DIRD) is responsible for the administration of the *Airports Act 1996*.

Other Commonwealth agencies control, support or have influence on the airport's activities in the following areas:

- the immigration, customs and other border protection services as provided by Commonwealth agencies;
- the standard setting and enforcement activities of the Civil Aviation Safety Authority (CASA), under the *Civil Aviation Act 1988*, the *Civil Aviation Safety Regulations 1998 (CASR)* and the *Civil Aviation Regulations 1988*;
- aviation security controls of the *Aviation Transport Security Act 2004* and Regulations administered by the DIRD;
- the requirements of the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999*, the *Environmental Reform (Consequential Provisions) Act 1999*, the *Aboriginal and Torres Strait Islander Heritage Protection Act 1934* and the *Australian Heritage Council Act 2003*;
- Australian Federal Police;
- Quarantine Inspection Services of the Department of Agriculture;
- competitive policy arrangements, including pricing oversight administered by the Australian Competition & Consumer Commission (ACCC) through the *Competition and Consumer Act 2010*;
- matters related to the sale of airport leases under the *Airports (Transitional) Act 1996*; and
- airspace administration and regulation by CASA and Airservices Australia in accordance with the *Airspace Act 2007* and the *Civil Aviation Act 1988*.





## 2.4 The Master Planning Process

**The Master Plan presents a detailed outline and assessment of proposed developments in the next five years and less detailed descriptions of developments that may occur in the following fifteen year planning period.**

The Master Plan is a key document that is used as a guide for:

- development of airport facilities for both aviation and non-aviation uses;
- assessment of the environmental effects of aerodrome construction and operation;
- development of land uses for areas surrounding the airport; and
- establishment of airport access requirements.

Before privatisation, Australia had no formal procedures for use by airport planners or operators to develop a Master Plan other than the International Civil Aviation Organisation (ICAO) Manual (1987). Requirements for master planning airports were first developed by the then Department of Aviation, which in 1982 released a Provisional Master Plan for Adelaide Airport incorporating a draft Environmental Impact Statement. The provisional plan was issued to airport users and interest groups but was not finalised as a consolidated document for the development of the airport.

In July 1991, the Federal Airports Corporation (FAC) commissioned a redraft of the 1982 Provisional Master Plan. A notable feature was the identification of opportunities for the development of commercial precincts within the airport boundaries.

The privatisation of Australia's airports initiated the establishment of the *Airports Act 1996* and associated Regulations, which now provide a regulatory framework for airport operators of federally privatised airports to develop Master Plans.

Following privatisation in 1998, AAL prepared a draft Master Plan which was approved by the Commonwealth Minister for Transport in 1999. Two further iterations of the Master Plans were prepared and approved by the Minister in 2004 and 2009. These Master Plans were all prepared under the relevant sections of the *Airports Act 1996* current at the time.

AAL is required under Section 76 of the *Airports Act 1996* to submit a new Master Plan to the Commonwealth Minister for Infrastructure and Regional Development prior to the expiry of the original plan approved under Section 81. Section 77 of the Act provides that the approved Master Plan will be in force for a period of five years from the date of approval, or until it is replaced by a revised plan.

Under the Act, the draft Master Plan is to be developed in consultation with stakeholders including airport users, government departments at all three tiers and authorities, and surrounding communities. Once a preliminary version of the draft Master Plan has been prepared, it is then placed on public display for 60 business days to allow stakeholders and the general public the opportunity to review and make written comment on its content if desired.

Pursuant to Section 71 (2) (h) of the *Airports Act 1996*, AAL is required to submit a new Airport Environment Strategy to the Commonwealth Minister as a part of the Master Plan. This Strategy will be in force for the same period of five years as the Master Plan. The current Airport Environment Strategy was approved by the Minister on 26 November 2009, and is being updated as part of the master planning process.

Following the consultation period described in section 2.5 that follows, AAL is required to have due regard to the written comments received and make any necessary changes to the preliminary version of the draft Master Plan before submitting the document to the Minister. AAL will then prepare a response document that lists all persons or organisations that commented on the preliminary version of the draft Master Plan and provide a response to all the issues raised, identifying, if applicable, where changes to the preliminary version have been made.

The response document, together with the draft Master Plan is submitted to the Commonwealth Minister for Infrastructure and Regional Development for approval. The Minister has 50 business days to assess and either approve or reject the draft Master Plan. If the Minister rejects the draft Master Plan, AAL will be notified that the Minister requires a new draft Master Plan to be prepared and is given a timeline to complete this and re-submit. The existing Adelaide Airport Master Plan remains in force during that time.

If the Minister approves the draft Master Plan, AAL completes the amendments to the draft document and issues a final Master Plan for the airport which becomes the Adelaide Airport Master Plan. The Master Plan is in force for a period of five years, or until it is required by the Minister to be reviewed, or until AAL decides to submit a new draft Master Plan to the Minister before the end of the five year period.

The final Adelaide Airport Master Plan is advertised to the general public and made available free of charge on the airport website. Hard copies are also made available for inspection or purchase by interested parties.

## 2.5 Consultation

The *Airports Act 1996* requires a program of consultation on the preliminary version of the draft Master Plan prior to its submission to the Minister for approval. This consultation program must include (as a minimum):

- newspaper advertisements;
- circulation of a preliminary draft Master Plan for inspection;
- a period of 60 business days to provide comment;
- information on AAL's website; and
- a summary of how comments received during the consultation period have been addressed in the updated draft Master Plan.

Before AAL provides the Minister with the draft Adelaide Airport Master Plan, AAL must notify the Minister of any consultations held with:

- the South Australian Minister for Planning;
- relevant authorities of the State Government;
- relevant local governments;
- airlines and other users of the airport; and
- any other relevant stakeholders.

The draft Master Plan submitted to the Minister will be accompanied by a written statement signed on behalf of the company listing the names of the persons consulted and summarising the views expressed by the persons consulted and the due regard afforded to each submission.

Consultation will continue after the Master Plan is approved through the extensive airport consultative forums that are already in existence.

Any significant development foreshadowed by the Master Plan will be subject to separate Commonwealth approval including environmental impact assessment, industry consultation, and a further opportunity for public comment. Details of the approvals processes for airport developments are discussed in Chapter 7 – Land Use Planning.









# THE AIRPORT

# 3



# THE AIRPORT

## 3.1 Airport Site

Adelaide Airport is located approximately six kilometres west of Adelaide's CBD with its western boundary one kilometre from the shores of Gulf St Vincent. The airport occupies a site of approximately 785 hectares and is well-connected to the City of Adelaide, surrounding suburbs and other major locations in the State through road links.

The airport lies principally within the local government area of the City of West Torrens, with a small portion in the City of Charles Sturt. The southern boundary of the airport is adjacent to the City of Holdfast Bay. The airport shares its location with sport and recreational reserves, low and medium density residential areas and light-to-heavy industrial complexes. The Adelaide Shores Complex, a significant holiday and recreational area, is located immediately to the west of the site.

Figure 3.1 shows the local council boundaries surrounding the Adelaide Airport site.

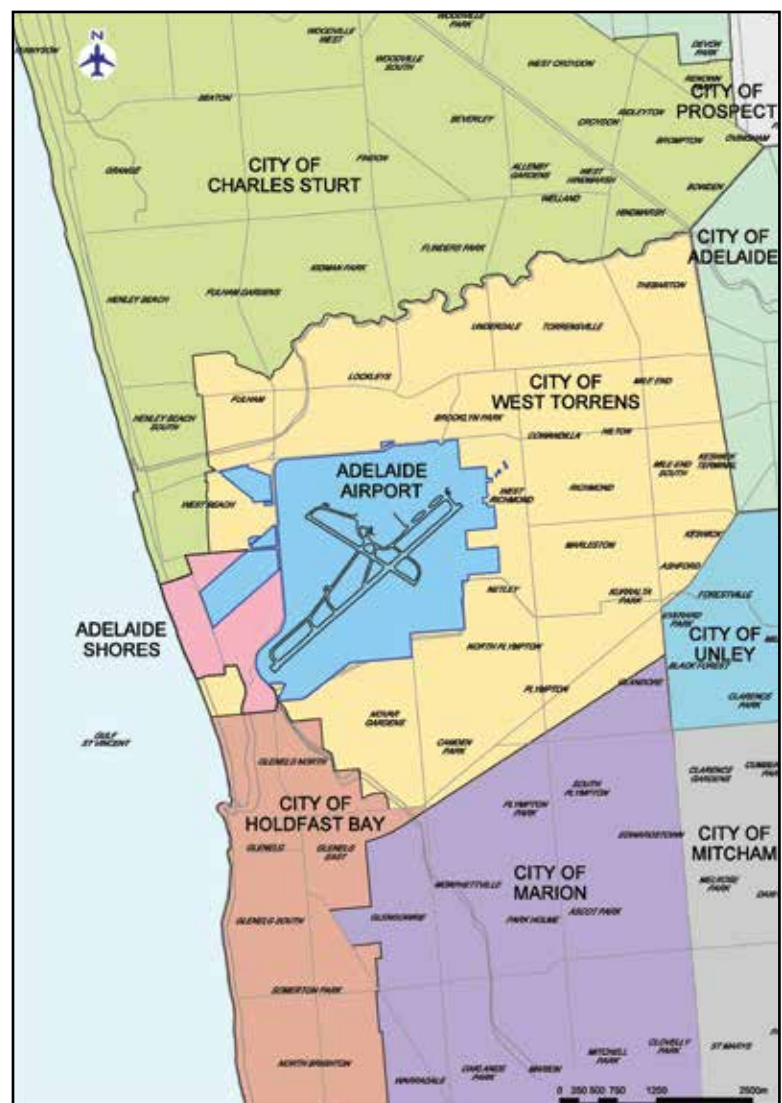


Figure 3.1 Council Boundaries around Adelaide Airport

## 3.2 Airport History

Air travel in South Australia commenced during the early part of the 1900s with airfields at various places throughout the State, including Northfield and what is now the location of the suburb of St Clair (formerly Cheltenham racecourse).

However, it was not until immediately following World War I that Adelaide saw its first official operational airport. Known as Captain Butler's Aerodrome, it was located at what is now the suburb of Hendon, nine kilometres north-west of the city, and was used as a base for an Adelaide to Sydney airmail service.

Adelaide's aviation needs continued to grow and in 1927 the existing Parafield Airport site was acquired. By 1941 it became evident that the location of this site was operationally unsuitable for the expanded future aviation needs of Adelaide, and investigations for an alternate site for the city's major airport commenced.

Following exhaustive topographical, geographical and meteorological testing over the period 1941 to 1944, the present site between the Adelaide CBD and the coast was chosen (see Figure 3.2). World War II slowed the acquisition and development program for the Adelaide Airport site, but the 10 years following the war saw the site developed for domestic services.

In December 1954, the Department of Civil Aviation commenced operational testing of the airport, which received its licence and opened for domestic operations in February 1955.

Since that time, the civil aviation world has been revolutionised – firstly with jet aircraft, followed by wide-bodied aircraft, and more recently the advent of low-cost carriers encouraging the carriage of passenger loads unheard of in the 1950s. Adelaide Airport has developed along with this aviation revolution and the increased demands of the South Australian community.

In the late 1960s, the main runway was first extended, along with one of many extensions to the domestic terminal to accommodate the public's adoption of aviation as a transport medium. The development and commissioning of state-of-the-art navigational and flight safety communications systems also took place at that time.

In November 1982, Adelaide Airport's international terminal was opened and the first scheduled international services into and out of South Australia commenced.

At around the same time the Commonwealth Government was laying the foundations for privatisation of its airports. The legislative processes for the first stage of this program were put in place by the development and promulgation of the *Federal Airports Corporation Act 1986* and the creation of the Federal Airports Corporation (FAC) under Section 5 of that Act.



Figure 3.2 View of the original Adelaide Airport Site 1947

### 3. THE AIRPORT

When the FAC took over management of Adelaide Airport in 1988, plans were formulated to commence upgrading the facilities. Following a planning and review period, the FAC embarked on a significant improvement program, and committed to the improvement of roads, power, water and sewerage capacity, landscaping, terminal development, and aircraft aprons and taxiways at a cost in the vicinity of \$20 million over a 10-year period, together with the extension of Runway 05.

The final stage of the privatisation program for Adelaide took place in May 1998, when AAL commenced the long-term lease of Adelaide Airport, inheriting identified staff, facilities and equipment from the FAC.

Since 1998, AAL has successfully completed major development works to position Adelaide Airport as one of the most modern and accessible airports in Australia. In October 2005, AAL completed the construction of the T1 terminal which was the first 'multi-user' type terminal in Australia (see Figure 3.3).

In 2011, AAL successfully completed a major resurfacing of runways and aprons.

Following the successful opening of and enhancements to the T1 terminal, AAL designed, constructed and opened the multi-level car park alongside the terminal in August 2012 (see Figure 3.4). The area between the terminal and the car park was developed as a pedestrian plaza, which was completed in March 2013.

Along with the terminal and car park developments, AAL has reconfigured the internal road network to provide enhanced accessibility to terminal precinct infrastructure and better external road access and egress.

All of these major projects were undertaken with little interruption to the workings of the airport and minimal interference to passengers. The success of these projects is testament to the project planning and management, and the consultative approach by AAL with all relevant stakeholders.

As a result of these significant infrastructure works completed in previous years and the planned works for the coming years, the airport is well placed to serve South Australia's air transportation needs for the next 20 years and beyond.



Figure 3.3 Adelaide Airport Terminal 1



Figure 3.4 Multi-Level Car Park



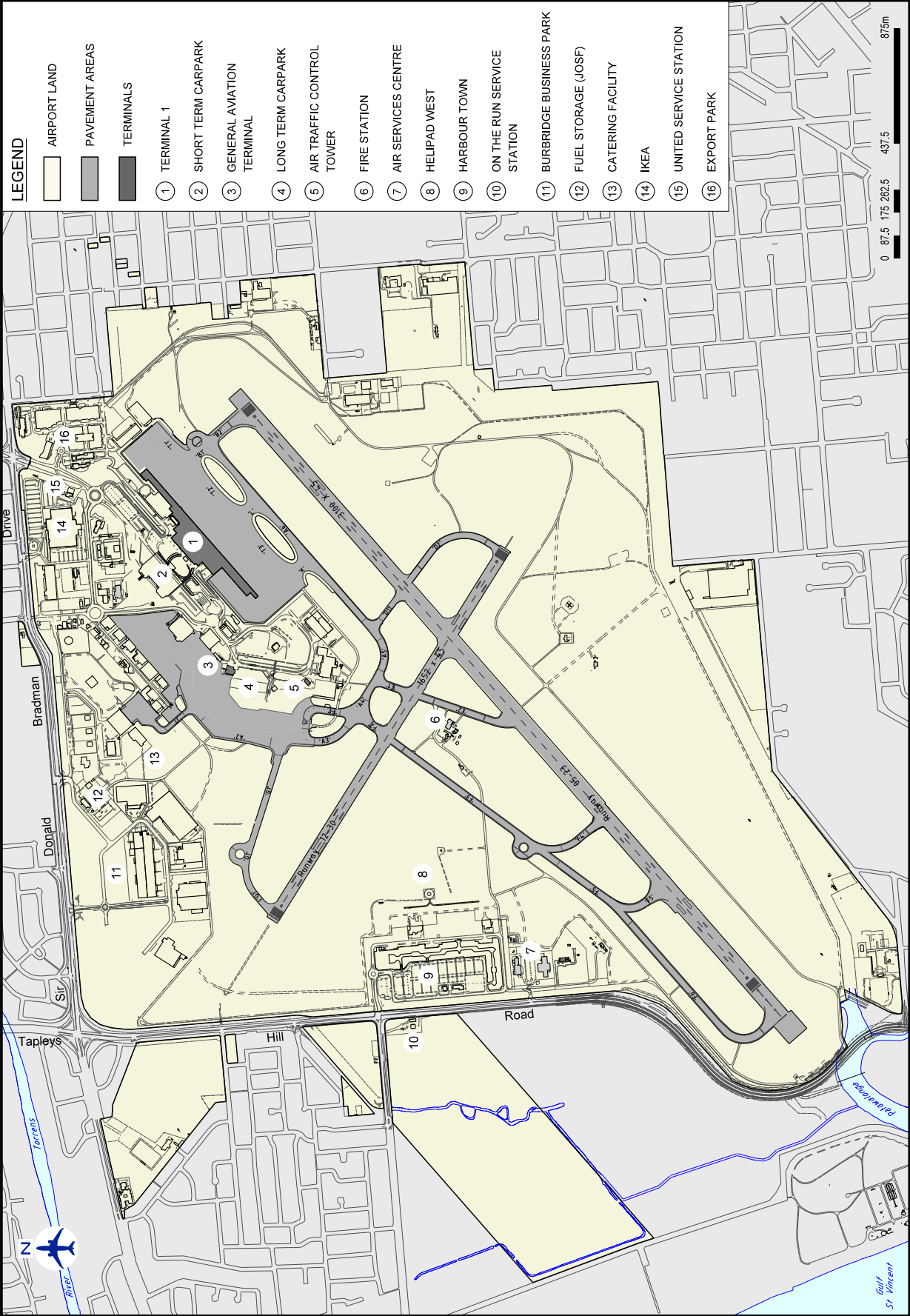


Figure 3.5 Layout of Existing Facilities at Adelaide Airport



## 3.3 Facilities

Adelaide Airport is a Certified Airport (as certified by CASA) and has facilities to provide for international, domestic and regional passenger airlines, freight services, general aviation, charters and helicopter operations. It also has dedicated facilities for the handling of freight including perishable and other time-sensitive products.

The principal aviation-related facilities at Adelaide Airport include:

- a two-runway system comprising the main 05/23 runway (3100 metres) and a secondary 12/30 runway (1652 metres) together with associated taxiways and apron;
- a multi-user integrated terminal serving international, domestic and regional customers in an efficient and economical manner;
- on-airport car parking facilities offering both short-and-long-stay car parking, and disabled car parking choices;
- taxi, hire car and bus parking;
- rental vehicle parking;
- air freight facilities including a six-metre pallet loader and cold storage facilities;
- aircraft maintenance hangars and associated facilities;
- in-flight catering facilities;
- general aviation facilities (including terminals) and helicopter facilities;
- rescue and fire-fighting facilities;
- air traffic control facilities;
- public transport access;
- meteorological facilities; and
- aviation fuel facilities.

The layout of the facilities at Adelaide Airport is illustrated in Figure 3.5 on the previous page.

The terminal (T1) and associated infrastructure provides 14 aerobridges and the capacity to handle 3,000 passengers per hour; offering state-of-the-art amenities for passenger comfort, quality processing and leisure.

## 3.4 Relationship to Other Airports

**Adelaide Airport is the hub airport for the major regional centres of South Australia and has direct services to all mainland capital cities and significant tourism icons. Figures 3.6 and 3.7 demonstrate the current and possible domestic and regional locations that have or might be serviced by flights from Adelaide Airport on a weekly basis, and included at Table 3.1.**

Adelaide Airport's main runway length of 3,100 metres is more than adequate to meet the demands of interstate and intrastate operations. It is also of sufficient length for the departure requirements, in all seasons, of critical long-haul international routes.

Current international direct services are provided to the cities of Dubai, Hong Kong, Singapore, Kuala Lumpur, Denpasar and Auckland, with additional one-stop links to the rest of the world. The international routes are shown in Figure 3.8, and outlined in Table 3.2 that follows.

The airport operates on a 24-hour basis that, under a curfew, restricts the operation of passenger-carrying jet aircraft between 11.00pm and 6.00am due to the surrounding residential areas. Shoulder periods of one hour exist at each end of the curfew timeframe for international regular public transport services, with a maximum extent of eight arrivals per week (subject to Commonwealth dispensation) and no departures.

AAL continues to work in partnership with all airlines, State Government agencies, the freight and cargo industry and the tourism and hospitality industry, to develop sustainable airline services that meet the air travel, import and export needs and social demands of South Australia.

## Domestic

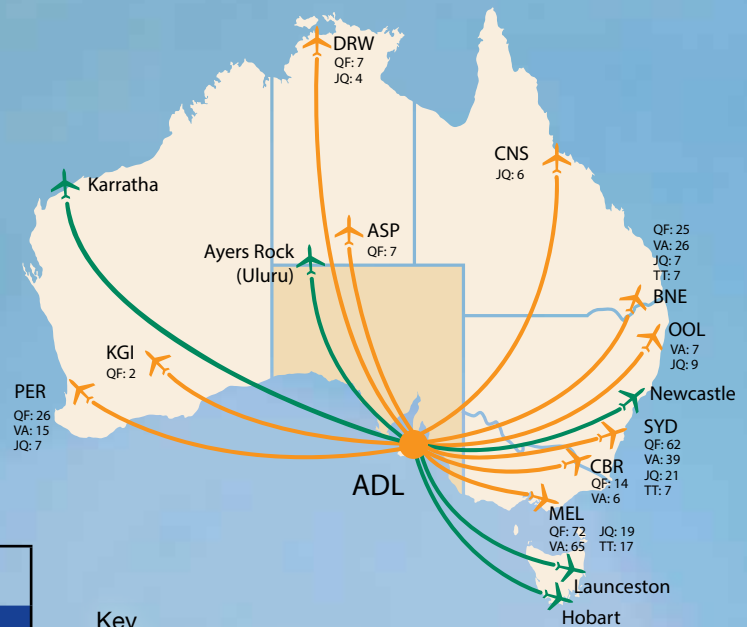


Table 3.1 Domestic and Regional Direct Services in Operation – 2014

Domestic / Regional			
Airline	Destination		Frequency (weekly)
Qantas Airways	Alice Springs (ASP)		7
	Brisbane (BNE)		25
	Canberra (CBR)		14
	Darwin (DRW)		7
	Kalgoorlie (KGI)		2
	Melbourne (MEL)		72
	Olympic Dam (OLP)		21
	Perth (PER)		26
	Port Lincoln (PLO)		22
	Sydney (SYD)		62
Virgin Australia	Brisbane (BNE)		26
	Canberra (CBR)		6
	Gold Coast (OOL)		7
	Melbourne (MEL)		66
	Perth (PER)		15
Regional Express	Sydney (SYD)		39
	Broken Hill (BHQ)		13
	Ceduna (CED)		12
	Cooper Pedy (CPD)		6
	Kingscote (KGC)		16
	Mildura (MQL)		6
	Mount Gambier (MGB)		23
	Port Lincoln (PLO)		48
	Whyalla (WYA)		31
Sharp Aviation	Port Augusta (PUG)		11
Jetstar	Sydney (SYD)		21
	Melbourne (MEL)		19
	Brisbane (BNE)		7
	Perth (PER)		7
	Darwin (DRW)		4
	Gold Coast (OOL)		9
	Cairns (CNS)		6
Tiger	Melbourne (MEL)		17
	Sydney (SYD)		7
	Brisbane (BNE)		7

### Key

orange: existing destinations

green: potential destinations

Note: Frequencies per week by carrier (capacity for NS13 / 30 weeks)  
(Source: OAG, Aspiration Analysis)

Figure 3.6 Domestic Destinations Serviced by Adelaide Airport

## Regional

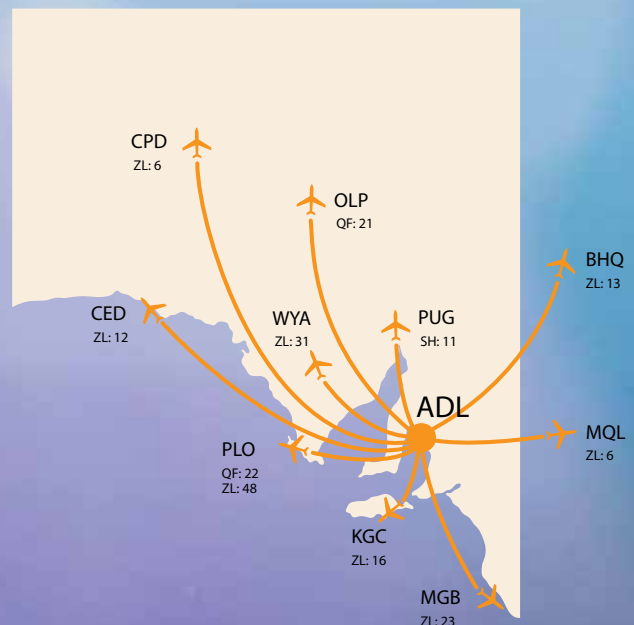


Figure 3.7 Regional Destinations Serviced by Adelaide Airport

## International

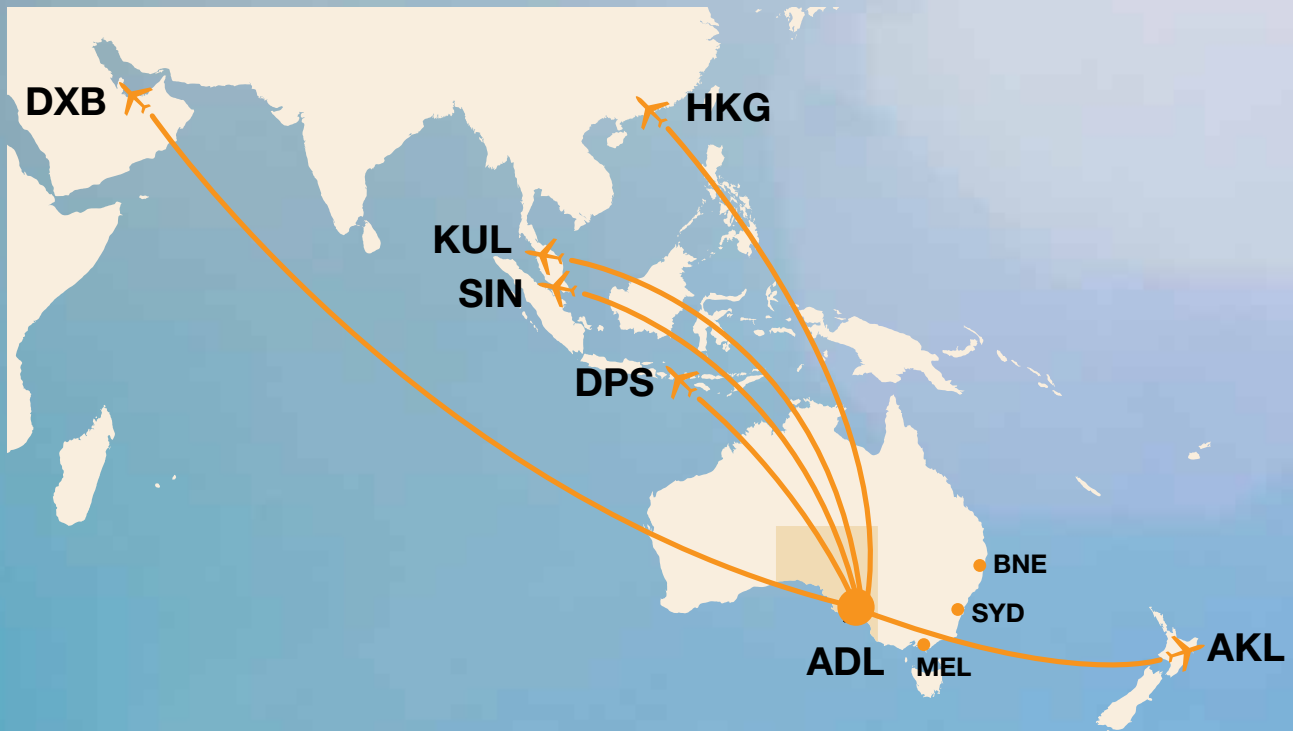


Figure 3.8 Existing International Destinations Serviced by Adelaide Airport

Table 3.2 Existing International Direct Services in Operation – 2014

International			
Airline	Destination		Frequency (weekly)
Cathay Pacific Airlines	Hong Kong	(HKG)	4
Malaysia Airlines	Kuala Lumpur	(KUL)	7
Singapore Airlines	Singapore	(SIN)	12
Air New Zealand	Auckland	(AKL)	5
Virgin Australia	Denpasar, Bali	(DPS)	5
Emirates	Dubai	(DXB)	7
AirAsia X	Kuala Lumpur	(KUL)	4
Jetstar	Denpasar, Bali	(DPS)	7
Jetstar	Auckland	(AKL)	3

## 3.5 Economic Significance

Adelaide Airport is the aviation gateway to South Australia. It makes an important contribution to the South Australian economy through employment and value-added production associated with the airport's business activities (both aviation and non-aviation related businesses). This is measured through a combination of a business survey and economic modelling to estimate the direct and indirect (multiplier) economic benefits attributable to airport activity.

### 3.5.1 Economic Impact

Aircraft movements and the number of passengers at Adelaide Airport has substantially increased in 2013. International passengers increased as a result of Emirates, Singapore Airlines, Cathay Pacific, Air New Zealand and Malaysia Airlines increasing services. Low-cost operator AirAsia X introduced a Kuala Lumpur service in October 2013, while Jetstar began international services to Denpasar (Bali) and Auckland in December 2013.

Adelaide Airport achieved record growth in passenger numbers in 2011, totalling 7.1 million. Passenger movements increased to 7.2 million in 2012, and further increased to 7.5 million in 2013. Of these passengers, 89% were domestic and regional, with the remaining being international passengers.

Adelaide Airport is the single largest employer base in South Australia, directly employing approximately 8,726 persons and indirectly employing an additional 9,033 persons – a total of 17,759 persons<sup>1</sup>.

In total, the full economic impacts associated with the operations of Adelaide Airport are estimated to be a contribution of \$1,944 million to Gross State Product (GSP) and support for 17,759 FTE jobs. This represents in the order of 2.1% of State economic activity; a significant increase since 1998. Table 3.3 compares the current economic impact findings of employment through Adelaide Airport, with the results of previous studies commissioned by AAL.

While it is estimated that airport activity supports in the order of 2.1% of the State's economic activity, this increases to 2.75% when the public sector contribution to GSP is excluded. State GSP was \$91,928 million in 2011/12 and is estimated to be in the order of \$95,605 million for 2012/13 allowing for indicative growth of 4%. The private sector component of this is estimated to be \$72,023 million of which the airport's total contribution of \$1,944 million is 2.75%.

Some of the most notable aviation-related changes since the 2009 Master Plan include:

- the continued introduction of low cost carriers and more recently, carriers to Asia and the Middle East (e.g. Emirates, AirAsia X and Jetstar);
- a continued decline in airfares due in the main to the entry of low cost carriers;
- higher transport security and regulations in response to terrorism threats since the early 2000s;
- strengthening of the Australian dollar making overseas travel for Australians more attractive (but less attractive for international visitors); and
- Adelaide Airport's new car park, which came into operation in 2012 with substantially improved airport transport facilities and services.

Table 3.3 Comparison of Economic Impact 1998 to 2013

Economic Impact	1998	2003	2006	2008	2013
Direct Employment	3,190	4,602	7,736	8,037	8,726
Onsite	N/A	3,212	5,070	5,267	6,152
Offsite	N/A	1,390	2,666	2,770	2,574
Indirect Employment	4,810	4,875	8,200	8,514	9,033
Total Employment	8,000	9,477	15,936	16,551	17,759
Total Value Added*	\$385 million	\$770 million	N/A	\$1,612 million	\$1,944 million
Gross State Product %	1.00%	1.50%	N/A	2.30%	2.1%

\*Contribution to Gross State Product (Direct and Indirect)

<sup>1</sup> Hudson Howells – Socio Economic Impact Assessment – Addendum (March, 2014).



#### 3.5.2 Freight Movements

The South Australian Government's Department of Planning, Transport and Infrastructure (DPTI) identifies the following air freight export data and trends in its most recent *South Australia Exports by Air* report (DPTI 2014):

- In the 2013 calendar year, South Australia exported more than 14,280 tonnes of products worth almost \$570 million by air. The total tonnage exported by air loaded at Adelaide Airport and flown directly to international destinations or transhipped to interstate gateways (by air and road) for export over the past seven years is shown in Figure 3.9. The total exports by value is shown in Figure 3.10.
- 2013 saw a decrease of 782.3 tonnes (or -5.2%) from 2012 in total SA exports by air. The total actually loaded for export at Adelaide Airport, however, increased by 820.1 tonnes or 11.4%, which resulted in the proportion of the total loaded at Adelaide increasing from 47.6% in 2012 to 55.9% in 2013.
- The volume of all product types exported through interstate gateways (via air and road) decreased by more than 1,602 tonnes or 20.3%.

Singapore was SA's biggest export market by volume in 2013 at over 2,215 tonnes, increasing by some 30.6% over 2012 and amounting to 15.5% of total exports, by attracting relatively low volume horticultural products and live animals.

Switzerland ranked first by value of exports at 25.6% of the total, increasing from \$9.7 million in 2012 to \$185 million in 2013, with new exports of wrought silver at 195.4 tonnes, plus fresh beef.

Other significant exports were:

- Vietnam – Fresh beef and lobsters;
- China – Table wine and frozen beef; and
- United Arab Emirates – Fruit and vegetables.

The results of a recent survey undertaken by AAL suggest that Adelaide Airport can expect sustained increases in outbound freight volumes over the next 5 years in the order of 1 to 2% per annum (predominantly manufactured goods and seafood). These results are consistent with the above export results for 2013 and suggest that total outbound air freight volumes (direct export and transhipped) could start to return to those experienced prior to the global financial crisis. For example, 2% growth in freight per annum over the next 5 years would increase SA exports by air (direct and transhipped) from 14,280 tonnes to around 16,000 tonnes per annum.

Notwithstanding this expected growth in outbound air freight, inbound air freight is expected to grow at double the outbound rate and be in the order of 2 to 4% per annum over the next 5 years and between 6.8% and 9.7% per annum over the next 20 years. This highlights the changes taking place in the South Australian economy and a greater reliance on imported manufactured goods.

Air freight statistics for Adelaide Airport indicate that in 2012 there were approximately 6,100 tonnes of freight imported from overseas, with the major source markets being the USA, China, Germany and the United Kingdom. Growth of 4% per annum over the next 5 years could see this volume rise to in the order of 7,420 tonnes per annum.

The above data is consistent with the AAL survey results, with the exceptions of Singapore and Thailand. However, the growth of these inbound markets can be expected given the Australian manufacturing trends already noted above, and as both Singapore and Thailand are already rating in South Australia's top 10 air import markets.

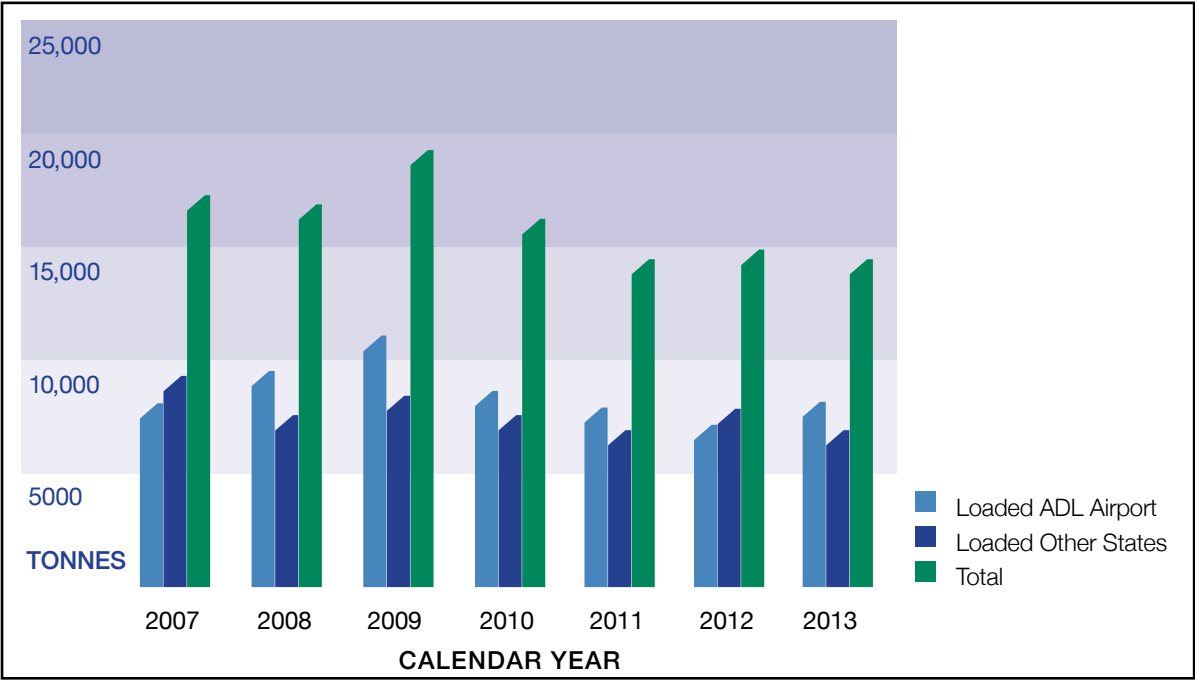


Figure 3.9 SA Exports by Air (Tonnes) 2007-2013 (Source: DPTI, 2013)

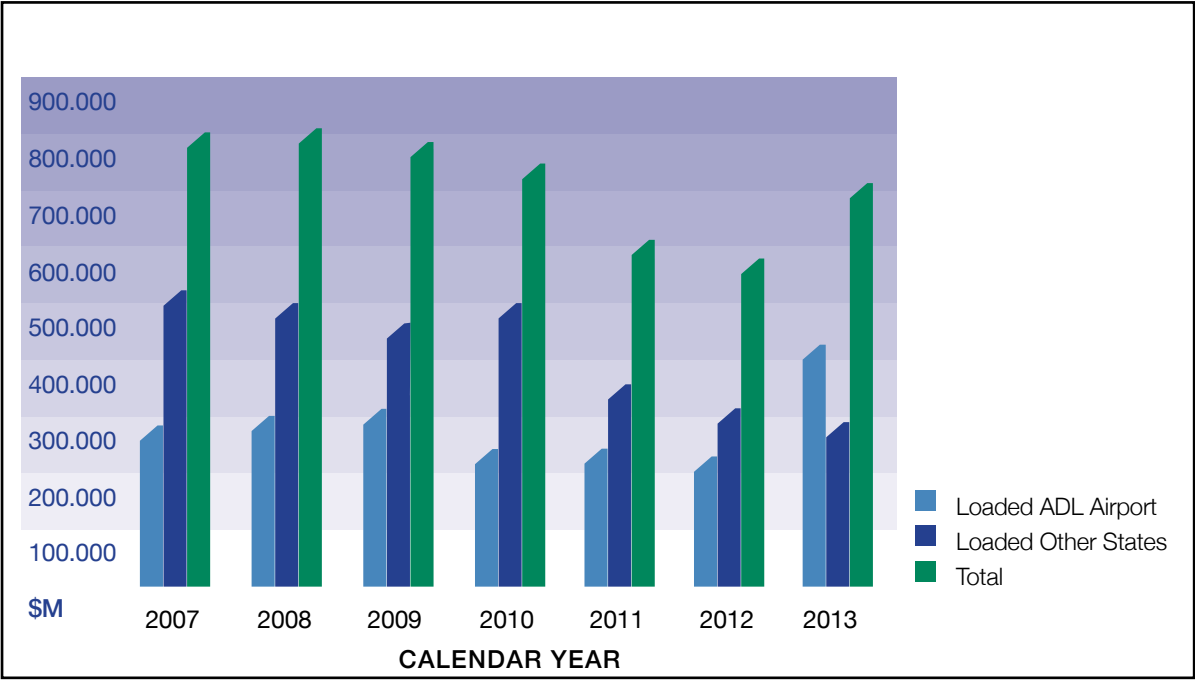


Figure 3.10 SA Exports by Air (\$m) 2007-2013 (Source: DPTI, 2013)

### 3.5.3 Employment

It is estimated that entities currently operating at Adelaide Airport directly employ 6,152 people (Full Time Equivalent – FTEs) on site and 2,574 people (FTEs) off-site, for a total of 8,726 FTEs, as shown in Tables 3.3 and 3.4. Steady increases have occurred over the last 10 years in direct employment, with a marginal decrease evident in off-site employment since 2008, attributed to a combination of business re-structuring and consolidation mainly from the Global Financial Crisis. The slight reduction of the business entities in number is similarly attributed to the dynamic of business consolidation leading to larger entities. These airport employees have gross wages and salaries of an estimated \$520 million. Returns to capital (i.e. other value-added) are estimated at \$342 million from industry averages, giving a total value-added of \$862 million.

Table 3.4 below outlines the direct employment impacts from entities operating at Adelaide Airport over the most recent 10-year period.

Through direct purchases by operators based at Adelaide Airport and the on-spend of direct wages, there is an estimated indirect (or multiplier) contribution of 9,033 jobs created for the South Australian economy. In total, the full employment impacts associated with the operations of Adelaide Airport are therefore estimated to be 17,759 FTE jobs in 2013/14, compared with 16,551 in 2008.

Additionally, through the direct purchases by airport operators, and the on-spend of the direct wages, there is also an included contribution to value-added (salaries, wages and profits) in the State estimated to be in the order of \$1,055 million; giving a total value-added of \$1,944 million per annum.

### 3.6 Planning Context

**The objectives for Adelaide Airport's development have been considered relative to Commonwealth, State and Local Government planning regimes.**

The Adelaide Airport Master Plan is a strategic planning tool for ensuring the operational integrity and continued viability of the airport is preserved, while also having due regard to relevant State and Local government land use planning legislation and significant State land use and transport planning policies. The State and Local Government Planning Strategies of relevance to Adelaide Airport are discussed in detail in Chapter 7 – Land Use Planning.

The airport land is owned by the Commonwealth of Australia and leased to AAL. Adelaide Airport is identified in legislation as a 'regulated airport', as are Parafield and other federally leased State and Territory airports that comply with the *Airports Act 1996* and associated Regulations.

Any project or development proposed for the airport must be assessed by the appointed statutory officer, the Airport Building Controller (ABC), who ensures that the project is consistent with the approved Master Plan, and that it complies with relevant building codes and Australian Standards.

Any new project, development or change to existing facilities is also considered by the Airport Environment Officer (AEO) who monitors AAL's compliance with the Master Plan, the Airport Environment Strategy and compliance with the *Airports (Environment Protection) Regulations 1997*.

For as long as the airport land remains in the custody of the Commonwealth, this planning approval regime will remain under the legislative direction of the Commonwealth Minister, who is ultimately accountable for what happens on Commonwealth land.

**Table 3.4 Direct Employment Impacts by Year 2003-2013**

	2003	2006	2008	2013
Number of Entities	140	117	146	133
Direct Employment at Adelaide Airport	3,212	5,070	5,267	6,152
Other Employees	1,390	2,666	2,770	2,574
<b>Total Direct Employment</b>	<b>4,602</b>	<b>7,736</b>	<b>8,037</b>	<b>8,726</b>



Accordingly, the principal development objectives for Adelaide Airport include:

- airport capacity to meet future demand from the aviation industry;
- the continuing commercial viability of the airport as a business;
- safe and efficient aircraft operations at the airport into the future; and
- environmental protection from noise and other potential impacts;
- provision of safe and efficient access into and within the airport for ground transport.

The master planning process ensures that sufficient land has been identified to meet the community's demand for air transport growth and supporting activities. Additionally, the Master Plan assists in ensuring structured development of commercial and industrial areas to guarantee the ongoing viability of the airport as a major component of the State's transport infrastructure.

The planning assessment process for development on airport land addresses issues such as the height of developments, wildlife hazards and the impact of lighting on aircraft operations in the vicinity of the airport. The planning assessment process and development principles are further discussed in Chapter 7 – Land Use Planning.





# FORECASTS

# 4





# FORECASTS

## 4.1 Introduction

Adelaide Airport is the major gateway for South Australia's aviation market. This aviation market comprises three key sectors:

- domestic aviation;
- regional aviation; and
- International aviation.

**Domestic and regional aviation comprises the largest component (91%) of passenger traffic generated at Adelaide Airport. Six key destinations amount for over 93% of all domestic passenger journeys and aircraft movements. The destinations are: Melbourne, Sydney, Brisbane, Perth, Gold Coast and Canberra. In 2013, approximately 6.1 million passengers travelled on interstate flights from Adelaide.**

In the past, Adelaide served as a 'point-to-point' role between the six key domestic cities and fed passenger traffic into Sydney and Melbourne Airports so that they could transfer onto other flights with destinations not served directly from Adelaide. However, in recent years this has changed markedly with successful marketing, and international carriers commencing or increasing the frequency of direct international flights to a range of Asian and Middle Eastern destinations.

Adelaide Airport has experienced a steady increase in growth and is currently ranked first of all Australian capital city international airports in terms of overall passenger movement growth trends. In 2013, some 807,000 international passengers departed or arrived from Adelaide Airport; a 21% increase on the previous year.

While this growth is not expected to be maintained at the same rate in both capacity and flight frequencies for future years, it will continue to address the latent demand for direct international flights.

The main carriers responsible for the growth in Adelaide are:

- Emirates Airlines, which provides direct flights to Dubai;
- Singapore Airlines, which has increased flights to Singapore;
- Virgin Australia, which has increased flights to Singapore, Auckland and Bali;
- Jetstar which commenced regular services to New Zealand and Bali; and
- AirAsiaX which commenced regular services to Malaysia.

International flights have increased substantially since the last Adelaide Airport Master Plan was approved in 2009. In 2008/2009, there were 3,100 international flights carrying some 542,000 passengers. In 2012/2013, this increased to 4,000 flights carrying some 736,000 international passengers. This represents a 29% increase in flights and a 36% increase in international passengers.

In addition to the 4,000 international movements, Adelaide Airport had 47,000 domestic movements in 2013, 26,000 regional movements and 24,000 general aviation movements. Helicopters also operate out of Adelaide Airport and in 2013 there were 2,879 helicopter movements.

## 4.2 Historical Data

**An assessment of historical data for passenger and aircraft movements for Adelaide Airport has been compiled based on a number of sources.**

For international, domestic and regional data, the Bureau of Infrastructure, Transport and Regional Economics (BITRE) compiles aviation statistics. Direct AAL research and records and information supplied by Airservices Australia were also sourced for such movement data.

Table 4.1 provides aircraft movements supplied by Airservices Australia recorded for the previous eleven years.

Table 4.2 provides international, domestic and regional commuter passenger movements recorded for the previous eleven years.

Table 4.1 Historical Aircraft Movements 2003-2013 (000s)

Movements (000s)	Calendar year										
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
International	1.7	1.9	2.2	2.7	2.9	3.2	3.5	3.3	3.5	4.0	4.6
Domestic	35.5	37.6	41.2	42.4	43.6	47.5	47.1	48.6	46.0	46.6	47.8
Regional	29.2	27.7	27.2	25.3	28.6	24.6	24.3	25.3	25.1	26.2	24.6
General Aviation	27.7	28.9	28.4	28.9	29.5	26.3	22.6	22.2	24.7	23.6	23.1
<b>Total</b>	<b>94.1</b>	<b>96.1</b>	<b>99.0</b>	<b>99.3</b>	<b>104.5</b>	<b>101.6</b>	<b>97.4</b>	<b>99.4</b>	<b>99.3</b>	<b>100.4</b>	<b>100.1</b>

Table 4.2 Historical Passenger Movements 2003-2013 (000s)

Passengers	Calendar year										
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
International AD*	233	302	345	409	470	492	516	541	595	675	807
DOC**	35	32	37	25	16	17	14	7	5	16	5
Transit	36	26	25	38	47	57	52	41	34	32	41
Domestic	4,062	4,470	4,852	5,155	5,457	5,790	5,903	6,254	5,931	5,921	6,118
Regional	319	369	379	452	508	564	501	564	590	620	584
<b>Total (excluding Transit)</b>	<b>4,648</b>	<b>5,174</b>	<b>5,614</b>	<b>6,042</b>	<b>6,452</b>	<b>6,863</b>	<b>6,934</b>	<b>7,366</b>	<b>7,120</b>	<b>7,232</b>	<b>7,514</b>

Notes:

\* Arriving and Departing Passengers included

\*\* Domestic-On-Carriage

Figure 4.1 plots the growth trend for International passengers since 1991, and shows the impacts of various global and regional issues influencing passenger growth. This figure shows the 12-month moving sum of international passenger movements at Adelaide Airport over the period from 1990/91 and into 2013/14. The decline over 2002 and into 2003 is explained by a series of events including the September 11, 2001 terrorist attacks in the USA, the collapse of Ansett in Australia, the Bali bombings and the SARS outbreak.

From 2004 onwards Adelaide has experienced strong international growth. This coincides with the strong Australian dollar and strong growth in Australian outbound travel, and has resulted in the increase in Australian resident share of international passengers. In turn, this growth in resident travel has attracted additional airline capacity. Announcements have included the entry of Emirates and increased capacity by Singapore Airlines.

Figure 4.2 plots the growth trend for Domestic passengers since 1991, and shows the impacts of various global and regional issues influencing passenger growth.

This figure shows the 12-month moving sum of domestic and regional passenger movements over the period June 1991 to January 2014. The significant domestic events are also shown. The decline in traffic over 2002 was due to the Ansett collapse. Growth since that time has been strong with the entry of Jetstar and Tiger Airways into the Adelaide domestic market. The most recent decline is due to the cessation of flights by Tiger Airways over the period from July 2011 through to November 2012.

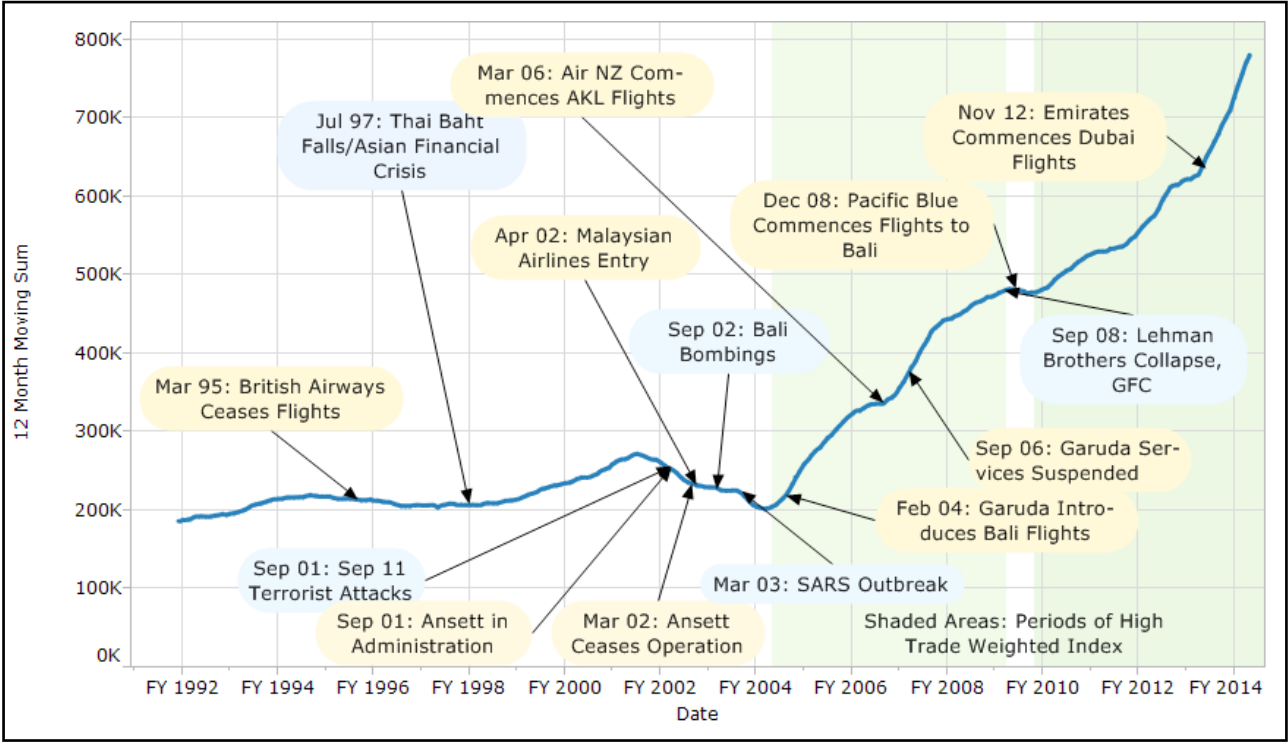


Figure 4.1 Growth trend for International passengers since 1991

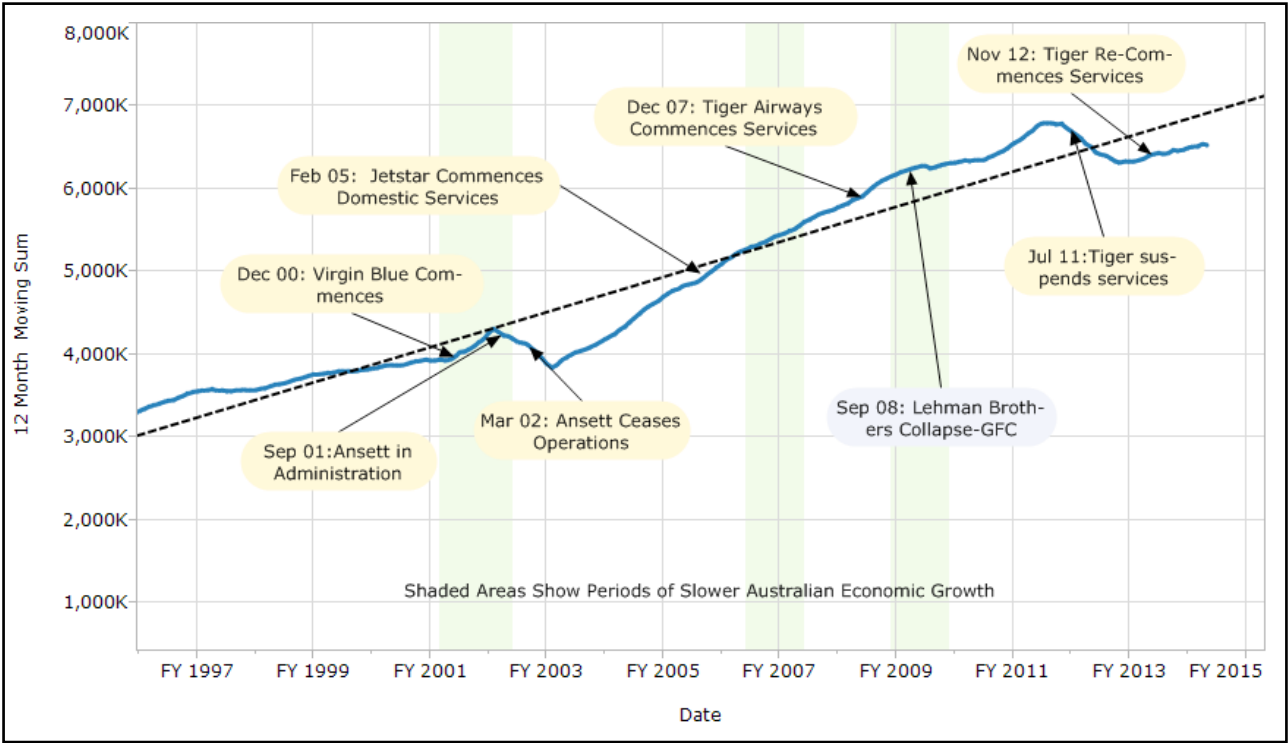


Figure 4.2 Growth trend for Domestic passengers since 1991



## 4.3 Passenger and Aircraft Movement Forecasts

In 2014, Tourism Futures International (TFI) in conjunction with Airbiz was commissioned to prepare long-term passenger and aircraft movement forecasts for Adelaide Airport.

TFI provided forecasts for both passengers and fixed-wing aircraft movements over the forecast period of 20 years to 2034. The forecasts are formulated from a review of past data, economic predictors and a starting point of the latest available data.

### 4.3.1 Forecasting Methods

A large number of factors influence the growth of passenger movements at an airport. These include:

- the incomes of travellers or potential travellers – both the level of income and confidence that these levels will be maintained and grow, are important;
- the prices of air transport and the ground component of travel;
- the competitiveness (quality, product attributes and price) of a destination compared to alternative destinations;
- the supply of airline services – frequency, reliability and quality of service;
- tourism promotion by Governments, airlines and industry bodies;
- consumer tastes and available time for travel; and
- one-off factors and shocks - these include the travel impacts of events such as the Olympics, September 11, the collapse of an airline such as Ansett and health concerns such as those generated by the SARS virus.

Whilst all types of factors have an influence on demand, only some can be measured and factored into the type of modelling generally undertaken in forecasting.

Key drivers for international traffic include international economic and population growth, exchange rate movements, movements in travel costs and airline capacity developments.

For the domestic market, drivers include Australian and South Australian economic and population growth, mining developments (for regional traffic), movements in domestic travel costs and airline capacity developments.

The approach adopted by TFI in preparing the Adelaide Airport forecasts was based on a number of elements:

- segmentation of Adelaide's international and domestic markets to assess the significance of traffic drivers;
- a review of the traffic history available for Adelaide Airport and an assessment of statistical trends;
- a review and analysis of the general aviation and business environment and current airline schedules. This assists in the development of capacity assumptions and identification of qualitative factors that might influence traffic outcomes;
- the development and updating of models linking drivers and traffic;
  - macro models linking drivers and traffic are developed at the aggregate airport level;
  - micro models have been developed by TFI based on extensive statistical analysis and published studies and based on a market and/or market group analysis;
  - final model outcomes are based on an iterative process between the modelling approaches listed above and are constantly being tested and updated; and
- a review of 'official' tourism forecasts in Australia and elsewhere.

### Veracity of Forecasts

To establish the veracity of the forecasts used in this document, a number of assumptions are adjusted either up or down to determine their impact.

The main assumptions that are varied are those related to estimates of Gross Domestic Product (GDP). The assumed GDP estimates for Australia and the Gross State Product (GSP) estimates are provided in Table 4.3.

The assumptions are then varied as follows:

1) an increase of one percentage point on GDP growth to 2015/16 and one-half of a percentage point on GDP growth per year from 2016/17 onwards, in conjunction with modest fare reductions of one-half a percentage point per year, throughout the forecast period; and

2) a decrease of one percentage point on GDP growth to 2018/19 and a decrease of one-quarter of a percentage point from 2019/20 onwards, in conjunction with fare increases of one-half a percentage point per year, throughout the forecast period.

These assumptions were used to confirm the veracity of the adopted forecasts.

**Table 4.3 Economic Driver Assumptions to 2034**

	Financial Year							
	2012/13 (est.)	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/34
	Percent Change on Previous Year							
Australia	2.7%	2.5%	3.0%	3.1%	3.1%	3.1%	2.9%	2.7%
SA Gross State Product (GSP)	1.3%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	2.0%

### Movement Forecasts

Based on the economic driver assumptions in Table 4.3 for passenger growth, modelling was undertaken to estimate the average number of passengers per movement in the forecast period. This was based on developments with respect to passenger seat factors and the average number of seats per movement. Table 4.4 summarises the assumptions for the average number of passengers per movement. These average number of seats per movement have been used to forecast calendar year aircraft movement numbers and aircraft noise metrics.

**Table 4.4 Average Number of Passengers per Movement, Actuals for Financial Years 2006/07 and 2011/12, and Forecasts to 2032/33**

Segment	Year				
	2006/07	2011/12	2017/18	2022/23	2032/ 2033
International	192	191	206	212	216 - 220
Domestic	125	125	133	139	148 - 155
Regional	16	24	26	27	31

### 4.3.2 Data Sources

#### International Passenger and Movement Data

A number of sources exist for international data. AAL data is used as the base information for the forecasts of international passenger movements presented in this document.

Three other data sources have been consulted. The first is the Australian Bureau of Statistics (ABS) collection on overseas arrivals and departures. This information is available by purpose of travel for each Australian gateway. ABS data was used to examine markets for visitor arrivals and destinations for Australian residents travelling overseas.

A second source of data used in international forecasting is the BITRE data issued in the publication *International Scheduled Air Transport*. This publication is based on data provided by international airlines. Data published includes aggregate airport passenger movements and city pair information.

A third source is the *International Visitor Survey* (IVS) compiled by Tourism Research Australia (TRA). This is a survey of international visitors to Australia and is used to identify characteristics of the markets visiting including those that visit Adelaide by port of arrival and departure.

#### Domestic and Regional Passenger and Movement Data

Domestic data (for passengers, aircraft movements and freight) is regularly published for the top routes in the BITRE publication *Australian Domestic Airline Activity*. This data is published as traffic on-board by stages and includes all traffic on each flight stage between two directly connected airports; and thus includes domestic transit passengers.

Data was collected from the BITRE publication *Air Transport Statistics: Airport Traffic Data* that contains a time series of annual airport traffic data for Australian airports receiving more than 7,000 revenue passenger movements annually. This includes international, domestic and regional airline data.

Another source is the *National Visitor Survey* (NVS) compiled by TRA. This is a survey of Australians travelling within Australia and to overseas destinations. It details the demographic and other characteristics of Australian travellers.

### 4.3.3 Risks and Uncertainty in Forecasting

The following assumptions are key to the achievement of forecasts for Adelaide Airport:

- It is assumed that the global economies will recover from current uncertainties and that the European crisis will be contained.
- Aviation industry supply side issues such as air services, pilots and airport capacity will not impede growth, i.e. airline capacity will grow in line with demand in the longer term.
- The trend for low cost carriers to increase market penetration resulted in downwards pressure on fares and stimulation of leisure traffic over recent years, however these impacts may moderate over the next few years; in the longer term TFI considers it likely that Governments' policy responses to Global Warming will lead to an increase in fares (in inflation-adjusted terms).
- Mining growth will continue in South Australia, supported by continued demand from China.

There are a number sources of forecasting uncertainty, including:

- considerable uncertainty at this time as to the direction of some of the major drivers such as economic growth; and
- many unpredictable factors that can influence outcomes; these factors can lower average growth rates in the short-to-medium-term.

The impact of unexpected shocks (such as the Bali bombings) is to reduce travel, often significantly, for varying time periods. Recovery generally follows, although lost patronage is seldom fully restored in the short-term.

It is also assumed that the numbers of movements of helicopters will increase at approximately 1% per annum in the forecast 20-year period.



### 4.3.4 The Forecasts

#### International

The approach to forecasting international passengers is to link the main economic and aviation drivers to traffic via elasticities derived from an analysis of Adelaide traffic behaviour and a review of many Australian and overseas studies.

Relationships were developed for each of the main international markets and included in the forecasting models. Model drivers include country GDP, exchange rates and movements in airfares.

Aggregated models were also developed linking international visitors to OECD GDP and the Australian Trade Weighted Index (TWI). The volume of overseas travel via Adelaide by Australian residents is linked to Australian GDP and the TWI.

In the short-term (12 months to 2 years), airline capacity factors often dominate other factors. TFI has examined airline capacity announcements and made judgements about likely capacity increases.

Adelaide's airline developments and history were also reviewed for the trend growth for the international markets visiting Adelaide. Based on these reviews the trend growth rate for international passengers at Adelaide Airport is assessed at around 5.0% to 6.0% per annum.

The forecasts for 2013 and beyond have been constructed based on the analyses and assumptions outlined earlier, including:

- GDP growth rates as per Table 4.3;
- the annual projections of exchange rates underlying TFI's forecasts assume the TWI trends towards 66 by 2017/18 – a weighted average of the longer- and shorter-term trends; and
- fare decreases are assumed for 2013/14 and 2014/15 following from increases in capacity announced or introduced in the past year. From 2015/16 it has been assumed that airfares will increase in real terms by 0.5% per annum.

International arriving/departing passenger movements are forecast to grow from 807,000 in 2013 to 1.4 million passengers in 2019. This represents a Compound Annual Growth Rate (CAGR) of 6% over the period from 2013 to 2019.

Forecast International Passenger Movements from 2014 to 2034 are depicted in Figure 4.3 below.

Forecasts of International Passenger Movements are derived from the numbers of forecast passengers divided by the average forecast passengers per movement depicted in Table 4.4. The numbers of proposed movements associated with predictions of international passengers are depicted in Table 4.5.

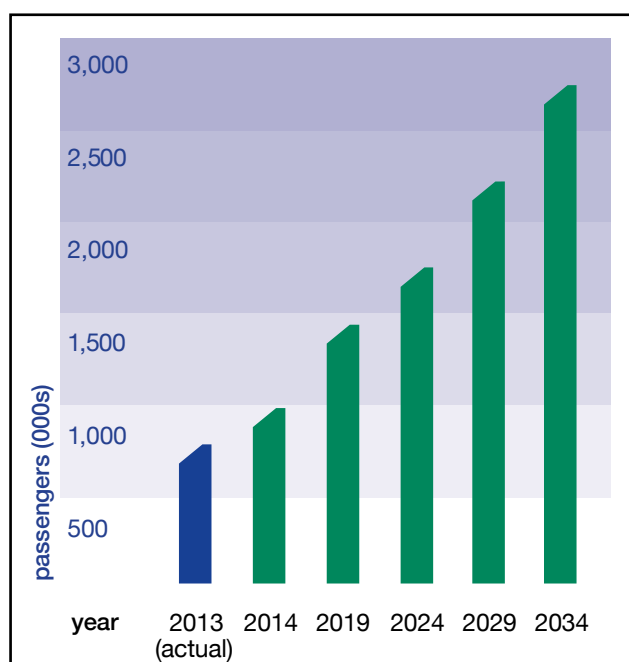


Figure 4.3 Forecast International Passenger Movements 2014 to 2034

Table 4.5 Forecast International Movements

Calendar year	International Movements (000s)
2013 (Actual)	4.68
2014	5.06
2019	6.51
2024	8.24
2029	10.34
2034	12.77

## Domestic and Regional Forecasts

The key drivers for domestic growth at Adelaide Airport are the economic factors (Australian GDP and South Australian GSP) and airline servicing factors. These factors were

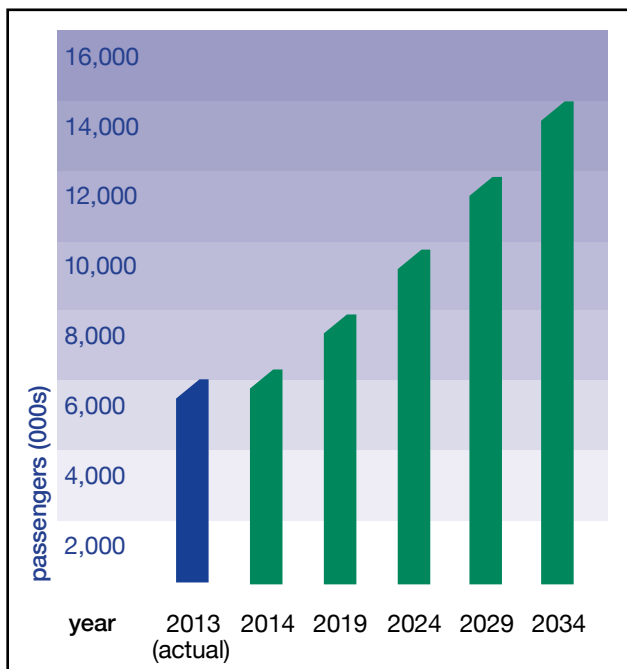


Figure 4.4 Forecast Domestic Passenger Movements 2014 to 2034

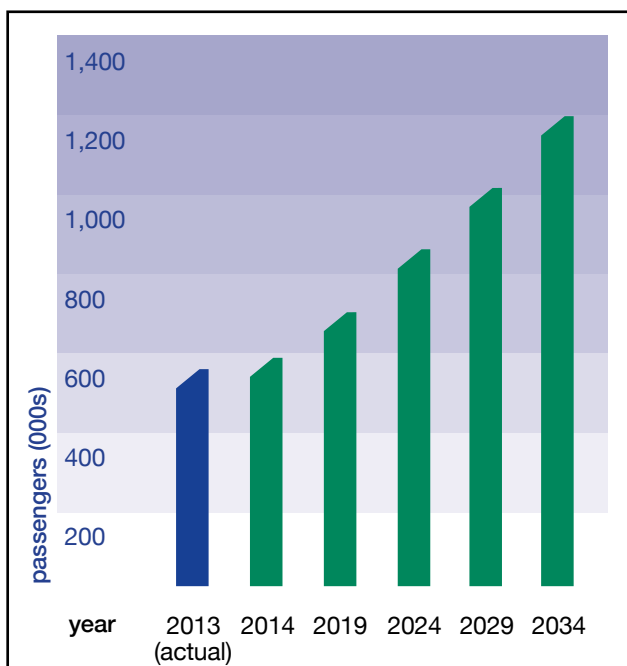


Figure 4.5 Forecast Regional Passenger Movements 2014 to 2034

addressed and relationships were developed for each of the main domestic routes and included in the forecasting models. Aggregated models were also developed linking domestic passengers to Australian GDP.

Adelaide's domestic and regional airline developments and history were reviewed, including the trend growth for the main domestic routes for Adelaide. Based on these reviews, it was assessed that the trend growth rate for domestic passengers at Adelaide Airport is around 4.5% to 5.3% per annum.

The forecasts for 2014 and beyond have been constructed based on the analyses and assumptions outlined earlier in this report:

- GDP and SA GSP grow as per Table 4.3; and
- fares fall in financial years 2013/14 and 2014/15 resulting from the re-entry of Tiger Airways and the introduction of new aircraft to airline fleets. From financial year 2015/16 it has been assumed that airfares will increase in real terms by 0.5% per annum.

Domestic arriving/departing passenger movements (see Figure 4.4) are expected to increase from 6.1 million in 2013 to 7.8 million in 2019; a CAGR of 3.5% over the period, whilst regional airline passenger movements (see Figure 4.5) are expected to grow from 584,000 in 2013 to 718,000 by 2019; a CAGR of 3.6%.

Table 4.6 Forecast Domestic and Regional Movements 2014 to 2034

Calendar year	Domestic and Regional Movements (000s)
2013	72.45
2014	72.20
2019	84.59
2024	98.99
2029	113.51
2034	130.78

Forecasts of domestic and regional movements are derived from the numbers of forecast passengers divided by the average forecast passengers per movement depicted in Table 4.4. The numbers of proposed movements associated with predictions of domestic passengers are depicted in Table 4.6 and for general aviation movements in Table 4.7.

**Table 4.7 Forecast General Aviation Movements 2014 to 2034**

Calendar year	General Aviation Movements (000s)
2013	23.09
2014	23.33
2019	25.60
2024	27.29
2029	28.29
2034	29.08

## 4.4 Summary Of Forecasts

A summary of the forecasts for Adelaide Airport is presented below.

### International

The numbers of international arriving/departing passenger movements are forecast to grow from approximately 807,000 in 2013 to 2.81 million in 2034. This represents an average growth of 5.5% per annum over the next 20 years.

### Domestic

Domestic arriving/departing passenger movements are forecast to grow from 6.1 million in 2014 to 14.1 million by 2034; an average growth of 4.0% per annum over the next 20 years.

### Regional

The trend growth rate for regional passengers at Adelaide Airport is forecast at around 3.7% per annum, although mining developments may lead to a change in trend for some time.

### General Aviation

Nationally, there has been growth in just one area of General Aviation (GA) activity over the past decade – charter activity. Charter activity has accelerated over the past five years associated with the substantial increase in mining activity.

GA activity has been declining in recent years in Adelaide. For the purpose of forecasting GA movements at Adelaide Airport however, the approach has been to assume growth in line with South Australian GSP. This allows for growth to accommodate an expected increase in charter activity associated with mining activity.

The consolidated aircraft movement forecasts for the planning period 2014 to 2034 are depicted in Figure 4.6.

### Helicopters

The current operations of helicopters at Adelaide Airport are largely associated with medical operations and police operations. Airservices Australia has advised that in 2013 there were 2,879 movements of helicopters. The forecast number of helicopter movements is based on a 1.0% per annum increase until 2034. This may vary depending on State Government contracts of helicopter use and the locations of various private helicopter operations. These helicopter forecasts are in addition to the fixed-wing aircraft forecasts described in the previous sections.

### Air Freight Forecasts

Air freight projections for Adelaide Airport to 2034 were provided by TFI based on data and economic forecasts.

Only a short period of international freighter data is available for Adelaide Airport. The forecasts have been predicted based on OECD growth rates over the 20-year forecast period.

The approach adopted by TFI in preparing the freight projections for Adelaide Airport was based on a number of elements:

- a review of the traffic history available for Adelaide Airport and an assessment of statistical trends;
- a review and analysis of the general aviation and business environment and current airline schedules;
- the development of models linking drivers and freight traffic; and
- a review of 'official' freight forecasts in Australia and elsewhere.

Models were developed for inbound and outbound freight volumes.

On the basis of the analysis conducted, it was concluded:

- International inbound freight volumes will grow by between 42% and 62% (average annual growth of between 7.3% and 10.9%) over the next 5 years. This compares with the Adelaide Airport freight survey, which suggests growth of around 10% to 22% over the next 5 years. Over the 20 years from 2013/14 to 2033/34, TFI has projected that growth would increase at an average of between 6.8% and 9.7% per annum.
- International outbound freight volumes will grow by between 18% and 34% (average annual growth of between 3.3% and 6.0%) over the next 5 years. This compares with the Adelaide Airport freight survey conducted by Hudson Howells in 2013, which suggests growth of around 5% to 10% over the next 5 years. Over the 20 years from 2013/14 to 2033/34 TFI has projected growth at an average of between 3.4% and 5.7% per annum.

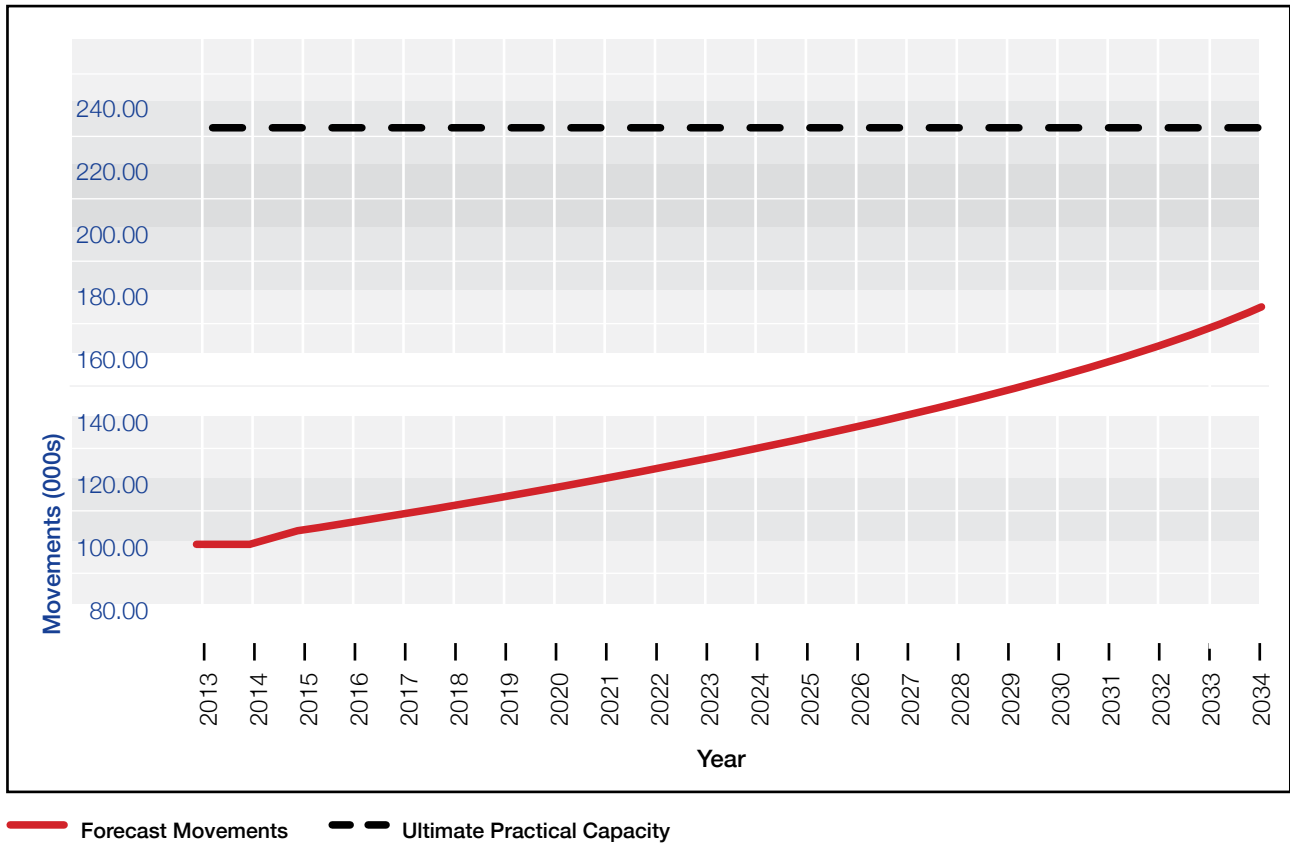


Figure 4.6 Adelaide Airport Aircraft Movement Forecasts



From the analysis above, it appears that the belly-space capacity on passenger aircraft is potentially adequate to cover Adelaide's needs for international freight.

With respect to domestic freight, TFI has concluded:

- Inbound freight volumes will grow by between 10% and 21% (average annual growth of between 1.9% and 3.9%) over the next 5 years. Over the 20 years from 2013/14 to 2033/34 TFI has projected growth at an average of between 1.9% and 4.8% per annum.
- Outbound freight volumes will grow by between 14% and 24% (average annual growth of between 2.6% and 4.3%) over the next 5 years. Over the 20 years from 2013/14 to 2033/34 TFI has projected growth at an average of between 2.5% and 4.9% per annum.

Allowing for the domestic freight projections, use of both specific air freight and domestic regular passenger services is expected to increase consistent with forecasts.

## 4.5 Airport Metrics

### 4.5.1 Airport Capacity

AAL commissioned Airbiz to undertake a review of the runway capacity estimates contained in the *Adelaide Airport Master Plan 2009*, with assessment of the likely ultimate practical capacity for the following scenarios:

- existing runway layout with additional taxiways to minimise runway exit delays for arrivals; and
- existing runway layout with additional runway entry taxiways.

A previous study for the 2009 Master Plan found the Annual Service Volume of the airport to be 207,740 movements per annum using the existing layout but with provision of all necessary taxiway connections to avoid exit delays. In the 2009 study, the use of Land and Hold Short Operations (LAHSO), as currently employed at Adelaide, could potentially increase the Annual Service Volume to 217,730 movements per annum. Further, adding a parallel runway for commuter turbo prop and general aviation aircraft could increase the Annual Service Volume to 280,700 movements per annum.

The most recent study undertaken by Airbiz in 2014 used a different methodology and concurred with this order of magnitude (220,000 fixed wing movements) as an annual practical capacity assessment.

Using annual aircraft movement forecasts extended beyond 2034, demand approaches the nominal runway capacity for the existing layout plus additional taxiway improvements and LAHSO, around the year 2046.

Airbiz included an extended assessment by considering the potential additional incremental annual runway capacity with:

- infrastructure enhancements (taxiway improvements); and
- the effect of peak spreading.

To assess the additional annual capacity from peak spreading at Adelaide Airport, Airbiz analysed busy hour profiles and weekday demand on the current runway system.

The analyses showed that with future growth in aircraft movements, delays would increase in peak periods. Spreading the movements to before and after the peak hours could accommodate additional runway demand. Other airports in Australia that are nearing their runway capacity and are experiencing significant delays in peak periods are already using runway demand management schemes to reduce delays.

To achieve this runway capacity, the following airfield infrastructure enhancements are required:

- Rapid Exit Taxiways (RETs) on Runway 23; and
- additional runway entry taxiways.

If these enhancements were introduced, Airbiz estimates that the practical ultimate capacity could approach 233,000 fixed wing movements; noting that at this level of traffic there would be significant delays to arrivals and departures at peak times of the day.

This estimate is comparable to other single runway systems at capital city airports in Australia when they begin to reach capacity and require additional major aviation infrastructure.

By adopting the estimate for ultimate practical capacity at 233,000 movements in the year 2052 (based on an assumption that there is no material change to the current traffic mix), the current forecast to derive ultimate capacity extends some 15 years beyond the 20-year horizon of this Master Plan. During this period, infrastructure and operational enhancements will need to be introduced to meet projected demand.

The concept for an additional runway and associated infrastructure, if needed, will be progressively considered in future master plans including close liaison with AsA upon existing air traffic control and other air traffic service arrangements. However, consistent with Ministerial approval to the *Adelaide Airport Master Plan 2009*, AAL continues to reserve land area and allow for suitable land use planning toward a parallel third runway should this be required in the future.

The number and nature of the infrastructure improvements and the timing for implementation of these is presented in Chapter 11 – Development Program.

#### 4.5.2 Movement Area

The movement area of an airport is defined in the *CASA Manual of Standards Part 139 – Aerodromes* as that part of the airport used for the take-off, landing, taxiing and parking of aircraft. As a signatory to the ICAO Conventions, Australia, and therefore AAL, has adopted that definition.

The basic principles of the long-term plan for the movement area are based on:

- airspace and aircraft operational requirements;
- the economic and financial feasibility of proposed developments; and
- the impacts on the environment of airport construction and operation.

To maximise the operational aviation use of the existing site, the approach has been based on capacity evaluation of the appropriate runway system for the airport and facility planning to support such a runway system. This is then balanced against the forecast requirements of the individual facilities and other planning parameters critical for the airport.

As demand increases, AAL will review the efficiencies of the airport taxiway system and, if appropriate, will consider the introduction of additional exit taxiways.

#### 4.5.3 Runway Operations

This Master Plan specifies the runway facilities required within a 20-year planning horizon and it also examines the possible ultimate long-term movement area development required for Adelaide. Determination of the runway system for the 20-year planning horizon is based on the following key technical data:

- runway useability during crosswind;
- runway capacity; and
- design aircraft.

### 4.5.4 Runway Useability

Design of the runway system provides sufficient runway orientation to meet the wind useability criteria described in the *CASA Manual of Standards*. This states a planning goal for useability of 99.8% for capital city airports. In order to match this criterion for a 20-knot crosswind on the main runway, the existing cross runway must be retained and is therefore included in all development plans for the 2034 planning horizon.

### 4.5.5 Design Aircraft

The geometric layout of the proposed movement area will accommodate the critical design aircraft expected to operate into Adelaide up to the year 2034 (the A380).

Aircraft are grouped according to different characteristics, such as wing span and outer main gear wheel span. Each grouping of aircraft is allocated a reference code rotation for example B737 and A320 aircraft are Code C, B767s are Code D, B747 is a Code E, while the new large aircraft such as the Airbus A380 is Code F. It has been forecast that this aircraft could operate on a regular scheduled service into Adelaide in future, and therefore has been included at 10 flights per week in 2034.

Larger Code G aircraft with wingspans up to 95 metres are unlikely to enter service at Adelaide within the 2034 planning horizon, if at all. Notwithstanding this, restricted operations of Code G aircraft can be accommodated in ultimate planning considerations.

Beyond this horizon it is difficult to predict with any surety the dimensions of new generation aircraft likely to operate into Adelaide. Various studies of long-range aircraft design trends have included predictions of aircraft with wingspans up to 95 metres (Code G).

### 4.5.6 Domestic Fleet

There has been a noticeable trend for domestic airlines to fly larger, more fuel-efficient aircraft with higher passenger capacities, at higher load factors into Adelaide Airport. This is evidenced by the recent trends for slow growth in aircraft movements, but a much higher increase in passenger numbers.

That trend is likely to continue into the foreseeable future, driven by fuel costs and carbon reduction schemes in Australia. Therefore, AAL expect that the domestic carriers will continue to renew their fleets to larger capacity aircraft such as the B787, and more efficient aircraft such as the A320 neo-type aircraft and B737-800 NG type aircraft.

The current regional fleet in South Australia is based heavily on the SAAB 340 and Dash 8 type aircraft. It is forecast that this fleet type will continue in the future with those aircraft types being predominant in the medium and small turbo prop categories. There will continue to be some limited small jet operations, and possibly some of the larger Q400 aircraft on the more heavily used routes. The Pilatus PC12 type aircraft is anticipated to continue in the medium term as the major aircraft type used by the Royal Flying Doctor Service.

### 4.5.7 International Fleet

The recent trends for implementing A380 size aircraft are assumed to continue with A330, A350 and B787 and B777-300 versions also to be more prevalent in the fleets of airlines servicing Adelaide Airport. It is also expected that these aircraft will allow for more direct services between Adelaide and closer international destinations and also to more Asian and Middle Eastern hubs, providing improved access to European and American ports.

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# AIRCRAFT NOISE

# 5



# AIRCRAFT NOISE

## 5.1 Introduction

Under the *Airports Act 1996*, Adelaide Airport is not responsible for the noise generated from aircraft whilst landing, taking-off or taxiing. However, AAL recognises the need for the airport to assist in managing aircraft noise for the surrounding communities by acting as a facilitator between the airlines – the generators of the noise – and Airservices Australia, the airspace manager.

The most effective means for reducing the impact of aircraft noise is through the effective planning of land use for areas adjacent to the airport site. Other means include a combination of land use with alternative runway allocations and/or adopted flight path procedures, restrictions of aircraft movements by aircraft type, and the implementation of aircraft operational procedures aimed at achieving desired noise abatement objectives. The recent trend in renewing airline fleets also has the advantage that the newer aircraft types are generally quieter than existing or older aircraft.

The *Airports Act 1996* requires a Master Plan to include forecasts of noise levels resulting from the operation of the airport. There are many ways to forecast and display aircraft-related noise levels and the Australian Government has specified the use of the computer-based Integrated Noise Model (INM) which produces Australian Noise Exposure Forecasts (ANEFs) for the prediction of exposure to aircraft noise.

ANEFs are one measure to describe aircraft noise in relation to impacts on surrounding lands and communities, but recent evidence suggests that there may be little relationship between noise exposure attributed to the results of ANEF modelling and aviation-related noise complaints.

ANEFs continue to be required by law and additionally by State Government planning authorities to plan and regulate land use and proposed developments around airports. However, further tools have been devised to better reflect and identify areas around airports which experience noise from aircraft.

An additional descriptor of airport noise at Adelaide Airport is included in this Master Plan through an N70 map showing the number of noise events above 70 decibels<sup>1</sup> (dB) caused by over-flying aircraft. The background to this mapping is also provided in this section.

## 5.2 Noise Plots

Noise plots are plans of the airport and surrounding localities on which contours of equal noise exposure units (usually 20, 25, 30 and 35) have been superimposed, the level of noise impact increasing as the noise level value increases. There are three variations of contour plans which are closely related, but differ in the type of base data and assumptions used in their preparation.

The definitions and relationship of each type are as follows:

- **ANEI (Australian Noise Exposure Index)**

An ANEI is a plot of defined noise exposure based on the actual operations of the airport and uses an analysis of actual aircraft movements over a 12-month period, usually a calendar year. It represents the best estimate of the actual noise exposure for a particular period rather than for some forecast future scenario. An ANEI is primarily used to establish a base case from which an ANEF and ANEC can be developed.

- **ANEF (Australian Noise Exposure Forecast)**

An ANEF is a plot of estimated noise exposure based on a forecast of aircraft movements and fleet mix for a defined future horizon. The ANEF provides an indication of the change in noise emissions over time and is used for developing appropriate land use zoning of areas affected by aircraft noise.

- **ANEC (Australian Noise Exposure Concept)**

An ANEC is an illustration of the aircraft noise exposure at a site using data that may bear no relationship to actual or future situations. Its primary function is to assess the noise effects of various operational or airport development alternatives. ANECs are used for specific investigations and should not be used for definitive land use zoning. However, it serves as a valuable planning guide in assessing the relative impact of future development options. An ANEC plot has been produced for the long-term theoretical practical capacity of the airport as part of this Master Plan.

An ANEF is a chart that is endorsed by Airservices Australia for technical accuracy. An airport can only have one endorsed ANEF at any one time.

### 5.3 The Australian Noise Exposure Forecast (ANEF) System

The ANEF system is the aircraft noise exposure index currently adopted in Australia. The aircraft Noise Exposure Forecast (NEF) technique was first developed in the United States of America in the late 1960s and is recognised internationally. It was subsequently modified in Australia to the 'ANEF' in 1982.

The ANEF system provides a scientific measure of noise exposure from aircraft operations around airports. It can also provide valuable guidance for land use planning in the vicinity of the airport. Table 5.1 shows the land use compatibility as recommended by Standards Australia: Australian Standard AS2021-2000 *Acoustics – Aircraft noise intrusion – Building, siting and construction*.

The ANEF computation is based on forecasts of traffic movements on an average day. Allocations of the forecast movements to runways and flight paths are on an average basis over a year and take into account the existing and forecast air traffic control procedures at the airport which nominate preferred runways and preferred flight paths for noise abatement purposes.

The following factors of aircraft noise are taken into account in calculating the ANEF:

- the intensity, duration, tonal content and spectrum of audible frequencies of the noise of aircraft take-offs, landings and reverse thrust after landing (the noise generated on the airport from ground running of aircraft engines or taxiing movements is not included for practical reasons);
- the forecast frequency of aircraft types and movements on the various flight paths;
- the average daily distribution of aircraft take-offs and landing movements in both daytime (7.00am to 7.00pm) and night time (7.00pm to 7.00am) hours; and
- the topography of the area surrounding the airport.

### 5.4 Calculation of the Australian Noise Exposure Forecast

The ANEF system combines noise level and frequency of operations to calculate the average noise level at any point along, and to the side of, the flight path using the following reasonably simple mathematical procedure.

Partial ANEFs are calculated for the frequency of night-time and day-time operations of each aircraft type and flight path. These calculations use a value of Effective Perceived Noise Level (EPNL) for each aircraft and take into account all known annoying aspects in the temporal, frequency spectrum and spatial domain. The EPNL is obtained by the algebraic addition of the maximum perceived noise level at any instant corrected by noise tonal and duration factors. The EPNL unit is also used for the international certification of new aircraft.

These Partial ANEF values are computed for each significant type of noise intrusion. The total ANEF at any point on the ground around the airport is composed of all individual noise exposures (summed logarithmically) produced by each aircraft type operating on each path over the period of one day.

These calculated values do not take account of any background noise levels such as road or rail activities which, particularly in ground transport corridors, could be much higher than aircraft noise.

### 5.5 Noise Threshold Levels

The effects of noise can range from minor to very serious depending on the noise level, the duration of the noise, and the sensitivity of the subject. Noise, by definition being unwanted sound, elicits a wide range of individual responses in the vicinity of airports and the reasons for the differences between individuals are largely socially-based and complex to quantify. Research has indicated however, that community response to noise impact issues is more predictable than an individual's response.

In the areas outside the 20 ANEF contour, noise from sources other than aircraft tends to predominate over aircraft noise. Within the area between the 20 to 25 ANEF contours levels of noise are generally accepted to emerge as an environmental problem, and within the 25 ANEF contour the noise exposure becomes progressively more severe. Table 5.1 identifies the acceptability of land use in the various ANEF contour zones.



It should be noted that the actual location of the 20 ANEF contour is difficult to accurately define. This is because variations in actual flight paths, operating techniques of pilots, meteorological conditions and topography all have a largely unpredictable effect on the position of the 20 ANEF contour for any given day.

## 5.6 The Integrated Noise Model

Studies of aircraft noise impacts were carried out using the United States Federal Aviation Administration (FAA) approved INM Version 7.0d. This internationally-recognised, computer-based noise simulation model calculates contours from an analysis of the contribution the various defined aircraft and their operations have on the overall noise emissions from the airport. The resulting noise footprint can then be used to assess the relative impacts different aircraft fleets and/or operational procedures have on the surrounding environs. The INM model contains a database of civil passenger and military aircraft along with their performance and typical noise characteristics.

The impact of aircraft noise was modelled for three scenarios:

- the recorded 2013 calendar year movements (ANEI);
- the highest predicted number of aircraft and fleet mix for 2034 (ANEF); and
- the highest predicted number of aircraft and fleet mix at maximum (ultimate practical) capacity (ANEC).

These ANEF and ANEC scenarios are estimated to be 'worst-case' in terms of potential noise impacts, and provide a considerable safety margin for future planning.

By extrapolating out the forecast movement numbers provided in Chapter 4 – Forecasts and shown graphically in Figure 4.6 of this Master Plan, it is estimated that the practical capacity of the airport would be reached in about 2052. This estimate is well outside the 20-year planning horizon of this Master Plan and relies on no changes to current air traffic control procedures or other air traffic management practices that

**Table 5.1 AS2021 Table of Building Site Acceptability Based on ANEF Zones**

Building type	ANEF Zone of Site		
	Acceptable	Conditionally Acceptable	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	25-30 ANEF	Greater than 30 ANEF
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)	20-25 ANEF	Greater than 25 ANEF
Public building	Less than 20 ANEF (Note 1)	20-30 ANEF	Greater than 30 ANEF
Commercial building	Less than 25 ANEF	25-35 ANEF	Greater than 35 ANEF
Light industrial	Less than 30 ANEF	30-40 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 in AS2021 – 2000 may be followed for building sites outside but near to the 20 ANEF contour.
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 (see also Figure A1 of Appendix A in AS2021 – 2000).
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 5.1 above should be used to determine site acceptability, but internal design noise levels within the specific spaces should be determined by Table 3.3 in 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 in AS2021 – 2000. For residences, schools etc., the effect of aircraft noise on outdoor areas associated with the building should be considered.
5. In no case should new development take place in greenfield sites deemed unacceptable because such development may impact airport operations.

could extend this estimate. Hence the estimate of 2052 for when the airport will reach practical capacity is considered a conservative one.

These ANEF and ANEC scenarios are estimated to be ‘worst-case’ in terms of potential noise impacts, and provide a considerable safety margin for future planning.

Airservices Australia has reviewed the noise modelling for the 2013 ANEI and the 2034 ANEF and has formally endorsed these models for technical accuracy (see Appendix B). Only one ANEF can be endorsed for an airport, and thus the ANEC for practical ultimate capacity is not endorsed but is based solely on the identical modelling procedures for the 2034 ANEF, with increased aircraft movement numbers.

## 5.7 Flight Movements

The number of flights operating from Adelaide Airport in the future is discussed in detail in Chapter 4 – Forecasts. These forecasts have been used for both the 2034 and ultimate capacity modelling. The estimated aircraft movement numbers are provided in Table 5.2.

**Table 5.2 Proposed Fleet Mix for 2034 and Ultimate Capacity Projections**

Aircraft Category	Aircraft Type (Fleet Mix)	2034 Total Movements	Ultimate Capacity Total Movements
A380	A380 - 800	520	702
Large Wide Bodied (LWB)	B777 - 300 ER	1,820	2,456
	A350 - 900	1,820	2,456
Medium Wide Bodied (MWB)	A330 - 300	1,872	2,527
	A330 - 200	468	632
	B787 - 900 ER	1,820	2,456
	B787 - 800	9,204	12,422
Small Wide Bodied (SWB)	B777 - 200	260	351
Large Narrow Bodied (LNB)	A320 - neo	26,260	35,441
	B737 - 800 NG	26,260	35,441
Small Narrow Bodied (SNB)	B737 - 800	17,940	24,212
	EMB - 190	17,940	24,212
Regional Jet (RJ)	B717/EMB - 190	3,640	4,913
	Lear 35	1,976	2,667
Large Turbo Prop (LTP)	Q400	5,200	7,018
	ATR 72	5,200	7,018
Medium Turbo Prop (MTP)	Dash 8	3,640	4,913
Small Turbo Prop (STP)	EMB - 120	6,240	8,422
	SAAB - 340 B	6,240	8,422
	PC 12 (RFDS)	5,200	7,018
General Aviation	CAN 441	28,080	37,898
Freighter (FRT) B737	B737 - 400	1,040	1,404
Helicopters	EUROCOPTER EC130B4	1,774	4,373
	Bell 430	1,774	4,373
<b>Total</b>		<b>176,188</b>	<b>241,746</b>

## 5.8 Fleet Mix

The predicted fleet mix of aircraft operating from Adelaide Airport 20 years or more into the future cannot be defined accurately. At best, the mix of aircraft using the airport in the future can only be inferred from current fleet mixes and discussions on the intentions of major airlines regarding future purchases and operational arrangements.

The expected fleet mix for international, domestic, regional and general aviation that was used for the modelling is provided in Table 5.2, and generally reflects the current fleet mix. However, the modelling has included newer aircraft types that do not presently fly into Adelaide on a regular basis. These include the Airbus A380 and the Boeing B787 which are now entering service in Australia. The proposed fleet mix also includes aircraft types such as the Airbus A350, which has only recently commenced test flights, and new generation variations of the B737 and A320 type aircraft which are currently under development.

## 5.9 Runway Utilisation

The runways used by aircraft for arrivals or departures are largely controlled by wind direction and may change during different times of the year, and even time of the day.

The choice of runway can also be influenced by aircraft type, as the larger aircraft can only use the main runway while smaller aircraft have more options available. Operational rules may also be imposed to limit the number of flights on runways that have greater impacts on noise (as a standard noise abatement procedure).

As the INM model predicts average noise levels, runway use can be expressed as an average over a period of time – typically one year. There are differences for different categories of flights and day or night time operations.

Runway usage for the modelling was based on analysis of the available 2013 Adelaide radar data provided by Airservices Australia. Small adjustments were made, with very minor historical runway usage (<1% of total movements) omitted and the difference made up by the other active runways for that aircraft group including jets, large turbo props, and other non-jet aircraft. The allocations were made onto the existing runway layout.

Runway allocations were also made recognising the existing curfew requirements and also the existing noise abatement procedures. The same percentage allocations were used for the ANEF modelling for the year 2034 and the ultimate capacity modelling.

## 5.10 Flight Paths

The impacts of aircraft noise will be greatly affected by the flight paths that are used by aircraft approaching the airport or after take-off. The flight paths used are determined by the runway allocation, as discussed previously, and the destination of the flight.

The flight tracks used for noise modelling were developed through a detailed analysis of flights tracks currently used and available in the Adelaide Airport radar data supplied by Airservices Australia. These flight tracks were confirmed in a number of stages and verified through discussions with Airservices Australia.

Initially, tracks were drawn based on valid path names in the radar data, and the tracks were converted to INM track files. Flight density grids were then plotted over the INM flight tracks. The INM tracks were then assigned to these programmatically for a 'best fit', and the resulting images verified through Airservices Australia. Examples of some of more than 150 such flight density grid analyses are shown in Figures 5.1 and 5.2 for arrivals onto Runway 05 and Runway 23 respectively.

Final analysis involved creating flight density grids for all remote airport bearings for each runway and operation type represented in the radar data. In some cases, suitable INM tracks were absent and these were plotted again from the representative INM radar track import files.

Track usage was then derived through a combination of radar track analysis (where possible), analysis of aircraft category remote airport bearings from the AVSTATS data, and discussions with Airservices Australia.

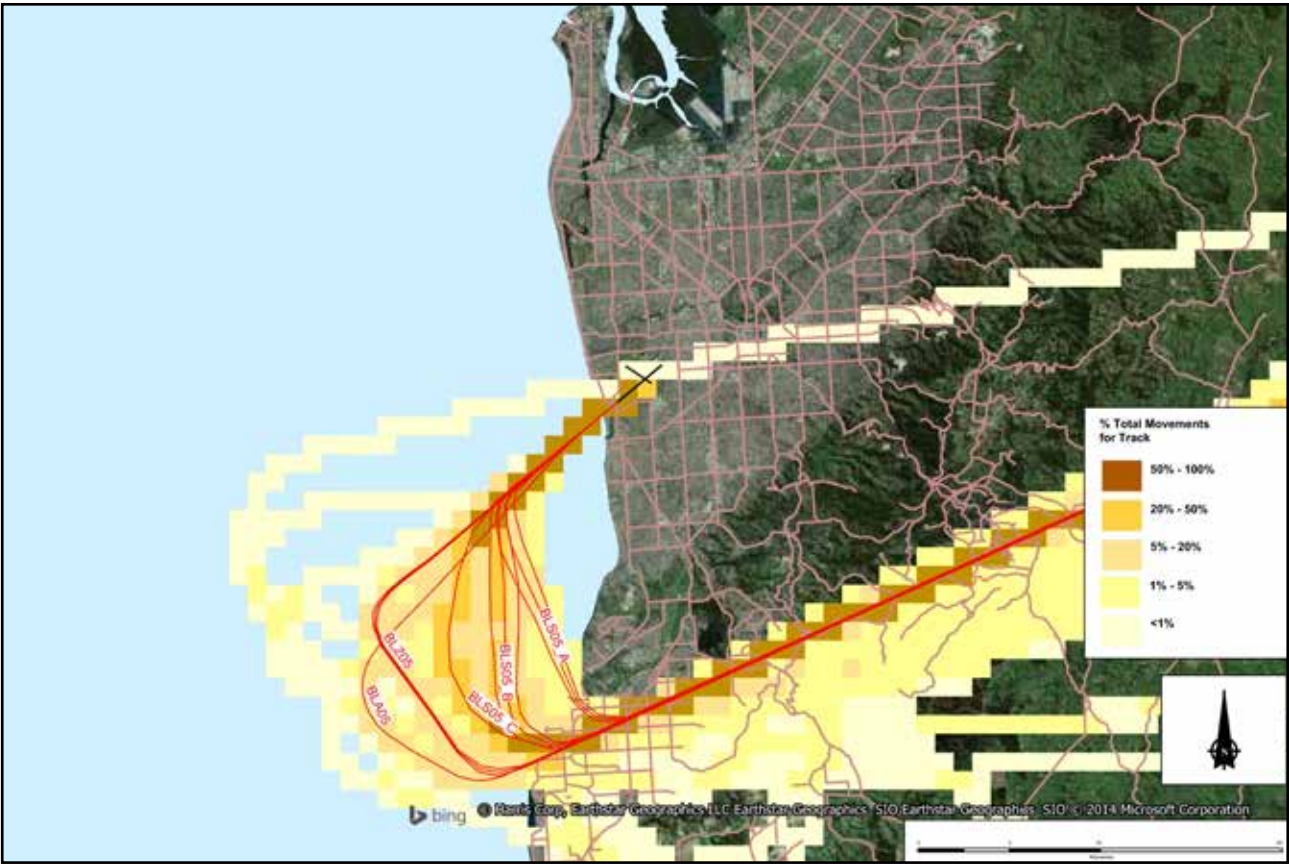


Figure 5.1 Example of Arrivals Flight Density Grid Analysis for Runway 05

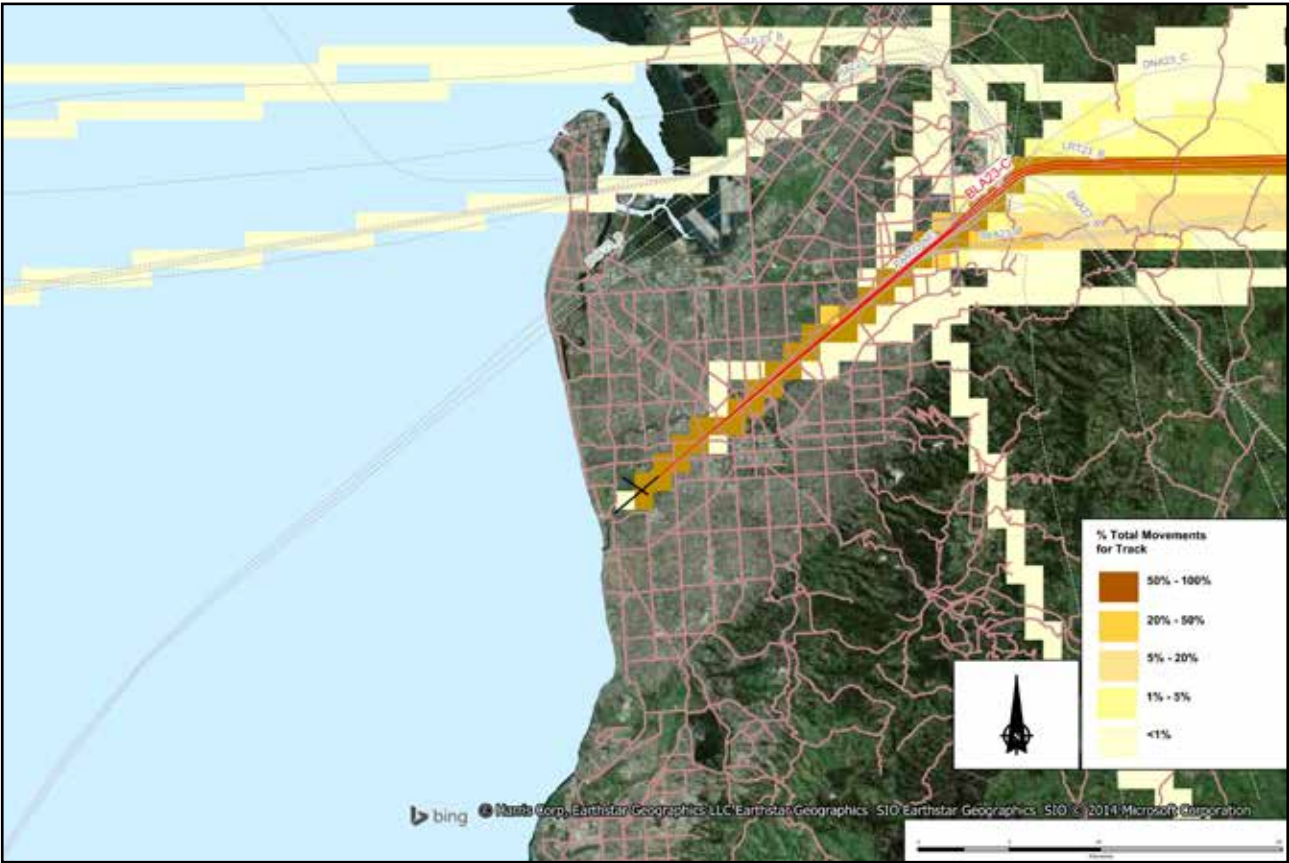


Figure 5.2 Example of Arrivals Flight Density Grid Analysis for Runway 23



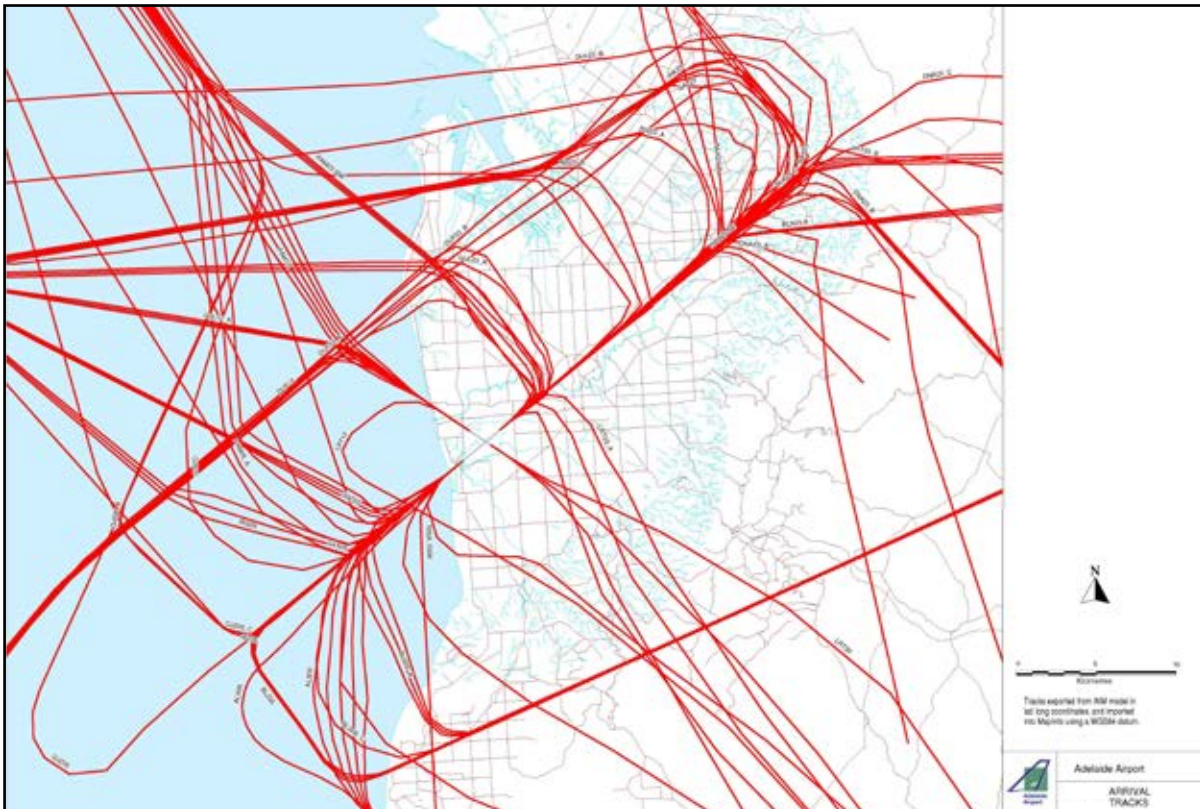


Figure 5.3 Arrivals Flight Paths (tracks)

Maps showing the general placement of flight paths and their importance are shown in Figure 5.3 (Arrivals), Figure 5.4 (Departures) and Figure 5.5 (touch-and-go operations).

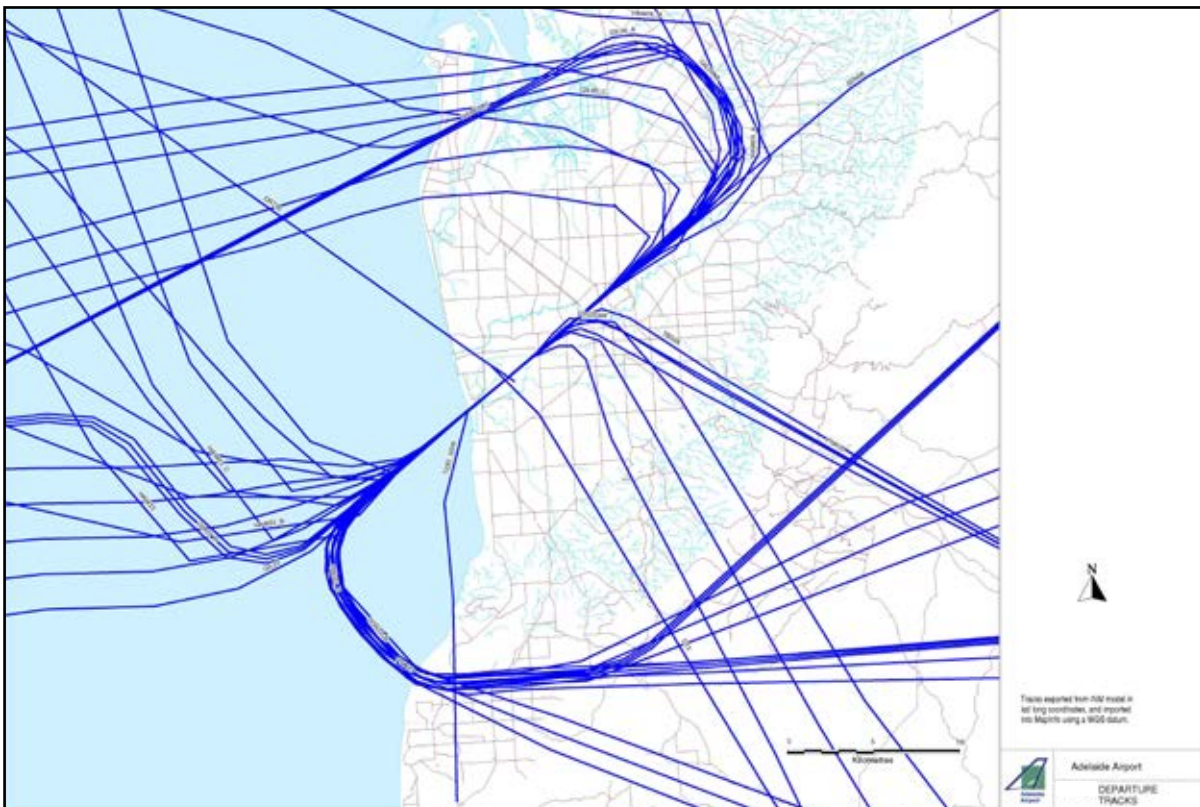


Figure 5.4 Departure Flight Paths (tracks)

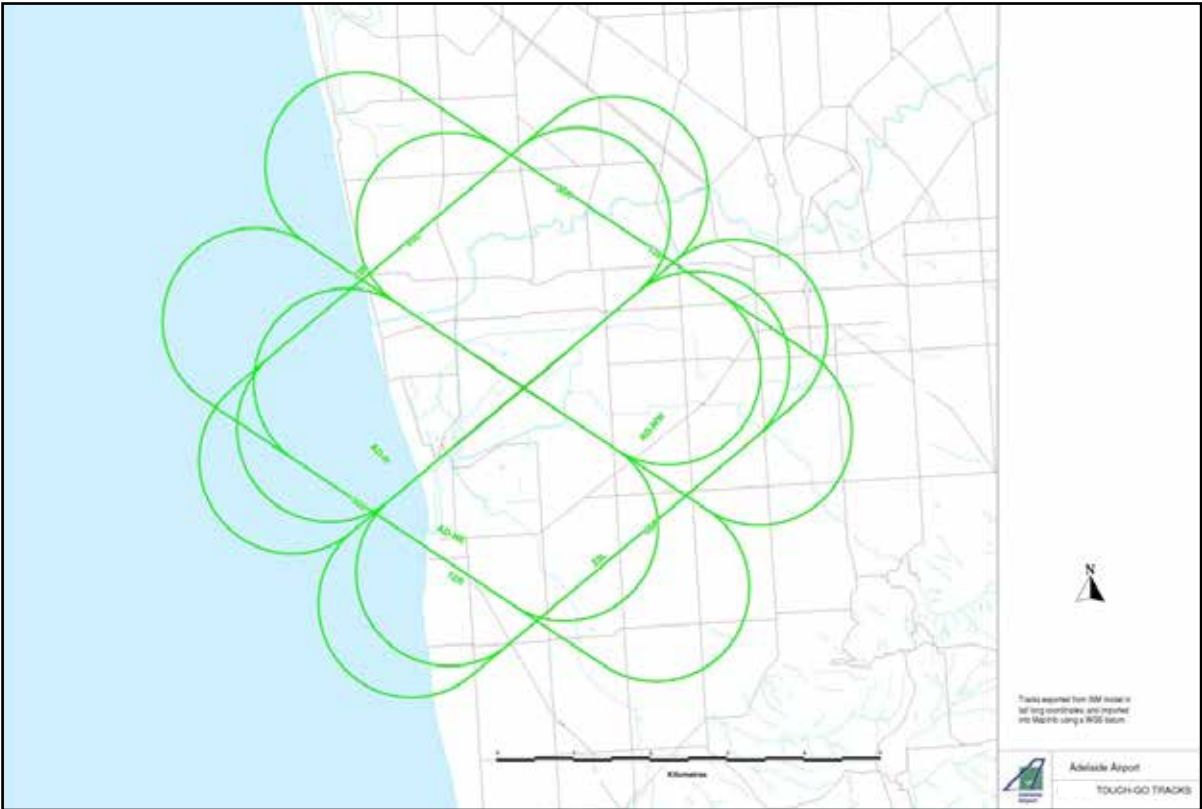


Figure 5.5 Touch and Go Flight Paths (tracks)

Helicopter flight paths are shown in Figure 5.6. These flight paths have been discussed with Airservices Australia and reflect the current operating procedures.

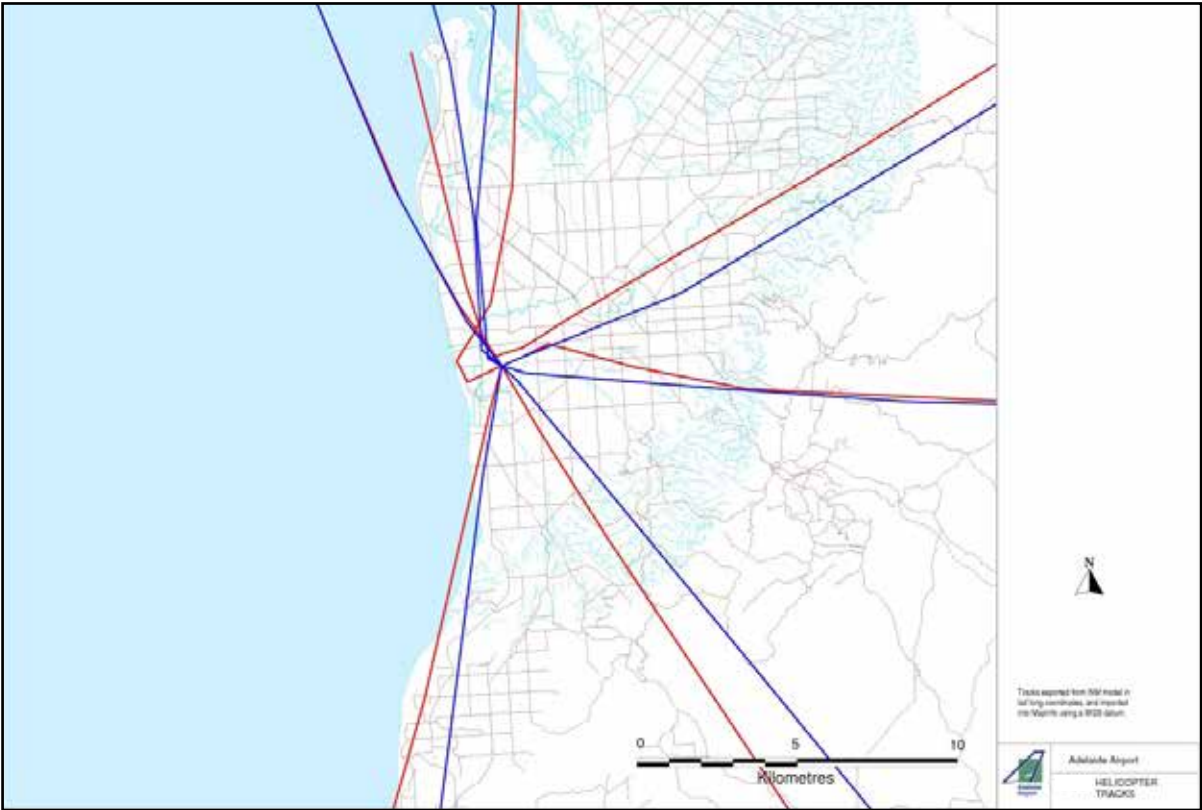


Figure 5.6 Helicopter Flight Paths (tracks)



Flight tracks represent the concentrations of where aircraft fly, and for jet aircraft these tracks are generally representative of actual tracks or corridors where they fly. For example, the jet flight tracks of all jet movements in May 2014 are shown in Figure 5.7. These tracks are based on Airservices Australia radar tracks for jet aircraft for one month (green represents departure tracks and red represents arrival tracks).

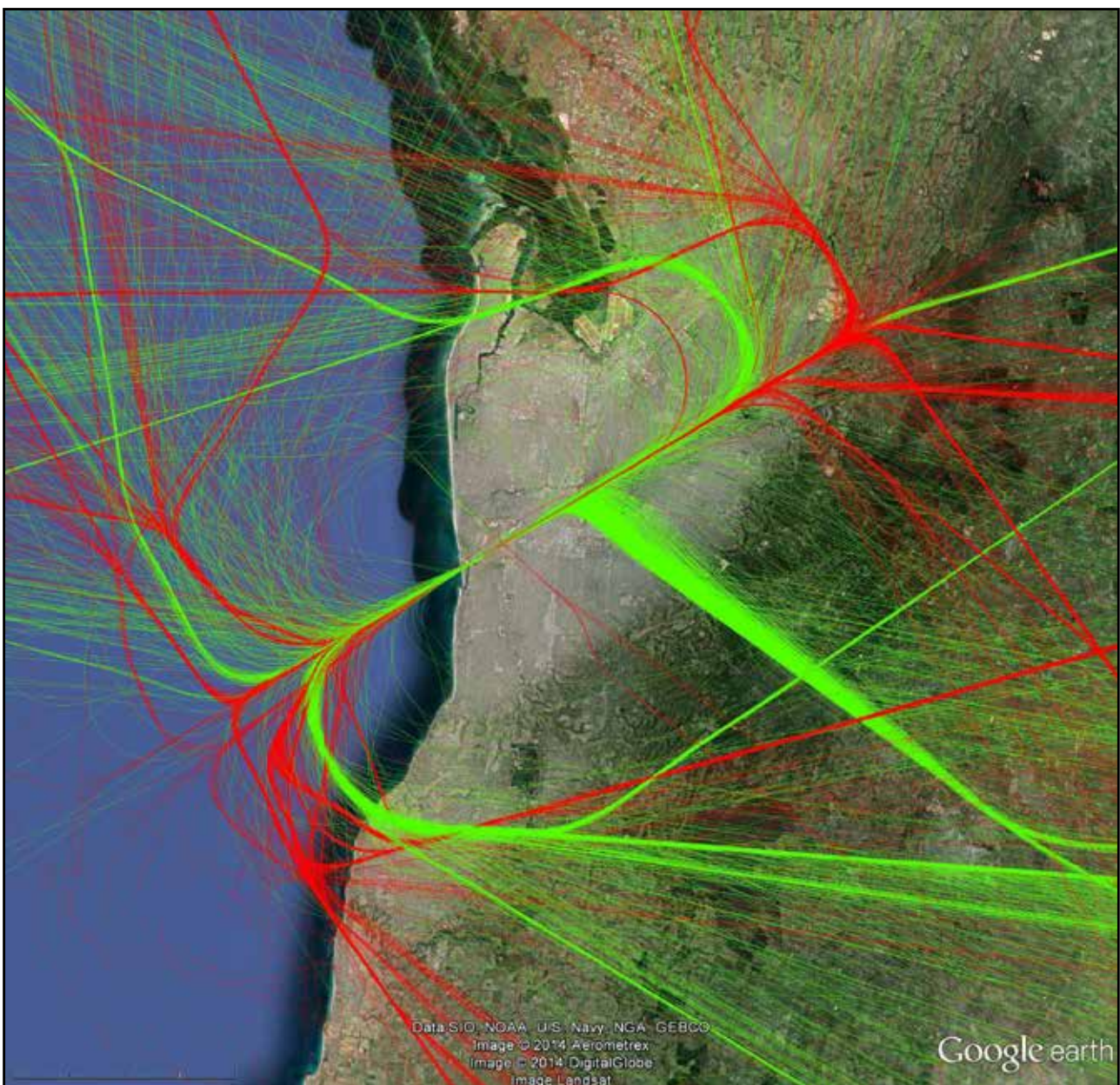


Figure 5.7 Jet Aircraft Tracks for May 2014 (Source: Airservices Australia)



These jet flight tracks generally follow the schematic tracks as shown in Figures 5.3 and 5.4. However, non-jet tracks (turbo-prop, piston engine aircraft and helicopters) arrive and depart Adelaide Airport on much more spread out flight tracks. Examples of these spread out tracks are shown in Figure 5.8 (green represents departure tracks and red represents arrival tracks).

Figure 5.8 clearly shows that there are very few areas around Adelaide that were not overflown by aircraft in May 2014 by non-jets. By comparing Figures 5.7 and 5.8, it can be seen that the noisier jet aircraft generally follow set flight tracks and the quieter aircraft (non-jets) fly over most of Adelaide.

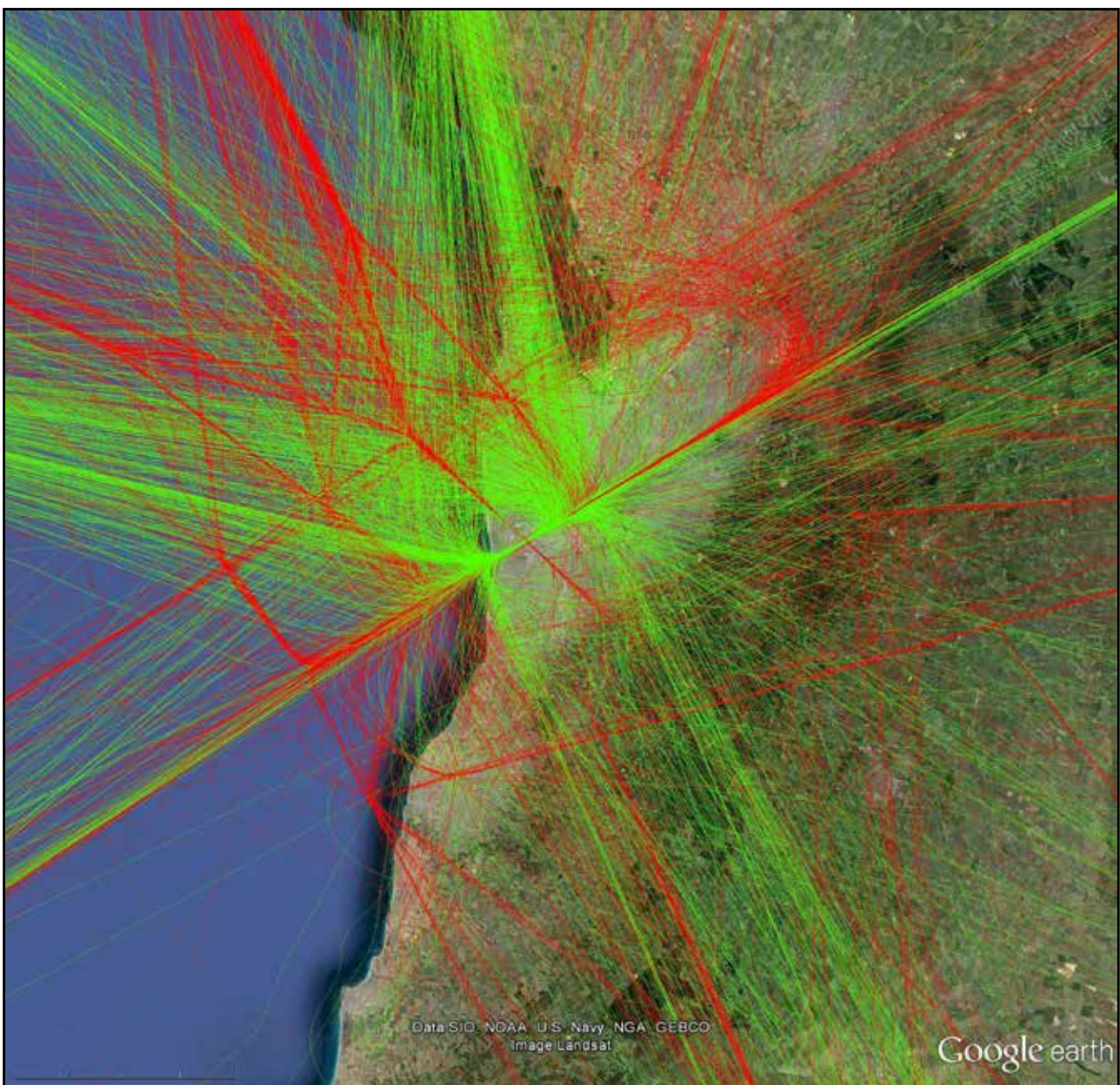


Figure 5.8 Non-Jet Aircraft Tracks for May 2014 (Source: Airservices Australia)



## 5.11 Modelling Results

A number of noise modelling charts depicting the ANEI contours, ANEF and ANEC for Adelaide Airport are included in Appendix B – Aircraft Noise Metrics, and are briefly outlined below.

A chart depicting the 2013 ANEI contours for the airport is depicted as Figure B1 in Appendix B. Charts depicting the 2034 ANEF for the numbers of aircraft movements expected in 2034 and the ANEC for the ultimate capacity of the airport are included as Figures B2 and B3 respectively.

A chart comparing the 2013 ANEI and the predicted ANEF for 2034 is included as Figure B4 of Appendix B. A comparison of the ANEF for 2034 compared to the current ANEF, which was included in the previous Master Plan for Adelaide Airport for the year 2029, is depicted in Figure B5.

Finally, a comparison of the Ultimate Practical Capacity ANEC in this Master Plan compared to the ANEC in the previous Master Plan is shown in Figure B6 of Appendix B.

## 5.12 Assessment of Changes

The ANEI chart shown in Figure B1 in Appendix B provides an estimate of the current position of the noise contours around the airport. These contours can be used as a guide in assessing future proposed changes to the noise contours in the ANEF and ANEC charts.

The ANEFs and ANECs presented in Figures B2 and B3 indicate an extension in the area of the contours along all runway ends compared to their present position in the ANEI. The reasons for the extensions are mainly due to the increase in the forecast numbers of movements and the types of aircraft using the runways.

Comparison plots of the 2034 ANEF are overlayed over the 2029 ANEF produced in 2009 and depicted in Figures B4, B5 and B6 in Appendix B. These overlays indicate that there is a difference between the 2029 ANEF and 2034 ANEF contours. The reasons for the differences relate to a number of factors:

- an increase in the numbers of fixed-wing flights modelled;
- the spreading of the tracks and the use of sub-tracks in the 2034 modelling;
- a change of the INM Model (version 6 to version 7);
- the use of specific helicopter tracks and the integration of the helicopter modelling into the INM model; and
- a slightly different fleet mix.

All of these factors have influenced the change of the ANEFs from 2029 through to the ANEF for 2034.

In the 2009 Master Plan, the forecast 20-year total annual movements for fixed wing aircraft was 171,732. In this Master Plan, the forecast number of fixed wing movements in 2034 is 172,640. The extension of the contours in this Master Plan is only partially due to the forecast number of total fixed wing movements. However, the forecasts reflect a doubling of international movements of heavy jet international aircraft from a predicted 6,424 movements in 2009 to 12,700 in 2034. In addition, there is predicted to be a significant increase in domestic jet movements compared to forecasts in the previous iteration of the Master Plan.

The predicted change to the fleet mix also adds to the extension of noise contours as there has been a trend for airlines to replace smaller aircraft on more frequent services with less frequent, larger aircraft, flying with higher load factors. The predicted percentage of larger jets in the fleet mix has increased from 4,343 in the 2029 forecasts to 17,500 in the 2034 forecasts.

The extension of the ANEC contours for the ultimate capacity predictions are largely due to an increase in the number of movements and the shift in fleet mix to larger jet aircraft as discussed above. In the previous 2009 Master Plan, the ultimate capacity estimate for Adelaide Airport was approximately 218,000 fixed-wing movements. In this Master Plan, the ultimate capacity has been increased to 233,000 fixed wing movements for the reasons outlined in Chapter 4 – Forecasts.

In terms of significant 2034 ANEF contours, the 35 ANEF contour extends outside the airport boundaries and just crosses Marion Road. The 30 ANEF contour extends further to the north-east and almost reaches Henley Beach Road. The 25 ANEF contour extends north-east and reaches Wellington Square in North Adelaide. To the south-west, the 25 ANEF contour extends over an area of residential land in North Glenelg and the 30 ANEF contour also passes over some residential properties in this area. The 35 ANEF contour is generally restricted to airport land, public open space and the residential areas at West Richmond; much of which has been subject to a Commonwealth programme of noise insulation measures in the past decade.

## 5.13 Supplementary Aircraft Noise Metrics

The ANEF modelling using the INM model described in Section 5.3 provides noise contours for aircraft operations around airports. Local and State Governments have used these contours for land use planning. As described for most airports in Australia, many (and in some cases the majority) of noise complaints originate outside the 20 ANEF contour.

The Commonwealth Government has recognised the limitations of the ANEF system for predicting and communicating aircraft noise impacts and has recommended that a number of additional metrics can be used for informing communities around airports that they may be affected by aircraft noise.

The ANEF system, in conjunction with *Australian Standard AS 2021-2000 Acoustics – Aircraft noise intrusion – Building siting and construction (AS2021)* is currently proposed to continue to be used for land use planning purposes around airports, particularly in relation to land use suitability and sound insulation. It should also be recognised that the AS2021 is currently under review. In consideration of this, the current interpretation of AS2021 and additional noise metrics should be taken as interim, as they may change in the future.

Thus the Commonwealth Government has suggested that a range of information should be provided including ANEFs, flight paths and other metrics such as measures that convey the level of noise intrusion in a scale that is easily understood by communities around airports. One recommended measure is the N70 metric.

N70 modelling provides maps of areas that are likely to experience a predicted number of noise events from aircraft flying overhead. N70 noise modelling computes the number of noise events greater than 70dB on an 'average' day over particular areas. It is calculated as the number of noise events, over a one year period, averaged per day. It is not indicative of a typical day and actual experience on any given day can be considerably different to the 'average' day.

The 70dB level was selected by the Commonwealth Government as an aircraft noise level of 70dB is expected to be attenuated by 10dB for a house with open windows, in accordance with AS2021. Thus an aircraft noise event would result in a noise level inside a house of 60dB. A level of 60dB inside a house may interfere with a normal conversation or with listening to radio or television. Thus the use of the 70dB level is used to define 'noise' events from aircraft overflights.

To understand the context of noise levels of 60dB to 70dB, the range of noise events is presented for comparative purposes in Figure 5.9.

N70 maps allow all stakeholders to interpret aircraft noise issues based on counts of aircraft with noise profiles greater than 70dB over the flight paths that aircraft utilise surrounding Adelaide Airport. These N70 maps, together with the ANEF maps, allow stakeholders to assess the suitability of areas for property purchase, and enable land use planners to plan for long-term land uses in the vicinity of the airport.

An N70 map for the area around Adelaide Airport is depicted in Figure B7 of Appendix B – Aircraft Noise Metrics. This is based on the numbers and types of aircraft used for modelling the 2012 ANEI shown in Figure B1. Additionally, a N70 map for the area around Adelaide Airport in 2034 is shown in Figure B8 of Appendix B, which is based on the forecast numbers of aircraft to be operating at the airport in 20 years time, as discussed in Chapter 4 – Forecasts.

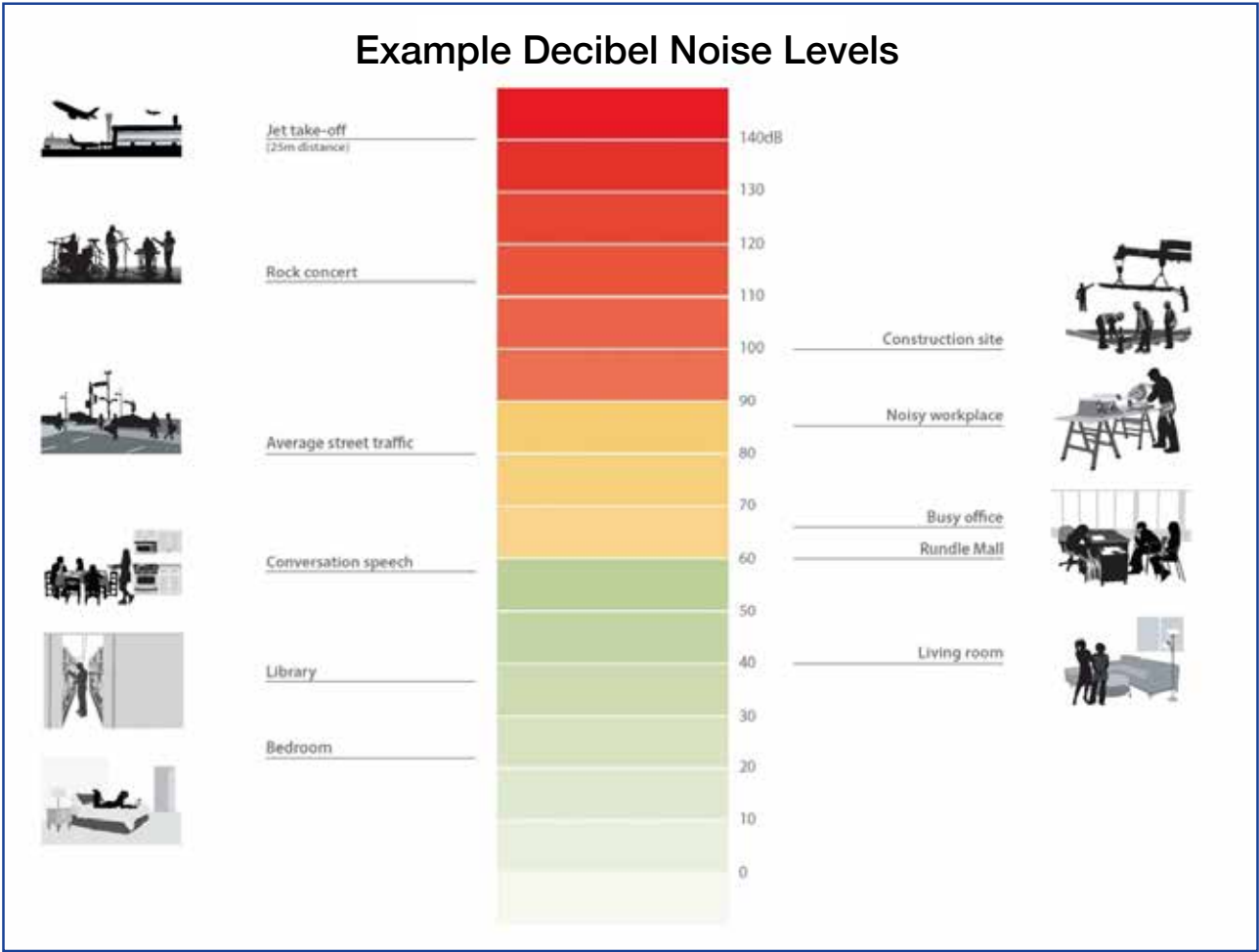


Figure 5.9 Example Noise Levels (In Decibels). (Source: Airservices Australia and Australian Airports Association)

## 5.14 Aircraft Noise Mitigation

The ANEF for 2034 (Figure B2 in Appendix B) and ANEC for the ultimate capacity (Figure B3 in Appendix B) indicate that there will be some increase in residential areas affected by aircraft noise with the forecast increased air traffic. These impacts will be alleviated to some degree by the design and use of noise reduction features in future models of aircraft.

AAL has a broad range of programs in place to address aircraft noise around the airport. These include:

- working with stakeholders to observe the existing curfew arrangements;
- consulting and engaging with the local community;
- working closely with the Commonwealth, State and Local Governments to ensure a consistent approach, management and implementation of the noise mitigation measures;
- consulting with the airlines that use the airport; and
- investing in airport infrastructure to support new generation quieter aircraft.

### 5.14.1 Current Curfew Arrangements

Adelaide Airport operates under a legislated curfew (*Adelaide Airport Curfew Act 2000* and *Adelaide Airport Curfew Regulations 2000*) to limit noise impacts from aircraft at night. During curfew hours (the period 11.00pm to 6.00am), take-offs and landings at the airport are restricted to specific types of aircraft and operations. For departing flights to meet the curfew they must be given taxi clearance by Airservices Air Traffic Control after 6.00am and before 11.00pm.

Some aircraft can operate during the curfew if they meet certain low-noise criteria and observe noise abatement procedures. These aircraft movements include:

- a maximum of 15 take-offs and 25 landings each week during the curfew by low-noise heavy freight aircraft that meet the noise level requirements set out in the *Adelaide Airport Curfew Act 2000*; and
- aircraft that are propeller driven or listed as specified types of jet aircraft, of a maximum take-off weight of 34,000 kilograms or less, that meet the noise level requirements set out in the *Adelaide Airport Curfew Act 2000*.

The Commonwealth Minister for Infrastructure and Regional Development has the power to grant a dispensation that allows an aircraft to operate during a curfew period. In practice, a dispensation is granted by the Minister where there are exceptional circumstances to justify the flight. Dispensations must be granted before a flight operates into, or out of, Adelaide Airport. Curfew restrictions do not apply in cases of emergency such as:

- search and rescue or medical emergencies, such as Royal Flying Doctor flights by turbo prop aircraft and Medivac helicopters;
- a declared in flight emergency landing or resumption of that flight;
- a low fuel emergency; and
- for safety or security emergencies.

During the curfew period, aircraft must land on Runway 05, and must take-off on Runway 23. Under Section 15 of the *Adelaide Airport Curfew Act 2000*, Runway 23 can be used for arrivals only when Runway 05 is declared by Airservices Australia to be not operationally acceptable for arrivals.

The *Adelaide Airport Curfew Act and Regulations 2000* provide for international passenger movements between 11.00pm and midnight and between 5.00am and 6.00am (the curfew shoulder periods) subject to:

- jet aircraft meeting the strictest ICAO noise standards; and
- a maximum of eight landings but no take-offs per week.

AAL will continue to work with Commonwealth, State and Local Governments, airlines, operators and relevant stakeholders to observe the current curfew arrangements and review compliance with regulations through regular reporting to the Adelaide Airport Consultative Committee (AACC).



### 5.14.2 Commonwealth Noise Insulation Scheme

The Commonwealth Government introduced and operated a noise insulation program for buildings affected by aircraft noise in 2000. The program was established in areas of high aircraft noise exposure around Adelaide Airport. Residential properties in the 30 ANEI (Australian Noise Exposure Index) contour and public buildings (schools, churches, day care centres and hospitals) in the 25 ANEI contour were eligible for assistance under the program.

The noise insulation scheme was funded by a Commonwealth levy on passengers and collection of the levy was terminated in 2010. Insulation works on some public buildings continued until 2012.

During the course of the operation of the scheme, the Commonwealth Government reported on progress to the Adelaide Airport Consultative Committee on a regular basis. This mechanism provided feedback to the airport and all stakeholders on the implementation of the scheme. The Commonwealth Government announced the final project under the noise insulation scheme in May 2013.

### 5.14.3 Consultation with Local Communities

AAL continues to engage with local communities surrounding the airport through a range of committees and forums. Principally, the Adelaide Airport Consultative Committee (AACC), which includes local community representatives, is a forum where any issue relating to the operations of the airport and potential effects on the local community can be raised. This includes issues such as aircraft noise, car parking, flood mitigation, landscaping, bike path access and commercial developments.

Issues such as the management of the curfew and reporting of dispensations and levels of allowable night time flights are regularly reviewed. Master planning, including the formulation of ANEFs and aircraft flight path improvements, is regularly discussed, including presentations from airlines and Airservices Australia.

AAL maintains a website ([www.adelaideairport.com.au](http://www.adelaideairport.com.au)) with links to aircraft noise information. This includes a link to the Airservices Australia website 'WebTrak', which provides information about individual flights and allows users to investigate issues and lodge noise complaints if needed.

AAL is also preparing a new section of the AAL website that specifically addresses the issues of off-airport land use and planning with respect to aircraft noise and limitations to developments such as the obstacle limitation surfaces. In addition, the section will address issues such as:

- responsibilities and roles for aircraft noise management (Commonwealth, State and Local Government, Airservices Australia, CASA, and other agencies);
- limitations on the heights of proposed developments to preserve aircraft safety;
- noise metrics (ANEI, ANEF, ANEC, N70);
- links to the WebTrak website;
- links to noise complaint reporting;
- links to the aircraft noise ombudsman;
- updates regarding the various reporting of aircraft movements;
- updates on the National Airports Safeguarding Framework (NASF); and
- details of and updates on the review of AS2021.

AAL also proposes to consult with key real estate stakeholders such as the Real Estate Institute of South Australia and the Property Council of South Australia to inform them of the need for safeguarding the future of Adelaide Airport through considered land use planning. AAL will encourage these parties to influence their membership to accurately represent the degree of aircraft noise impacts on properties to potential buyers and also inform developers of the need to maintain building heights below the published Obstacle Limitation Surfaces (OLS).

AAL regularly publishes in hard copy and on the AAL website, a news magazine 'Plane Talking' which addresses many aspects of the operation of the airport and allows for direct consultation with stakeholders. AAL intends to use this publication to provide details of the master planning process, opportunities for stakeholders to engage with the airport during the public consultation phase and also to provide updated information about airport operations.



#### 5.14.4 Consultation with Commonwealth, State and Local Governments

Representatives of the Commonwealth, State and Local Governments also sit on the Adelaide Airport Consultative Committee (AACC). In addition, all three tiers of government attend the Adelaide Airport Planning Co-ordination forum. This forum regularly deals with off-airport land use planning issues including land use suitability issues such as aircraft noise, OLS and Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS) surfaces.

A process to formalise the long-term land use planning of the airport and surrounding areas, particularly those associated with the ANEF and ANEC contours produced at Figures B2 and B3 of Appendix B, has commenced with the South Australian Government as a flow-on from the National Airports Safeguarding Framework (NASF).

AAL is consulting with the State Government regarding a process to implement planning protections in council development plans to ensure that proper account is taken of aircraft noise.

#### 5.14.5 Consulting Airlines and Airservices Australia

AAL conducts regular consultative meetings with the airport operators and Airservices Australia to maximise the use of the movement area infrastructure and to minimise the impacts on the community. Regular Public Transport (RPT) and General Aviation (GA) airline representatives are invited members of the Adelaide Airport Consultative Committee.

Airlines are also invited as speakers on issues affecting aircraft noise and operations at the airport. Recent presentations have included Cathay Pacific (concerning early morning arrivals and discussion of State economic benefits and compliance with the noise abatement procedures) and Qantas regarding the potential use of Required Navigation Procedures (RNP) at Adelaide Airport.

Operators of freight aircraft have presented to the AACC in the past when any changes are proposed to aircraft types or flight times. The views of the AACC are used by such operators when formally applying to the Commonwealth Minister for permission to operate low-noise freighter aircraft in the curfew period.

Airservices Australia (AsA) attends all consultative meetings and is regularly in contact regarding any issues that arise concerning movements that are the subject of any queries. AsA reports on recent aircraft noise complaints, trends in complaint histories and any investigations associated with the complaints. AAL works with AsA on aircraft noise complaint investigations to provide any airport specific information available. AAL has been proactive in dealing with emerging aircraft noise issues by consulting with groups of operators to achieve an industry-based solution to noise issues.

When a noise complainant is not satisfied with the handling or outcome of a noise complaint made to Airservices Australia, the complainant has the option to address their concerns to the Aircraft Noise Ombudsman (ANO). The ANO is a Commonwealth office which investigates the issues raised by complainants. AAL co-operates with the ANO when requested, to provide any information about particular airport operations in question. If any investigations concerning Adelaide Airport referred to the ANO are investigated or are finalised, the ANO will notify the AACC that an investigation is proceeding and when finalised, that the matter has concluded. No details of the complainant or any personal details are provided to the AACC.

#### 5.14.6 Investing in Airport Infrastructure to Reduce Ground-Based Noise

Terminal 1 includes ground power and pre-conditioned and compressed air facilities for the use of aircraft parked at this terminal. AAL regularly consults with the major carriers to encourage their use of these facilities, thereby minimising the impact of auxiliary power units and early engine start-ups on the surrounding environment. Further detail and objectives relating to the management of ground-based noise is provided in Chapter 10 – Environment Strategy.

AAL is planning for the investment for infrastructure to support new generation quieter aircraft such as the B787 and A380 aircraft types.





A photograph of an air traffic control tower against a clear blue sky. The tower is a multi-story building with a glass-enclosed upper section. Several antennas are visible on the roof. In the foreground, two tall, thin light poles are visible. The overall scene is bright and clear.

# AVIATION INFRASTRUCTURE

# 6



# AVIATION INFRASTRUCTURE

## 6.1 Introduction

Fundamental to the successful operation of Adelaide Airport is the ongoing development of both airfield and terminals activities to meet the forecast demands in the future. As outlined in Chapter 4 – Forecasts, the number of movements of all aircraft is predicted to increase by 71.6% in the 20-year planning horizon. Similarly, the number of passenger movements is forecast to increase by 128% between 2014 and 2034.

AAL has considered these forecast increases and planned for the development of aviation infrastructure to enable the growth in aircraft and passenger movements to occur in a well-planned and efficient manner.

Aviation infrastructure includes not only the runways, taxiways and aprons for aircraft movements, but also the terminal capacity capable of processing passengers at the forecast rates.

AAL envisages that the proposed developments discussed in this chapter will meet the needs of planning horizon in the Terminals & Business and Runways Precincts, whilst providing a safe and relaxed travel experience that distinguishes Adelaide Airport from other capital city airports in Australia.

This Master Plan does not foreshadow any major runway development within the 20-year planning period.

## 6.2 Existing Infrastructure

Adelaide Airport currently operates a two-runway system comprised of the main runway (RWY 05/23) which is 3,100 metres long and 45 metres wide, and a secondary cross-runway (RWY 12/30) which is 1,652 metres long and 45 metres wide.

The main runway accommodates larger, long-haul, wide-body international aircraft, as well as smaller domestic and regional aircraft.

The cross-runway is limited by its length to regional aircraft and some domestic operations. However, it is capable of accommodating larger aircraft such as the Boeing B767 and Airbus A330 (up to Code D) for landing only. The cross runway also provides the necessary runway orientation so that the airport can meet the wind useability criteria described in the CASA Manual of Standards, which requires sufficient runway capacity on the cross runway in the event of a 20-knot crosswind on the main runway.

The existing runway system provides sufficient capacity for arriving and departing aircraft to handle the forecast volumes of air traffic within the 20-year forecast period and beyond to the extent of the perceived ultimate capacity predictions.

The existing taxiway system provides for the safe and efficient movement of aircraft between aprons, holding bays and runways. Consideration has been given to supplementing the existing taxiway system to facilitate improved access and egress from the two runways to the adjacent terminal apron and facilitate queuing of aircraft, but this is not proposed within the timeframe of this document.

Apron parking areas are provided for the safe parking of aircraft, transfer of passengers and freight, and to enable the servicing and maintenance of aircraft.

The current aircraft parking capacity at Terminal 1 is 15 Code C (e.g. Boeing B737 or Airbus A320) equivalent bays. This is currently being expanded to 17 Code C equivalent bays by 2015. Increased demand for aircraft parking is expected during the 20-year forecast period.

Airside roads comprise a mixture of both sealed and unsealed roads. As peripheral development is established, these roads will be realigned and where necessary, sealed.

Airside roads on expanded aprons will be established or varied to ensure the safe movement of vehicles around operational aircraft.

The existing terminal, opened in 2005, comprises a 3-level facility of around 33,000 square metres that provides aesthetic, modern and efficient facilities.

The terminal operates a series of flexible 'swing gates', which provides the flexibility of passenger boarding lounges to be used for both international and domestic services to match airline schedules.

## 6.3 Airfield Infrastructure Development

### 6.3.1 Capacity Monitoring

AAL monitors passenger forecasts and airline scheduling to maintain a forward planning cycle, which allows development of necessary airfield infrastructure. This monitoring extends to busy hour capacity, aircraft route networking, aircraft fleet management and capacity planning.

Capacity planning then extends to include future flexibility for current and next generation aircraft, principles of common-use facilities and flexibility in design. The ongoing evaluation of capacity enables the ready determination of new aviation infrastructure based specifically on demand.

### 6.3.2 Projected Developments – 2014 to 2019

Apron expansion to the south occurring in 2014/2015 will provide two additional Code C equivalent (B737, A320) bays, which will be fully serviced and suitable for future terminal expansion integration.

Subsequent apron expansion to the north will include relocation of regional airlines to the western side of the northern pier and establishment of three additional Code C gates at the end of the northern pier, which will require the demolition of the former international terminal structure. A tow-off apron will be established at the northern end of the apron adjacent to the 'cold storage' building to facilitate parking for long-stay aircraft and allow future expansion flexibility.

A new apron and taxiway connection is to be developed to facilitate the establishment of the adjoining Airport East Precinct aligned with new air freight and hangar development.

A new emergency services apron and connecting taxiway adjoining the Tapleys Precinct is forecast to be developed for the Royal Flying Doctor Service. This will be aligned with a new hangar and administration complex planned for construction in 2015. This will further consolidate the location of emergency services in this area.

Provision is also being made for the development of a new Aviation Rescue and Fire Fighting (ARFF) complex for Airservices Australia. This is expected to be located to the northern side of existing helicopter operations if it is unable to occur in its current vicinity in the Runways Precinct due to future taxiway re-alignments. The redevelopment of this ARFF Service relates to the timing of the introduction of much larger Code F aircraft such as the Airbus A380.

### 6.3.3 Projected Developments – 2020 to 2034

No major runway development is foreseen within the 20-year planning horizon based upon demand projections.

Taxiway systems will be monitored and varied to coincide with future apron expansion. A new connecting taxiway between Runway 05/23 and taxiway A6 is to be constructed after 2020.

Further apron expansion will continue to the south to match the aircraft parking demand. In addition, the southern apron will be developed either side of the southern terminal pier to allow aircraft parking on both sides and the establishment of a new regional apron complex in the south-western area of the apron.

The north-west apron will be expanded from regional service capacity to also accommodate the full range of Code C aircraft.

Figure 6.1 is a representation of both the existing and forecast aviation infrastructure to be developed within the 20-year planning horizon.

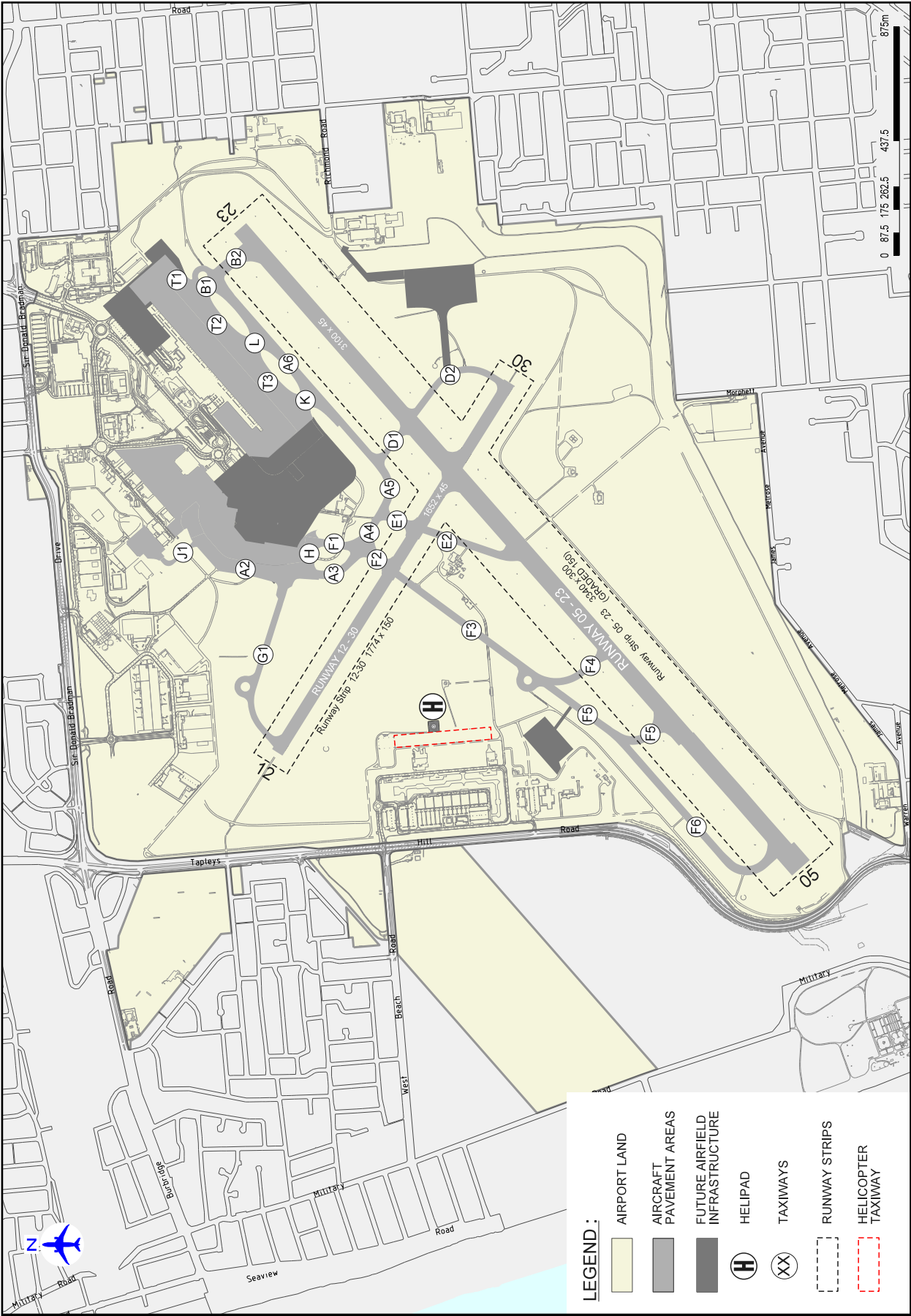


Figure 6.1 Airfield Infrastructure

## 6.4 Terminals Development

### 6.4.1 Planning considerations

An integral aspect of Adelaide Airport relates to terminals and associated landside infrastructure that directly service these terminals and passengers, and includes access roads, taxis, bus and valet facilities, plaza open spaces, and car parks.

The ongoing planning for terminals infrastructure is intended to meet and support future passenger and commercial demand within the overall airport precinct taking into account the exceptional growth over the past 10 years.

Future plans to enhance the terminals' landside infrastructure include addressing road, public transport and parking demands, as well as connectivity to surrounding road networks. These objectives are more fully addressed in Chapter 9 – Ground Transport Plan.

The major supporting infrastructure criteria considered within the development process includes:

- performance monitoring of the multi-level car park, road configuration including linking public terminal pick-up / drop-off, taxi and bus services, and the plaza between the terminal and multi-level car park;
- pedestrian and bicycle connectivity between all precinct activities, including terminals, car park, drop off / pick up points, and bikeways external to the airport boundary;
- ongoing enhancement and expansion of retail and amenities within the landscaped plaza to provide a relaxed and unique travel experience;
- efficient vehicle parking facilities offering a range of products, and accommodating the full range of customers that are likely to access the airport, including valet services and car rental expansion;
- relocation of air cargo and freight, and hangars, to the Airport East Precinct;
- development of a new long-stay and staff car park to allow airside expansion;
- a traffic network providing efficient and intuitive flow for all transport modes, including – but not limited to – public and private vehicles, future light rail, and buses and taxis;

- road development that enhances safety and security measures;
- segregation of the various modes of transport where practical, including separation of pedestrians from traffic;
- expansion of the existing multi-level short-stay car park to satisfy future demand; and
- connectivity of a new hotel development to Terminal 1, the multi-level car park, and links to an adjoining new office park fronting Sir Richard Williams Avenue and James Schofield Drive.

Future terminal expansion will include consideration of:

- enhanced security and baggage servicing outcomes for 'front-of-house' areas incorporating flexibility and adaptability;
- expansion of passenger services within the terminal, including the relocation of some ancillary offices nearby;
- the integration and expansion of retailing operations;
- the enhancement of amenities to a level of service standard reflective of existing and future traveller expectations and best class sentiments; and
- redevelopment to match A380 wide-bodied aircraft, including additional aero bridges and lounges.



### 6.4.2 Projected Development – 2014 to 2019

The expansion of terminal infrastructure will be commensurate with the need to meet passenger growth, service standards, aircraft parking demand, facilitation requirements, regulatory compliance and commercial opportunities.

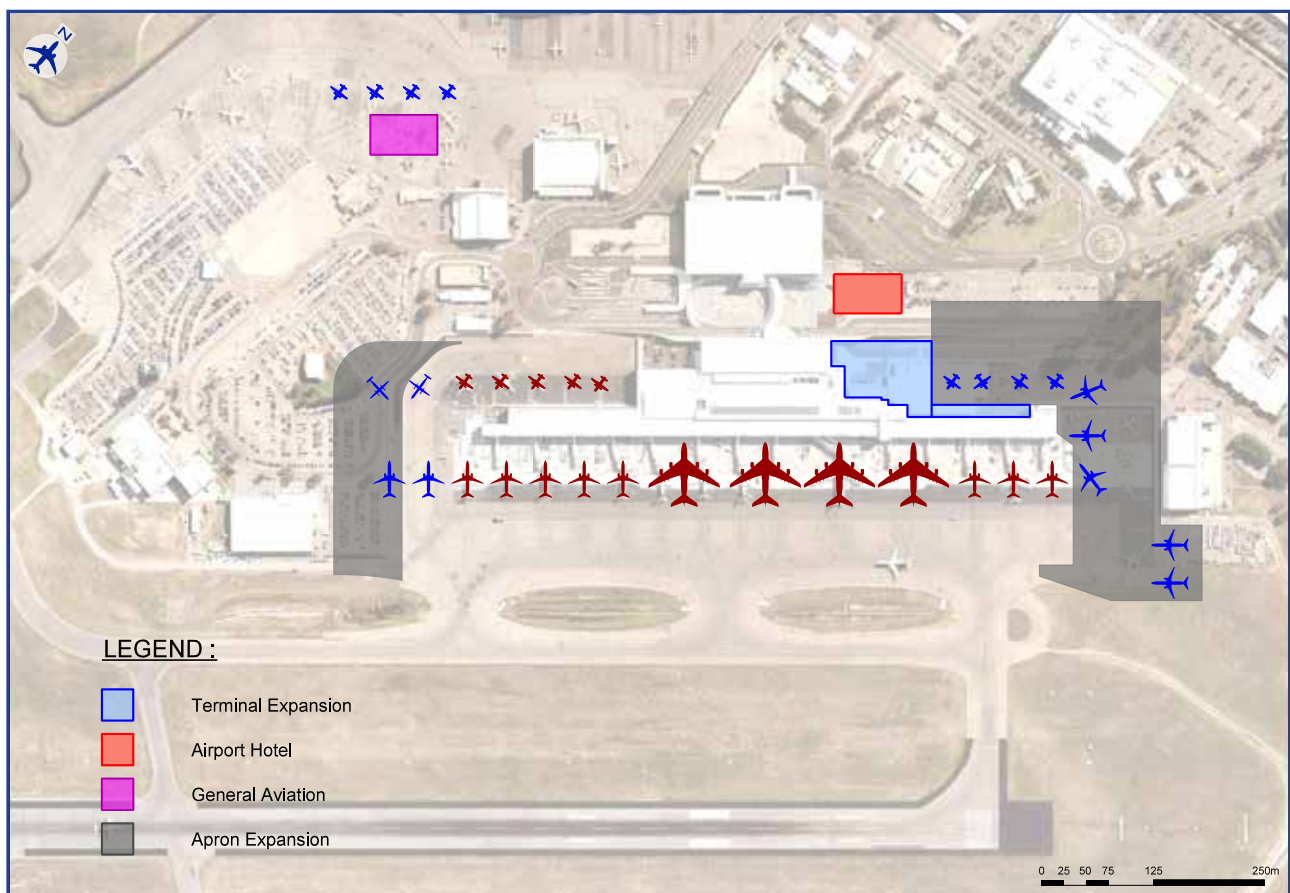
A new general aviation terminal will be developed to replace the existing structure in the vicinity of the former domestic terminal building site and apron area. It will provide facilities for intrastate operations, general aviation and charter operations; particularly relating to the resources sector.

The following schedule of activities describes the planned developments for this timing horizon. Figure 6.2 is an indicative diagram of projected development between 2014 and 2019.

Chapter 11 – Development Program provides information is included on development scale and the economic and environmental aspects of aviation infrastructure expansion to meet demand.

#### Scheduled Activities: 2014-2019

- hotel development
- demolition of former international terminal building and integration of regional aviation services within Terminal 1
- construction of new northern regional apron
- relocation of terminal offices to adjoining and linked new premises where practical
- provision of expanded and common user self check-in facilities
- dedicated taxi drop off point north of plaza
- expansion of emigration and immigration areas (phase 1)
- expansion of international baggage claim (phase 1)
- expansion of international arrivals hall (phase 1)
- expansion of main security check point
- expansion of northern pier and additional apron parking north
- expansion of retail area and development of new airline lounges at an expanded third level
- construction of general aviation facility (phase 1)
- relocation of existing general aviation facilities.



### 6.4.3 Projected Development – 2020 to 2034

The second stage of terminals development during the 20-year planning horizon is scheduled below and Figure 6.3 indicates projected development up until 2034.

#### Scheduled Activities: 2020-2034

- extension of multi-level car park and car rental facilities by 2000 spaces, and taxi drop-off activities
- expansion of domestic baggage claim/arrivals hall (phase 1)
- expansion of international baggage claim (phase 2)
- expansion of international arrivals hall (phase 2)
- expansion of southern pier and apron parking (phase 2)
- additional international gates; including allowances to suit Airbus A380 arrivals and departures and associated lounges
- expansion of baggage make-up (phase 2)
- further expansion of southern pier and apron parking
- expansion of general aviation facilities (phase 2).

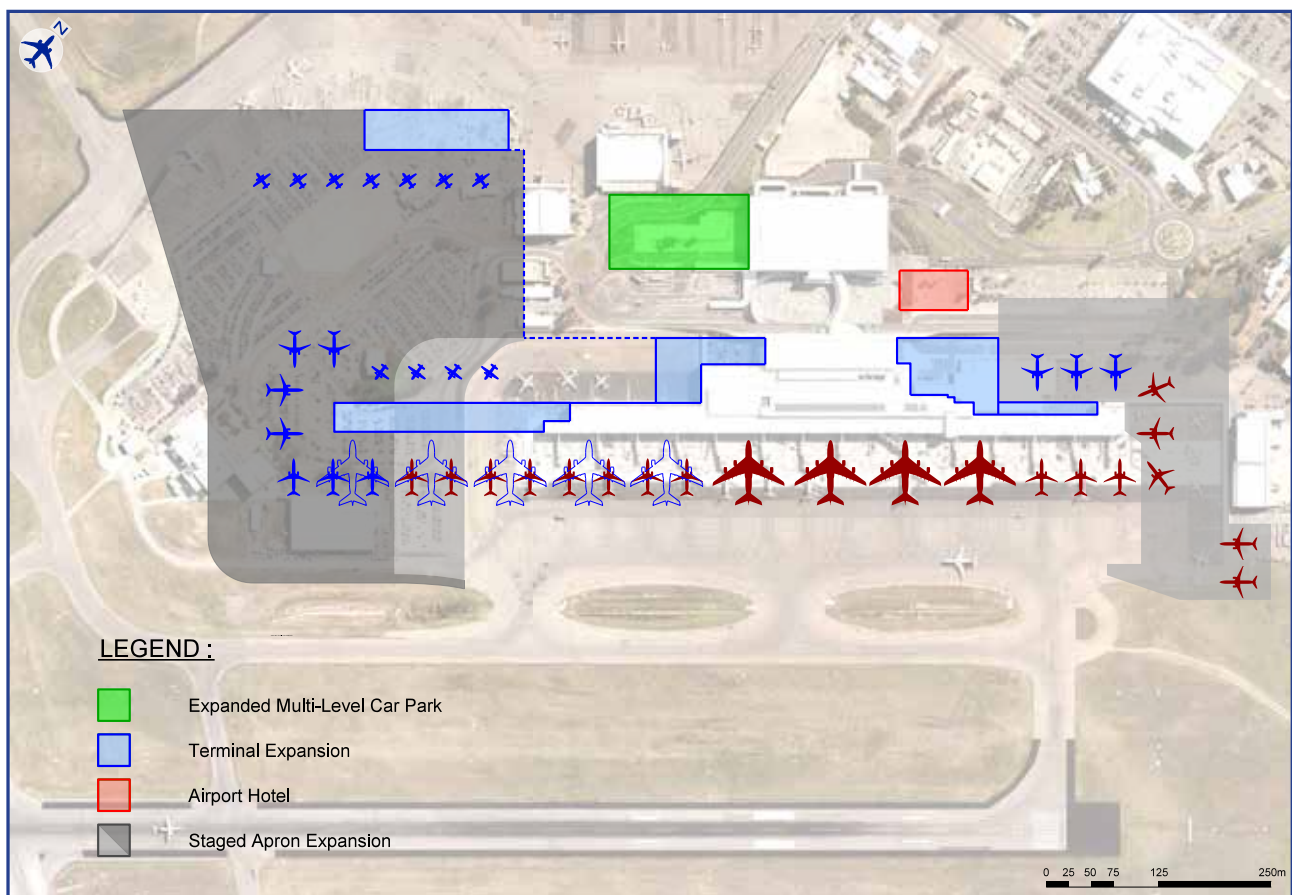


Figure 6.3 Projected Terminals Development 2020-2034





# LAND USE PLANNING

# 7





# LAND USE PLANNING

## 7.1 Introduction

The Master Plan recognises that Adelaide Airport is the major air transport hub for the State, and is arguably the most significant employment base in the Adelaide metropolitan area.

The airport is a major ‘activity centre’ within western Adelaide, and has the potential to support a number of uses that make efficient use of its existing infrastructure; particularly its transport connections.

The land use provisions in this Master Plan are refinements on the *Adelaide Airport Master Plan 2009*, taking into account the current Commonwealth Government’s aviation strategy and the following documents:

- Commonwealth Government’s Aviation White Paper, 2009;
- South Australia’s Strategic Plan, 2011;
- The 30 Year Plan for Greater Adelaide, 2010;
- The Strategic Infrastructure Plan for South Australia, 2005, and the associated 2010 Discussion Paper;
- National Airports Safeguarding Framework, 2012;
- Authorised Envisaged and Merit Use applications processed by Adelaide Airport Limited;
- changing development pressures and opportunities associated with Adelaide Airport; and
- State Government Integrated Transport and Land Use Plan (October 2013).

Development at Adelaide Airport should proceed in a manner which is compatible with adjacent land uses and optimum development policies. At the same time, the operational integrity and economic viability of the airport must not be compromised.

In essence, Adelaide Airport lies within major transit corridors, connecting the metropolitan area to international, national and regional air services. It is the tourism gateway for the majority of South Australia’s population and a vital infrastructure facility for the State. Direct employment at the airport is currently estimated at 8,726 full-time equivalent jobs, with a further estimated 9,033 jobs created for the South Australian economy. Overall, the operations of Adelaide Airport and its employees contribute to 2.1% of the Gross State Product. The airport functions as an integrated Transport Activity Centre with a focus on employment, tourism and business travel.

This Master Plan incorporates an Airport (Adelaide) Zone which guides development over the entire airport site. The zone is consistent with State Government’s approach to providing broad Objectives and Principles of Development Control to guide future development for each of the Council areas in South Australia. The Airport (Adelaide) Zone is further divided into seven precincts as shown in Figure 7.1 and Figure 7.2. These precincts are:

- Runways,
- Terminals & Business,
- Torrens,
- Tapleys,
- West Beach,
- Morphett, and
- Airport East.

In response to changing development pressures, the former Burbridge and Terminals Precincts have been incorporated into one larger Terminals & Business Precinct for simplicity as part of this revision of the Master Plan, and the Holdfast and Morphett Precincts have been incorporated into a larger Morphett Precinct. The expanded Terminals & Business Precinct is divided into five Policy Areas – Terminals & Aviation, Office Park, Export Park, Retail and Burbridge Business Park.

Further, the former Patawalonga Precinct has been renamed West Beach Precinct to reflect its geographic location.

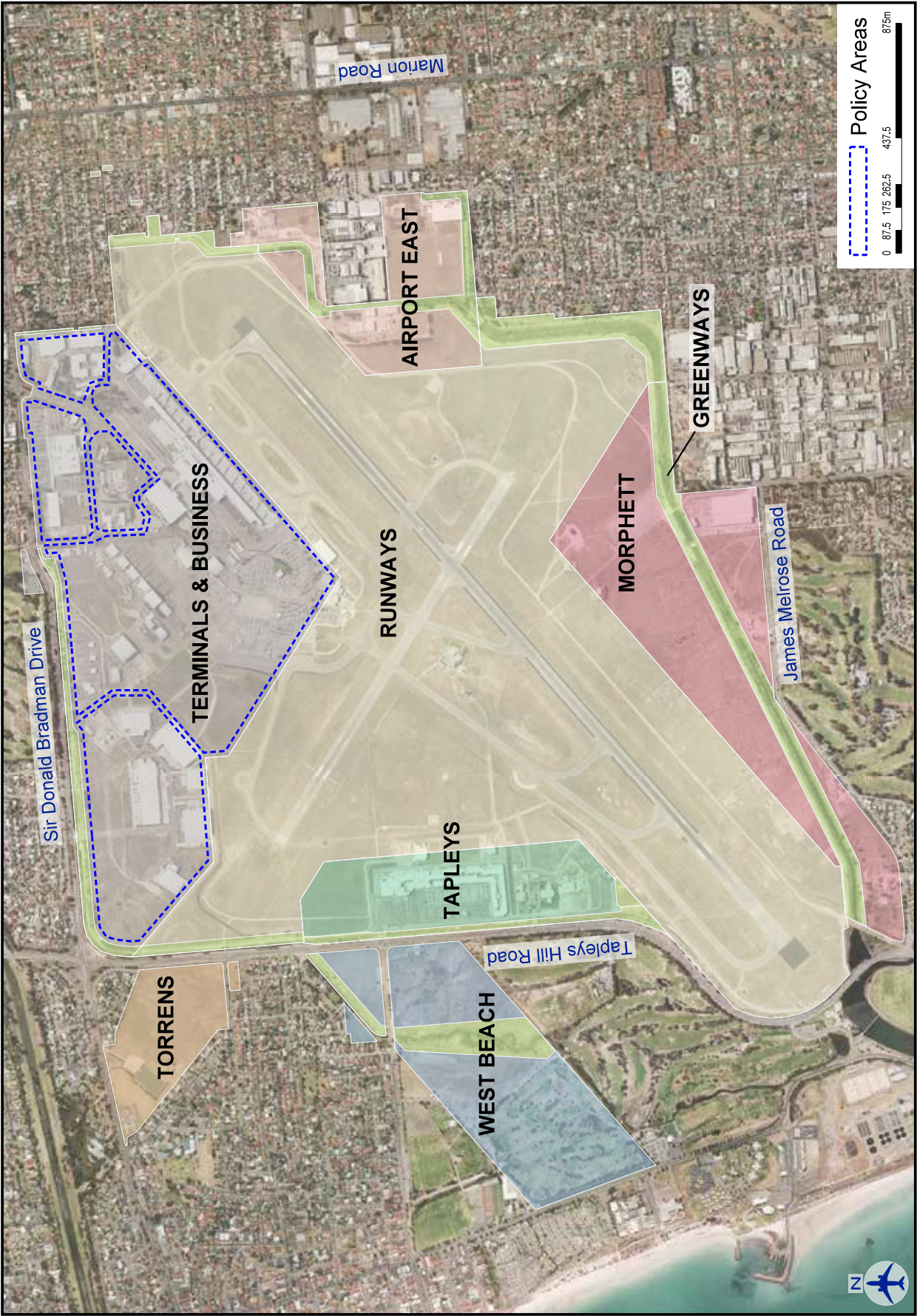
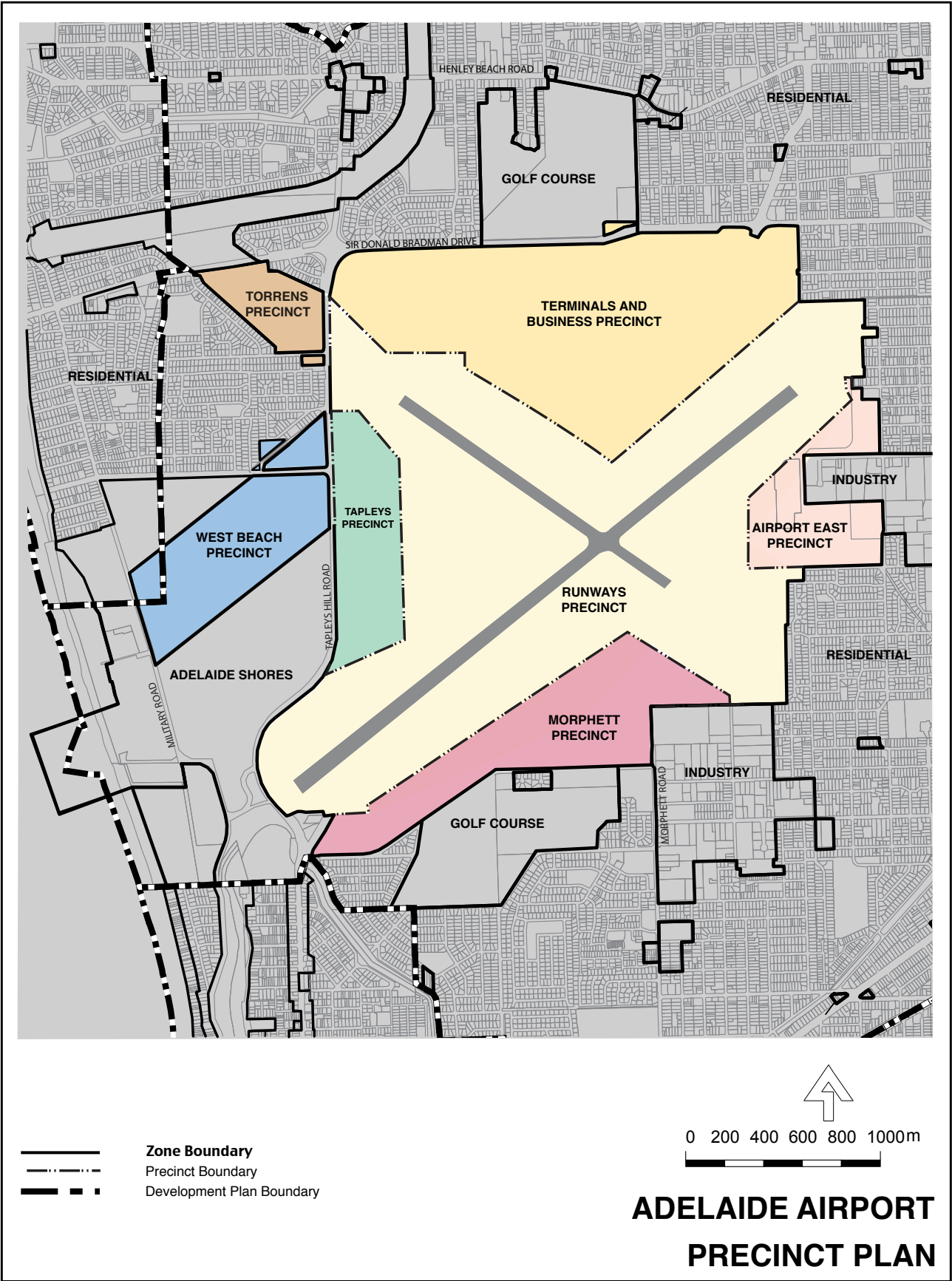


Figure 7.1 Adelaide Airport Precinct Plan





88 Figure 7.2 Adelaide Airport Precinct Structure Plan

## Precincts

For each precinct, the Master Plan contains Objectives and Desired Character Statements for future development, along with Principles of Development Control, which include Envisaged and Non-Complying uses in a similar vein to that which is in existence under the State Planning regime. Any uses not listed as Envisaged or Non-Complying are able to be considered on 'Merit', and must undergo an agency referral process and public consultation prior to a decision being made by AAL on whether to approve the proposal. This is detailed in the Development Decision Matrix at Figure 7.5.

The proposed development direction for each precinct is also indicated on individual precinct Structure Plans, showing:

- policy areas within certain Precincts (desired forms of development within specific geographic locations);
- major access/egress arrangements and internal road layouts (aligned with Chapter 9 – Ground Transport Plan); and
- 'Greenways' separating airport development from surrounding community activities or providing watercourses for stormwater; both within the precincts and surrounding the broader airport site (see Figure 7.3).



Figure 7.3 Adelaide Airport Greenways Plan



## 7.2 Commonwealth Planning Policy

### 7.2.1 Land Use Planning

The Commonwealth Government, in leasing its airports has retained responsibility for controls over land use planning and development on airport land pursuant to the *Airports Act 1996*. As part of this process, the Commonwealth Minister for Infrastructure and Regional Development must approve the Master Plan, which reflects suitable land use and related development within the Airport (Adelaide) Zone.

The process of approving developments on airport land has been aligned to those processes under the South Australian planning system (see Figure 7.4). The process is comparable in terms of setting strategic direction and establishing planning policy to guide future development (through the Master Plan process).

Land use controls are necessary in areas adjacent to the airport to protect its long-term safe and efficient operations. To this end, the Commonwealth introduced the *Airports (Protection of Airspace) Regulations 1996* to support planning authorities in ensuring that the operational integrity of the airport is maintained. It should be noted that this Master Plan covers only the Airport (Adelaide) Zone. However, greater attention is warranted to ensure a higher consideration of Aviation Standards, as detailed in the *National Airports Safeguarding Framework*.

Prior to the commencement of construction of any development classified as a 'Major Development' under the *Airports Act 1996*, AAL will prepare a Major Development Plan to thoroughly assess the potential impact of the development and outline the management procedures to be undertaken. Any Major Development Plans must be considered by the Minister for Infrastructure and Regional Development following public consultation and comment as prescribed in the *Airports Act 1996*. All developments are subject to formal building approval in accordance with the *Airports (Building Control) Regulations 1996*, taking into account the *Airports (Environment Protection) Regulations 1997*.

It should be noted that proposed development listed as 'Envisaged' within the Master Plan or that has received broad community acceptance is less likely to require any Major Development assessment process in terms of having any 'significant' impact on the community, unless it accords with other Major Development criteria specified in Section 89 of the *Airports Act 1996* (refer to Development Decision Matrix at Figure 7.5).

### The National Airports Safeguarding Framework (NASF)

The Commonwealth Government's 2009 *National Aviation Policy White Paper: Flight Path to the Future* proposed the development of a national land use planning framework in order to improve community amenity and improve safety outcomes.

The NASF is part of the agreement by Commonwealth, State and Territory Ministers at the Standing Council on Transport and Infrastructure meeting on 18 May 2012. The NASF is a national land use planning framework that aims to:

- improve community amenity by minimising aircraft noise-sensitive developments near airports including through the use of additional noise metrics and improved noise-disclosure mechanisms; and
- improve safety outcomes by ensuring aviation safety requirements are recognised in land use planning through guidelines being adopted by jurisdictions on various safety-related issues.

The NASF Principles promote a national approach to improving planning outcomes near airports and under flight paths, noting that the responsibility for land use planning (outside of the boundaries of the major Australian airports) primarily rests with State, Territory and Local Governments.

The NASF Guidelines cover the following topics:

- Measures for Managing Impacts of Aircraft Noise.
- Managing the Risk of Building Generated Windshear and Turbulence at Airports.
- Managing the Risk of Wildlife Strikes in the Vicinity of Airports.
- Managing the Risk of Wind Turbine Farms as Physical Obstacles to Air Navigation.
- Managing the Risk of Distractions to Pilots from Lighting in the Vicinity of Airports.
- Managing the Risk of Intrusions into Protected Airspace of Airports.

Each of the six Guidelines are discussed in further detail in Appendix C – NASF Guidelines Overview.

The South Australian Government has given a specific commitment to implementing the outcomes of NASF through a future amendment to the *Development Regulations 2008*, and amendments to relevant Council development plans to protect the ongoing operations of the major South Australian airports (including Adelaide, Parafield and Edinburgh Airports). This process has been given a priority as there is currently no recognition of the ANEF/AS2021 system in areas surrounding Adelaide Airport.

It is also noted that the National Airports Safeguarding Advisory Group (NASAG) has sought a review of the Australian Standard AS2021-2000: *Acoustics – Aircraft noise intrusion – Building siting and construction*. The State Government has developed proposals for inclusions in Council development plans based on Ultimate Capacity ANEC/AS2021 recognition and are presently consulting with the Department of Planning, Transport and Infrastructure (DPTI) on these proposals.

The current South Australian Planning System, established under the *Development Act 1993*, provides a framework for addressing some of the elements identified through the NASF process in relation to off-airport development. Key initiatives being considered by the South Australian Government to implement the findings of NASF include:

- mapping for both ANEC and building height criteria for inclusion in the relevant development plans;
- amendments to relevant modules of the DPTI Planning Policy Library to reflect NASF Principles for insertion into development plans;
- amendments to Schedule 8 of *Development Regulations 2008* relating to referral matters associated development that may impact on airport operations (i.e. building heights);
- seeking amendments to the Building Code of Australia for Noise Mitigation associated with construction of 'sensitive developments' with particular mapping noise contours; and
- inclusion of suitable Public Safety Zones (PSZ) at the end of runways to limit development to landscaped buffers (or similar) or other development that does not generate large numbers of people gathering in one place, and taking into account suitable distances and risk criteria.

### 7.2.2 Societal Issues

The Commonwealth Government has given discretion for the State Government to take responsibility at airports in traditional areas of State jurisdiction. These include certain ‘societal’ issues.

The offer to transfer regulatory responsibilities in these areas was made on the basis that each of the State and Territory Governments were prepared to amend or adapt their current regulations to allow existing activities at airports to continue.

The *Airports Act 1996* allows the Commonwealth to put in place laws at Adelaide Airport to control liquor, commercial trading, gambling, vehicle movements and smoking. These laws and resulting regulations also modify or exclude specific State laws in relation to matters where it is appropriate to do so.

The Commonwealth Regulations control airport activities by:

- ensuring authorisations to sell or supply liquor at premises on the airport that existed prior to privatisation are continued, subject to compliance with State laws (modified by the Commonwealth where necessary);
- modifying the application of liquor laws in the State in their application to the airport;
- where necessary, ensuring any commercial trading authorisations at the airport that existed prior to privatisation are preserved;
- prohibiting or regulating the parking and use of vehicles airside;
- prohibiting gambling except where an authorisation existed prior to privatisation;
- prohibiting smoking in designated non-smoking areas (including terminals); and
- providing a scheme of ‘on-the-spot’ fines for breaches of smoking offences.

Specific aviation functions also come under the jurisdiction of other authorities such as:

- the provision of air traffic services, air navigational facilities, an aeronautical information service, noise monitoring and Airport Rescue and Fire-Fighting services by the Aviation Rescue and Fire-Fighting (ARFF) services divisions AsA;
- the setting of aviation safety standards and associated regulations by CASA; and
- search and rescue services provided by the Australian Maritime Safety Authority.

The Commonwealth Department of Infrastructure and Regional Development (DIRD) is responsible for regulatory aviation security controls, which are set by the Office of Transport Security. It also administers the Commonwealth Government’s domestic and international aviation policies, and administers the Air Navigation Regulations.

Other Commonwealth and State Government Departments that provide services are the State Emergency Services, Australian Federal Police, Australian Customs and Border Protection Service, Immigration and Border Protection, Bureau of Meteorology, Health and Ageing and the Department of Agriculture incorporating the former Australian Quarantine and Inspection Services (AQIS) branch.

### 7.2.3 Building and Environmental Controls

With the introduction of the *Airports Act 1996*, building activity approvals are obtained from the Airport Building Controller (ABC), who is appointed by the Secretary of DIRD. The consent of Adelaide Airport Limited (AAL) is required before any approval can be given by the ABC. In considering its consent, which may be granted with conditions, AAL must ensure that the proposal is consistent with the approved Adelaide Airport Master Plan and its Principles of Development Control and land use planning Objectives, as well as relevant Development Design Guidelines. AAL will assess the impact of any proposal on infrastructure, the operations of the airport and environmental controls when reviewing an application for consent.

The Commonwealth has also put in place an environmental management regime at Adelaide Airport under the Act. AAL will operate in accordance with the Adelaide Airport Environment Strategy of this Master Plan, and provisions of the *Airports Act 1996* and the *Airports (Environment Protection) Regulations 1997*. An Airport Environment Officer (AEO) has been appointed by DIRD to ensure the airport and its occupiers comply with the Regulations and operate in accordance with good environmental practices mentioned in Chapter 10 – Environment Strategy.

## 7.3 State and Local Government Planning Policies

There are a number of strategic and statutory documents at both the State and Local Government level that offer a planning perspective on Adelaide Airport and have been considered in the preparation of this Master Plan. Not all perspectives are congruent, with some variation apparent in the timing processes associated with planning policy variations consistent with different enabling legislative situations between the *Airports Act 1996* and Regulations, and the *State Development Act 1993*. Discussion on the key documents is provided below.

### 7.3.1 Relationships between Airport Planning and State/Local Government Planning

At Figure 7.4, a comparative analysis between Airport Planning and State and Local Government planning. This indicates similar levels of control and consultation between both regimes. In particular, this figure and the following review of State and Local Government Planning Policies as they relate to airports, reveal the importance of Adelaide Airport to the State's economy. Further, there is an increasing emphasis towards achieving economic, social and environmental sustainability.

There is also clear evidence of a changing direction under State and Local Government planning to consider airports and aviation activity in the planning of urban areas surrounding airports. Accompanying this is a greater awareness of the long-term and unique nature of airport infrastructure and the high level of capital investment necessary for the development and maintenance of aviation infrastructure. This has been demonstrated through the establishment of the NASF as previously discussed.

The following sections of this Chapter detail the degree in which Adelaide Airport aviation and business activities are referenced within the State's planning framework through State Government policy and Local Government planning.

### Airport Planning Coordination Forum (APCF)

AAL has established an APCF to develop ongoing strategic partnerships between the airport operator and the Commonwealth Government, the South Australian Government and relevant Local Governments.

Regular meetings of the APCF are held to allow AAL and Commonwealth, State and Local Government, as well as Planning representatives, to discuss issues and exchange information on airport planning, development and operations, and the implications for Adelaide Airport on development in the surrounding areas.

Specifically, the Airport Planning Coordination Forum considers such issues as:

- consistency of on-airport land planning schemes with relevant urban and regional planning schemes; recognising the nature of the Airport as a Specialist Activity Centre and a significant employment node under the State Government's *30 Year Plan for Greater Adelaide*;
- the steps being taken to develop or implement the Adelaide Airport Master Plan, covering development projects and Major or Significant Development initiatives;
- airport ground transport issues including connections to off-airport transport networks, public transport and other road issues;
- environmental issues arising from airport development and operations;
- on-airport commercial developments and their off-airport interrelationships;
- measures to address the impacts of airport operations; including aircraft noise;
- land use planning and development issues in the vicinity of Adelaide Airport, including planning measures to safeguard airport operations; and
- government briefings on regulatory and policy developments.



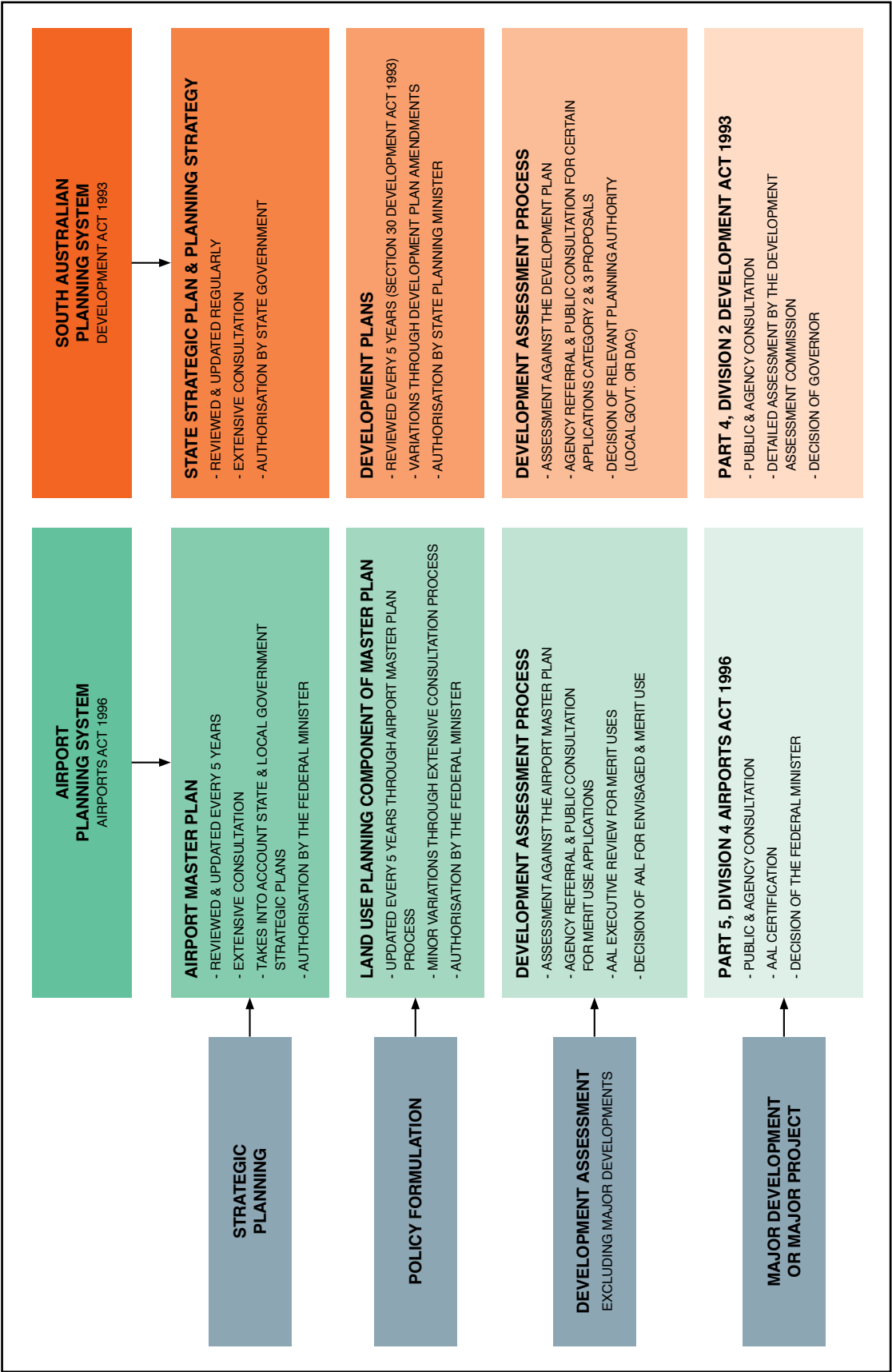


Figure 7.4 Comparison of Airport and State/Local Government Planning

### 7.3.2 South Australia's Strategic Plan (2011)

South Australia's Strategic Plan was first released by the South Australian Government in March 2004 and has been updated periodically since, with the most recent update in 2011. The Plan's targets reflect South Australia's aspirations for where it wants to be as a State in 2020 and beyond.

Targets are grouped under the following six priorities:

- Our Community
- Our Environment
- Our Education
- Our Prosperity
- Our Health
- Our Ideas

The Goals and Targets relevant to the ongoing operation and development of Adelaide Airport include:

Table 7.1 Extracts from South Australia's Strategic Plan (2011)

<b>Our Prosperity</b>	
<b>Strategic Plan Goal</b>	<b>Target</b>
South Australia has a resilient, innovative economy	<p><b>Target 35:</b> Economic growth – Exceed the national economic growth rate over the period to 2020 (baseline: 2002-03)</p> <p><b>Target 38:</b> Business investment – Exceed Australia's ratio of business investment as a percentage of the economy by 2014 and maintain thereafter (baseline: 2002-03)</p>
All South Australians have job opportunities	<b>Target 47:</b> Jobs – Increase employment by 2% each year from 2010 to 2016 (baseline: 2010)
South Australia's transport network enables efficient movement by industry and the community	<b>Target 56:</b> Strategic infrastructure – Ensure the provision of key economic and social infrastructure accommodates population growth (baseline: 2010-11)
<b>Our Environment</b>	
<b>Strategic Plan Goal</b>	<b>Target</b>
South Australia has reliable and sustainable energy sources, where renewable energy powers our homes, transport and workplaces	<b>Target 64:</b> Renewable energy – Support the development of renewable energy so that it comprises 33% of the State's electricity production by 2020 (baseline: 2004-05) Milestone of 20% by 2014
We aim for zero waste – recycling, reusing and reducing consumption all we can	<b>Target 67:</b> Zero waste – Reduce waste to landfill by 35% by 2020 (baseline: 2002-2003) Milestone of 25% by 2014
South Australia has reliable and sustainable water resources and is a leader in wastewater, irrigation, stormwater and groundwater management	<p><b>Target 73:</b> Recycled stormwater – South Australia has the system capacity to harvest up to 35 GL of stormwater per annum by 2025 (baseline: 2009)</p> <p><b>Target 74:</b> Recycled wastewater – South Australia has the system capacity to recycle up to 50 GL of wastewater per annum by 2025 (baseline: 2009)</p>
Industry and agriculture are highly efficient and innovative in their use of water	<b>Target 75:</b> Sustainable water use – South Australia's water resources are managed within sustainable limits by 2018 (baseline: 2003)

As noted previously, economic research by Hudson Howells has identified that 8,726 people are directly employed through Adelaide Airport with an additional estimated 9,033 jobs created indirectly through the airport and on-site operators. Additionally, through the direct purchases of on-site Adelaide Airport operators and the on-spend of direct wages of employees, there is an induced contribution to value-added in the State of South Australia of approximately \$1.055 million. These employment and spending estimates demonstrate the important and significant contribution that Adelaide Airport makes to the South Australian economy and job market.

In addition, an emphasis has been placed upon sustainable environmental practices, including the increasing use of recycled water from the Glenelg Wastewater Treatment Plant on airport land, the installation of solar panels on the terminal building, the development of an Aquifer Storage and Recovery system and the on-going re-vegetation plus a Terminal 1 waste recycling program will assist in achieving the State Government's Strategic Plan environmental targets.

### 7.3.3 Development Act 1993 and Development Regulations 2008

The South Australian planning system is established under the *Development Act 1993* and associated *Development Regulations 2008*. The object of the Act is to provide for proper, orderly and efficient planning and development in the State. Amongst other aims, the *Development Act 1993* provides for:

- the establishment of objectives and principles of planning and development;
- a system of strategic planning governing development;
- the creation of development plans with policies to guide and control development;
- appropriate public participation in the planning process and the assessment of development proposals; and
- the establishment of various decision-making bodies.

Although not utilised in the assessment of development on Adelaide Airport, the *Development Act 1993* and associated *Development Regulations 2008* are relevant to Adelaide Airport for the following reasons:

- The land use planning aspects of the Adelaide Airport Master Plan have been prepared to generally reflect the South Australian planning system – in format, language and approach to assessment of development proposals.
- The airport sits within a planning context established by the State Planning legislative requirements.

- The Planning Strategy for South Australia reflects and gives weight to further development of the airport.
- Development which surrounds the airport can have significant impact on the function, safety and ongoing operations of the airport, and the *Development Act 1993* provides the mechanisms for safeguarding airport operations from inappropriate off-airport development.

It should be noted that the State Government has recently launched a review of the South Australian Planning System. The review is expected to be completed in late 2014.

### 7.3.4 The Planning Strategy for South Australia

The *Development Act 1993* requires the State Government to prepare the Planning Strategy for South Australia. The Planning Strategy presents the State Government's policy directions for the long-term physical development of the State over the period 2010 to 2036, and is divided into 8 volumes based on geographical area; with 7 of those volumes dedicated to regional South Australia.

### 7.3.5 The 30-Year Plan for Greater Adelaide

The relevant volume of the Planning Strategy applicable to Adelaide Airport is the *30-Year Plan for Greater Adelaide* (referred to as the *30-Year Plan*) which was released in February 2010. The *30-Year Plan* provides directions for urban and regional development for business, industry, infrastructure provision, utility supply and government agencies.

The *30-Year Plan* shifts the emphasis of urban growth away from expansion of the urban fringe towards a greater proportion of development within existing urban areas. Growth within Adelaide's existing footprint is promoted by increasing housing densities close to selected transport corridors and at new Transit Oriented Developments. The *30-Year Plan* includes population and employment targets for western Adelaide, seeking 42,560 new dwellings (33,060 within corridors and 9,500 outside corridors) and 40,500 new jobs over the 30-year period.

The *30-Year Plan* recognises Adelaide Airport as a 'Specialist Activity Centre' and promotes an increase in the level of economic activity generated on airport land. It signals the importance of Adelaide Airport for a range of economic uses, and gives a clear policy direction towards protecting its ongoing operations from encroachment by incompatible uses.

The policy directions of the 30-Year Plan of promoting urban infill along main roads close to the airport and under flight paths, and further urban regeneration and consolidation within the surrounding suburbs, is anticipated to increase the number of people living near the airport who may be affected

by its ongoing operations. There is some tension between such policy directions and the National Airports Safeguarding Framework, which was discussed previously in section 7.2.1.

The policies relevant to airports in Adelaide are outlined below.

**Table 7.2 Extracts from the 30-Year Plan for Greater Adelaide**

<b>Chapter D: Policies and Targets</b>
<b>The Economy and Jobs</b>
<p><i>Policy 2: Set specific jobs targets at a regional level, which will: reflect where people are going to live to minimise journey to work times; take advantage of existing infrastructure such as transport; take account of the likely regional growth of key sectors; ensure that sufficient land is available for commercial, industrial, retail, primary production, mining and other activities.</i></p> <p><i>Policy 7: Focus business clusters around key transport infrastructure such as road, air, rail and sea terminals, particularly intermodal facilities to maximise the economic benefits of export infrastructure.</i></p>
<b>Transport</b>
<p><i>Policy 9: Ensure planning policy protects airport sites by restricting incompatible uses of land in surrounding areas. Development Plans should identify areas adjacent to airports and under flight paths where new development is inappropriate due to building height restrictions and aircraft noise impacts.</i></p> <p><i>Policy 10: Require new housing and other noise-sensitive developments permitted in locations adjacent to airports and under flight paths to incorporate appropriate noise attenuation measures to minimize the impact of aircraft noise and airport activities.</i></p> <p><i>Policy 11: Develop, in cooperation with the Australian Government, a clear policy on the definition of public safety zones around airports for incorporation in Development Plans.</i></p>
<b>Western Adelaide Directions (Maps D9, D10 &amp; E3)</b>
<p><i>The Plan establishes new housing and employment targets for western Adelaide. There are implications for Adelaide Airport both as the major employer in Adelaide's west but also for the greater number of residents who will live near Adelaide Airport, and potentially be affected by its operations. Adelaide Airport is shown as an 'existing key industry area' within western Adelaide. The map notation for the airport is to 'Strengthen tourism, transport and economic role of airport'.</i></p> <p><i>There are two activity centres on the airport site.</i></p> <p><i>The Harbour Town precinct on the western edge of the site is identified as a bulky goods centre and the airport terminal is identified as a specialist centre. The map also shows a future intensification of land uses in the urban areas between the airport and the city centre. The main road corridors adjacent to the airport of Marion Road, Sir Donald Bradman Drive, and Richmond Road are identified as such areas (non-corridor).</i></p>
<b>Major Planned Infrastructure Expenditure (Map D17)</b>
<p><i>The map indicates the future development of an 'Adelaide Airport southern road link'. An upgrade to the intersection of Sir Richard Williams Avenue and Sir Donald Bradman Drive is also indicated.</i></p>
<b>Water</b>
<p><i>Committed stormwater harvesting projects, as shown on Map D22</i></p> <p><i>Adelaide Airport Stormwater Scheme: Will source water from the Brownhill/Keswick Creek system. A storage basin will capture flows, which will then be treated using bio-filtration and media filtration to initially harvest about 400 megalitres a year.</i></p>



### 7.3.6 Housing and Employment Land Supply Program

The *Housing and Employment Land Supply Program (HELSP) Report 2010* supports the implementation of the *30-Year Plan for Greater Adelaide* by guiding the process of rezoning land to ensure there is a sufficient supply of land available to meet housing and employment targets.

The HELSP identifies Adelaide Airport as having a significant supply of industrial land which will contribute 76 hectares to the industrial land supply in Adelaide's western region. Components of Adelaide Airport referenced in the HELSP are detailed below:

- Airport East Precinct – identified as a major industrial site, supported by infrastructure, which contributes 41 hectares to the supply of industrial land;
- Morphett Precinct – identified as contributing 35 hectares to the supply of industrial land; and
- Harbour Town site in the Tapleys Precinct – identified as presenting a new opportunity for a retail centre within the established metropolitan area.

The 2012 HELSP monitoring report emphasises the benefits from locating future stocks of industrial land close to existing infrastructure, including airports. The report indicates that the consumption of industrial land in Western Adelaide over the 2008 to 2012 period was 81 hectares; less than 50 percent of the 164 hectares that was forecast for the region.



### 7.3.7 Strategic Infrastructure Plan for South Australia

The *Strategic Infrastructure Plan for South Australia 2005/2006 - 2014/2015* is a key document ‘...in developing a more coordinated long-term approach to infrastructure provision throughout the State’. It provides an overarching framework for the planning and delivery of infrastructure by all government and private sector infrastructure providers for the State.

The Strategic Infrastructure Plan incorporates several references to Adelaide Airport and aviation services generally. These references are outlined in the table below:

In 2010, the South Australian Government released the *Strategic Infrastructure Plan for South Australia* Discussion Paper. The Discussion Paper sought to update the 2005/2006 Strategic Infrastructure Plan, taking into consideration the Objectives and Targets of the *30-Year Plan for Greater Adelaide*.

In relation to Adelaide Airport, the Discussion Paper included the following initiatives:

- a light rail (or equivalent mass transit service) that services the Airport, with direct and simple connections to the Adelaide CBD;
- the delivery of an uninterrupted South Road (north-south corridor);
- potential for a southern airport link access road to Adelaide Airport, utilising Richmond Road; and
- continued enhancement of local cycle and pedestrian connections to the Airport and surrounding area.

To date, an updated *Strategic Infrastructure Plan for South Australia* has not been endorsed by the South Australian Government. However, planning for an uninterrupted South Road (north-south corridor) has progressed, with concept designs proposing a major grade-separated intersection at Sir Donald Bradman Drive.

**Table 7.3 Extracts from the Strategic Infrastructure Plan for South Australia**

<b>Transport</b>
<i>Discussion under the ‘Transport Sector’ section of the plan recognises Adelaide Airport as the “State’s main air freight and passenger gateway” and that “both freight and passenger movements are expected to grow”.</i>
<b>Aviation</b>
<i>Under the heading ‘Aviation’, the plan comments that “...owners of aviation assets are trying to maximise their return by using the large tracts of land for commercial purposes” and that “...increased road traffic in and around airports is being addressed”. The plan also notes that air freight is crucial for the transport of time-critical high-value products and that Adelaide Airport is the State’s only international export airport.</i>
<b>Aviation: Strategic Priorities</b>
<i>Under the ‘Strategic Priorities’ heading for Aviation, the following is identified:</i>
<ul style="list-style-type: none"> <li>• <i>Maintain an efficient transport network to Adelaide Airport to support anticipated passenger and freight movements</i></li> <li>• <i>Ensure any change in land use on or adjacent to export airports does not preclude future transport development.</i></li> </ul>
<b>Land Sector</b>
<i>Discussion under the ‘Land Sector’ section of the plan under the heading ‘Industrial Land Supply and Development Opportunities’ identifies some 60 hectares at Adelaide Airport in the list of the ‘most significant areas of vacant land’.</i>
<b>Land: Strategic Priorities</b>
<i>Under the ‘Strategic Priorities’ heading, the following is identified:</i>
<ul style="list-style-type: none"> <li>• <i>Identify, protect and facilitate the development of a 15 to 20 year supply of suitable industrial land to meet demand</i></li> <li>• <i>Planning of industrial estates should encourage sustainable industrial practices.</i></li> </ul>

### 7.3.8 Draft Integrated Transport and Land Use Plan

In 2013, the South Australian Government formed a working group to prepare a draft Integrated Transport and Land Use Plan (known as the Transport Plan) for the State. The draft Transport Plan was released in October 2013 for public comment.

The Transport Plan identifies six key transport challenges facing South Australia, and identifies a number of solutions to address each. The six key challenges are:

1. Growing the role of public transport in servicing our city and urban and regional centres.
2. Providing efficient connections to export/import gateways.
3. Prioritising transport infrastructure and services to encourage

**Table 7.4 Extracts from the draft Integrated Transport and Land Use Plan**

<b>Central and Inner Adelaide</b>		
<b>Solution</b>	<b>Action</b>	<b>Timeframe</b>
Public Transport	<b>Action 2.</b> WestLINK and EastLINK – extend trams along the east-west corridor from Henley Square, Henley Beach Road, through the city and along the Parade turning north to Magill Campus, with an extension to Adelaide Airport.	Medium term
Roads	<b>Action 17.</b> Upgrade intersections along Sir Donald Bradman Drive to reduce congestion and improve reliability of travel times to the airport, and provide taxi, commercial vehicle and bus access via Richmond Road.	Short-to-medium term
Cycling and walking	<b>Action 24.</b> Partner with local councils to complete the Airport Bikeway, including crossings of arterial roads.	Short term
<b>Middle Adelaide</b>		
<b>Solution</b>	<b>Action</b>	<b>Timeframe</b>
Public Transport	<b>Action 2.</b> WestLINK and EastLINK – extend trams along the east-west corridor from Henley Square, Henley Beach Road, through the city and along the Parade turning north to Magill Campus, with an extension to Adelaide Airport.	Medium term
Roads	<b>Action 13.</b> Upgrade intersections along Sir Donald Bradman Drive to reduce congestion and improve reliability of travel times to the airport, and provide taxi, commercial vehicle and bus access via Richmond Road.	Short-to-medium term
Ports, rail freight and airports	<b>Action 18.</b> Complete the North-South Corridor – including rail connections to the port.	Medium term
Cycling and walking	<b>Action 28.</b> Partner with West Torrens Council to complete the Airport Bikeway, including crossings of arterial roads	Short term
Local Government	<b>Action:</b> Work with local councils to complete local transport strategies to complement land use directions of local development plans, with a focus on accessible neighbourhoods, integration with public transport networks and state freight/major traffic routes:  Work with Local Government to implement the National Airport Safeguarding Framework within council development plans to ensure the future of Adelaide, Edinburgh and Parafield Airports.	Short term

mixed-use development in central and inner Adelaide.

4. Supporting lively communities by encouraging active travel modes.
5. Fine-tuning, maintaining and better utilising our existing transport assets.
6. Developing and maintaining a planning system that ensures integrated transport and land use.

With respect to airport operations in the State, the main focus is on improvements to the transport networks to assist freight movement and provide greater support for regional aviation. Reference is also made to working with local council Planners to improve planning policies to prevent inappropriate land uses surrounding airports to provide greater protection to airport operations.

The draft Transport Plan identifies a number of Solutions and Actions for nine regions of the State including: Central and Inner Adelaide, Middle Adelaide, Outer Adelaide, and each of the six regions in line with the Planning Strategy.

It should be noted that the suggested timeframes in the Transport Plan have not been specified beyond the broad 'short/medium/long term'. The Transport Plan is expected to be finalised in 2015.

The most relevant Solutions and Actions to the airport are listed in Section 5.8 solutions for the Central and Inner Adelaide Region, and the Middle Adelaide Region; and are identified in the table below:

### 7.3.9 Local Government Development Plans

Development Plans are key documents in the South Australian planning and development system. They are established under the Development Act 1993 and contain zones, maps and written policies that guide property owners and others as to what can and cannot be done in the future on any land in the area covered by the development plan. Development Plans may set out the desired character for different parts of an area, the types of development envisaged and whether public notification of a development application is required. Development Plans provide the detailed criteria against which development applications are assessed by the relevant Councils.

#### West Torrens Council Development Plan

Adelaide Airport is located within the West Torrens Council Development Plan (Consolidated 25 September 2014) which covers the entire City of West Torrens. The development plan is updated regularly to reflect current policy directions and best planning practices. Adelaide Airport is currently identified in an 'Airfield Zone'.

Prior to the amendments made to the West Torrens Council Development Plan in August 2011, the Adelaide Airport was contained within the 'Adelaide Airport Zone'; a specific zone containing planning policies which strongly correlated with the land use policy directions expressed in the Adelaide Airport Master Plan 2009. However, the changes made to the West Torrens Development Plan at that time are based on a generic 'Airfield Zone', which does not recognise the strategic importance of Adelaide Airport to the State, or provide a finer grain planning policy framework of dividing the Airport into various precincts (as was previously the situation).

Notwithstanding this, the following overview of the current Airfield Zone is provided below.

The primary Objective of the Airfield Zone is:

*"A zone primarily accommodating aircraft operations, passenger terminals, airport and aviation-related light industrial, service industrial, warehouse and storage purposes".*



The Objectives are supported by a 'Desired Character Statement' for the zone which seeks:

- a range of services and facilities necessary for the safe, convenient and efficient operation of aviation activities at the Adelaide Airport;
- to continue to accommodate a range of airport and export related industrial and commercial uses, and recreational activities of an open character on land reserved for long-term aviation needs;
- development compatible with the principle aviation function of the airport and maintaining the long-term operational and safety needs of the airport;
- development promoting the economic improvement of the State and the City of West Torrens by maintaining the airport as the international, national and regional gateway to South Australia, enhancing the airport as a major element of public infrastructure and facilitating the movement of time sensitive freight and passengers by infrastructure improvements;
- the adoption of adequate separation distances between non-aviation and aviation development on airport land, and between development on airport land and off-airport uses; and
- recognition of the on-going commitment for stormwater harvesting on the Adelaide Airport site.

The zone provisions also contain a number of Principles of Development Control that support the attainment of the Objectives and Desired Character Statement, recognising the long-term operational, safety and commercial aviation requirements of Adelaide Airport and providing guidance for building heights within the airspace surrounding the airport (through the 'Building Near Airfields' General Section module).

The overall planning policy provisions of the Airfield Zone, although generic in nature, remain generally compatible with the land use directions sought in this Master Plan.

#### Surrounding Council Development Plans

As previously mentioned, Adelaide Airport is located primarily within the City of West Torrens, with a small portion of the airport site located within the City of Charles Sturt to the west. The City of Holdfast Bay is located immediately adjacent the site to the south-west.

AAL continues to monitor policy changes to the Development Plans undertaken by the three Councils to ensure that the proposed policies do not negatively impact upon the operations of the airport. Additionally, the potential impact of airport operations and future development of Adelaide Airport on the Holdfast Bay and Charles Sturt Council areas is given consideration by AAL in the preparation of the Master Plan and also discussed at APCF meetings with Council

representatives.

An overview of the Development Plan Zones immediately adjacent to the airport site for the two Council areas is provided below:

#### City of Charles Sturt (consolidated 25 September 2014):

the Adelaide Airport site is located directly to the west of the Charles Sturt Council, with a small portion of the West Beach Precinct located within the Airfield Zone. The Development Plan is in Better Development Plan format and the adjoining zones include the Coastal Open Space and Adelaide Shores Zones, with areas of the Residential Zone north of the Adelaide Shores complex.

AAL prepared a submission on the Adelaide Shores DPA seeking to exclude the airport from the proposed zone, however this was not adopted. The recently created Adelaide Shores Zone sets out the guiding policies for new development at the Adelaide Shores complex, with a focus on short-term tourist accommodation, sporting facilities and recreational activities, with some commercial activities envisaged along Tapleys Hill Road.

The zoning surrounding the airport site is generally compatible with the Master Plan policies.

#### City of Holdfast Bay (consolidated 13 February 2014):

the Adelaide Airport site is located directly to the south-west of the Holdfast Bay Council area. The Development Plan is not in the Better Development Plan format and adjoining zones include Residential and Residential Activity Node Zones. These zones are located some distance south of the Runways Precinct, and south-west of the Morphett Precinct.

The zoning surrounding the airport site is generally compatible with the Master Plan policies. "

### 7.3.10 Recent Development Plan Amendments affecting Airport Operations

There have been a number of Development Plan Amendments (DPA's) proposed by the State Planning Minister and Councils surrounding Adelaide Airport since the 2009 Master Plan which may have an impact in relation to ongoing airport operations.

Whilst recognising the need to update planning policy to reflect current strategic directions for the State (i.e. the *30-Year Plan for Greater Adelaide*), due consideration must be given to protecting the ongoing operations of Adelaide Airport and to ensuring that the NASF guidelines are being achieved.

Adelaide Airport Limited has recently provided submissions in relation to a number of Development Plan Amendments, including those listed on the following page:

Table 7.5 List of Recent Development Plan Amendment Submissions

Council	Development Plan Amendment Title	Council or Ministerial DPA	Summary of Adelaide Airport Limited Comments
Adelaide (City)	Riverbank Health and Entertainment Areas	Ministerial	Response to DPA forwarded by AAL on 6 September 2013. DPA approved by the Minister for Planning on 11 October 2013.
Adelaide (City)	Capital City	Ministerial	Identified concerns with proposed building heights throughout.
Norwood, Payneham and St Peters	Residential Development (Zones and Policy Areas)	Council	Reviewed building heights but no issues as proposed building heights do not penetrate OLS.
Norwood, Payneham and St Peters	Kent Town and the Parade Strategic Growth	Council	Reviewed building heights but no issues as proposed building heights do not penetrate OLS. Note that policy recognises importance of protecting the airport.
Burnside	Inner Rim	Ministerial	Reviewed building heights but no issues as proposed building heights do not penetrate OLS. DPA approved and gazetted by the Minister for Planning on 29 October 2013.
Prospect	Inner Rim	Ministerial	Reviewed building heights but no issues as proposed building heights do not penetrate OLS. DPA approved and gazetted by the Minister for Planning on 29 October 2013.
Unley	Village Living and Desirable Neighbourhoods – Main Road Corridors and Mixed Use and Residential Vitalisation (Greenhill and Unley Roads)	Council	Identified concerns with proposed building heights along Greenhill Road (7 storeys/25.5 metres). Concern for minimal reference to protecting ongoing operations of airport within the proposed planning policies. The Minister has authorised the DPA on 29 October 2013.
West Torrens	Housing Diversity	Council	Concern for maximum building heights (5-8 storeys) penetrating OLS with reference to airport arrival/ departure maps. Lack of detail on noise impacts for new development.
West Torrens and Charles Sturt	Adelaide Shores	Ministerial	Concern that long-term development has been identified for the Adelaide Shores site on airport land and its potential to conflict with the Adelaide Airport Master Plan. Submission has been prepared on DPA seeking that any Airport land be excluded from this DPA in favour of the Adelaide Airport Master Plan.

### Section 7.3.11 City of West Torrens Draft Strategic Directions Report (not yet endorsed)

The City of West Torrens has recently undertaken a review of the 2008 Strategic Directions Report, and prepared a draft Report in August 2014, which has been endorsed by Council on 2 September and submitted to DPTI for endorsement.

Essentially, the updated Strategic Directions Report follows relatively the same overarching themes, reducing the number from six to four themes. Additionally, the DPAs that have been earmarked in the 2014 Strategic Directions Report were previously identified in the 2008 Report.

The draft document proposes a number of amendments to Council's Development Plan that may have implications for Adelaide Airport. A number of references to Adelaide Airport are contained within the document, both at the discussion stage and the recommendation stage of identified Development Plan Amendments.

The *City of West Torrens Strategic Directions Report* acknowledges the need for ongoing collaboration between the airport and council, and identifies a number of issues relating to the impact of emissions, non-aviation uses, and ongoing stormwater management for consideration by council.

A review of the current Master Plan is provided, recognising the economic importance of Adelaide Airport and projected growth in passenger numbers. Land use planning on airport land is also discussed, with reference to the need for new development to consider the impacts on airport operations and the surrounding residents and businesses.

#### Issues and Challenges

Under section 4.3 'Issues and Challenges', Council identified a number of issues that were raised by the community during the consultation process, and also through a review of current State and Local Government strategic documents. The following are considered of relevance to the Adelaide Airport:

- Anticipated increase in residential development through infill opportunities.
- The current and future increase in traffic travelling through the Council area, and the need to develop a city-wide traffic management plan.
- The need to address and mitigate the impacts of climate change.

#### Future Directions

To meet the vision set out in the *Strategic Directions Report*, the West Torrens Council has adopted four overarching themes to be achieved by a series of key priorities. Those that may impact upon the airport include the following:

- **Theme: Community Life**
  - Provision of access to new housing, services and transport networks at activity centres
  - Identify locations and opportunities for land banking and urban infill opportunities
- **Theme: Natural Environment**
  - Water quality management and efficient use and reuse of water resources having regard for whole of catchment area (Water Sensitive City)
  - Continue to work diligently in developing appropriate and innovative stormwater management measures, that can address future increases in run-off from urban development and rising sea levels
    - *Note: accompanying Natural Environment Plan for Council identifies parts of the airport as being at risk of sea level rise*
  - Promotion of more environmentally friendly modes of transport, such as cycling, walking and public transport.
- **Theme: Built Environment**
  - To implement innovative measures and regulatory controls to manage interface issues where residential land and less sensitive land uses such as industrial land, abut each other.
  - Recognising issues and concerns relating to the impact of the Adelaide Airport on neighbouring land use, transport and infrastructure
  - The ongoing implementation of an integrated city-wide traffic management plan to address traffic flows and speeds, local traffic issues and parking needs.
  - The continued prioritisation of structural and non-structural mitigation measures for flood prone affected land, including measures to enhance stormwater storage and reuse.
  - Continue work on the following key transit corridors identified within the City: Adelaide-Glenelg tram line, Sir Donald Bradman Drive, Marion Road and Richmond Road.
- **Theme: City Prosperity**
  - Enabling mixed use development along key corridors throughout the City, and key nodal points in local areas.

- Support the key employment sectors already within the City which include manufacturing, transport, retail and health care and social assistance.
- The protection of key employment zones, which includes industrial precincts and activities.

### Proposed Work Program

From the overarching themes, key directions and issues discussed in the Strategic Directions Report, the West Torrens Council has prepared a Proposed Work Program to undertake a series of Development Plan Amendments to enable policy changes to address these issues. The proposed DPA's that may have the greatest impact on the airport are briefly discussed below:

- **Employment** (to commence in 2015) – provide a range of employment options within the Council area in response to market demand and provision of appropriate land supply.
- **Activity Centres** (to commence in 2015) – undertake an economic and retail analysis to better align the existing activity centres with the Planning Strategy definitions.

### Section 7.3.12 City of West Torrens Towards 2025 Community Plan

Under Section 122 of the *Local Government Act 1999*, Councils are required to prepare 'strategic management plans' that establish the future direction of the Council area. Since the development of the 'Towards 2025' strategic planning process in 2007, Council has undertaken extensive consultation with the local community and has prepared the *Towards 2025 Community Plan in 2014*.

The Community Plan adopts four community aspirations as established through the engagement process entitled 'Our Place'. Under these themes, a number of community aspirations with long-term and five-year strategies, which are measured by success indicators for Council to monitor over the term of the Community Plan being five years.

Whilst there are no community aspirations or strategies that relate to the airport specifically, several strategies are aligned to AAL's own aspirations for the airport:

### Natural Environment

- **Community Aspiration: Environmentally sustainable development**
  - Long-term strategy: Encourage new and existing development to incorporate environmentally sustainable designs and practices.
  - Community aspiration: Reduction of our ecological impact
  - Long-term strategy: Facilitate the minimisation of waste production and disposal to landfill and productive utilisation of waste.
  - Long-term strategy: Create a water-sensitive city.
  - Long-term strategy: Manage current water resources efficiently.
  - Long-term strategy: Respond to the challenges of a changing climate.

### Built Environment

- Community Aspiration: A well-designed built environment
- Long-term strategy: Promote retail, commercial and industrial activity that is compatible with neighbouring land uses.
- Community aspiration: Effective stormwater infrastructure
- Long-term strategy: Manage the quantity and quality of stormwater flows.
- Long-term strategy: Minimise the risk of flooding to existing communities and future developments.

### City Prosperity

- Community Aspiration: A thriving business environment
- Long-term strategy: Support the development and growth of local business and jobs
- Long-term strategy: Encourage economic growth and productivity.



## 7.4 Development and Building Assessment Process

### 7.4.1 Development Assessment

AAL uses a development assessment process that closely aligns with the current South Australian Development Assessment process, in the context of the Commonwealth arrangements as described in the *Airports Act 1996*.

As mentioned in Section 7.2, under the *Airports Act 1996*, controls over land use planning and development on the airport remain with the Commonwealth Minister for Infrastructure and Regional Development, with AAL to make decisions on development proposals that are consistent with the approved Master Plan.

Figure 7.5 indicates the Development Decision Matrix for the specific forms and types of airport development at Adelaide Airport. There are a number of decision-making steps in this process which include:

- The decision of AAL to lease land for particular forms of development.
- The decision of airport authority regulators (such as DIRD and CASA) to accept development which will not unduly impact upon airport and aviation activities.
- The decision of AAL as to the appropriateness (or otherwise) of the development against the approved Master Plan. This discretionary decision takes into account:
  - The Airport (Adelaide) Zone Objectives and Principles of Development Control;
  - The relevant precinct Objectives and Principles of Development Control;
  - The general consistency with the desirable Structure Plans for the relevant precinct; and
  - Any comments from owners of abutting and facing adjacent property within 60 metres of the specific airport development site, separated only by a road, watercourse reserve or open space where an acoustic barrier is not already in place.
- Consideration of the development in the context of any classification toward sensitive or significant impact to the community, or Major Development under the *Airports Act 1996*.

If a development proposal is not identified within the relevant precinct as Envisaged or Non-Complying, it can be considered on 'Merit' and triggers two processes – Agency Referral and Public Notification. The Public Notification process entails notification in a newspaper circulating within the region and advice to the members of the Adelaide Airport Consultative Committee and the associated Airport Planning Coordination Forum. Such a process will assist in informing key groups/affected persons of the proposal, and allow written submission within 15 business days, which will be considered by AAL prior to any decision being made on the proposal.

If a development proposal is identified as being Non-Complying within the relevant precinct, and the proposal is considered by AAL to have Merit, such an application could trigger a Minor Variation to the Adelaide Airport Master Plan under Section 84A of the *Airports Act 1996* for decision by the Minister.

### 7.4.2 Building Assessment Process

All development on-airport is subject to building approvals consistent with the provisions of the *Airports (Building Control) Regulations 1996* under a process commensurate with the Local Government building approval process or private certification under State legislation.

Figure 7.6 as follows is an outline of the processes in terms of Development and Building Approvals, and Construction and Operational Controls.

## 7.5 Commonly Used Planning Definitions

Included within the Glossary of this Master Plan are definitions for varying airport activities consistent with airport needs or existing airport uses. Where a particular land use is not defined, regard should be given to the definitions contained in the *South Australian Development Regulations 2008* and *South Australian Planning Policy Library Terminology List 2011* prepared by DPTI. AAL will be the appropriate adjudicator in any anomaly instances.

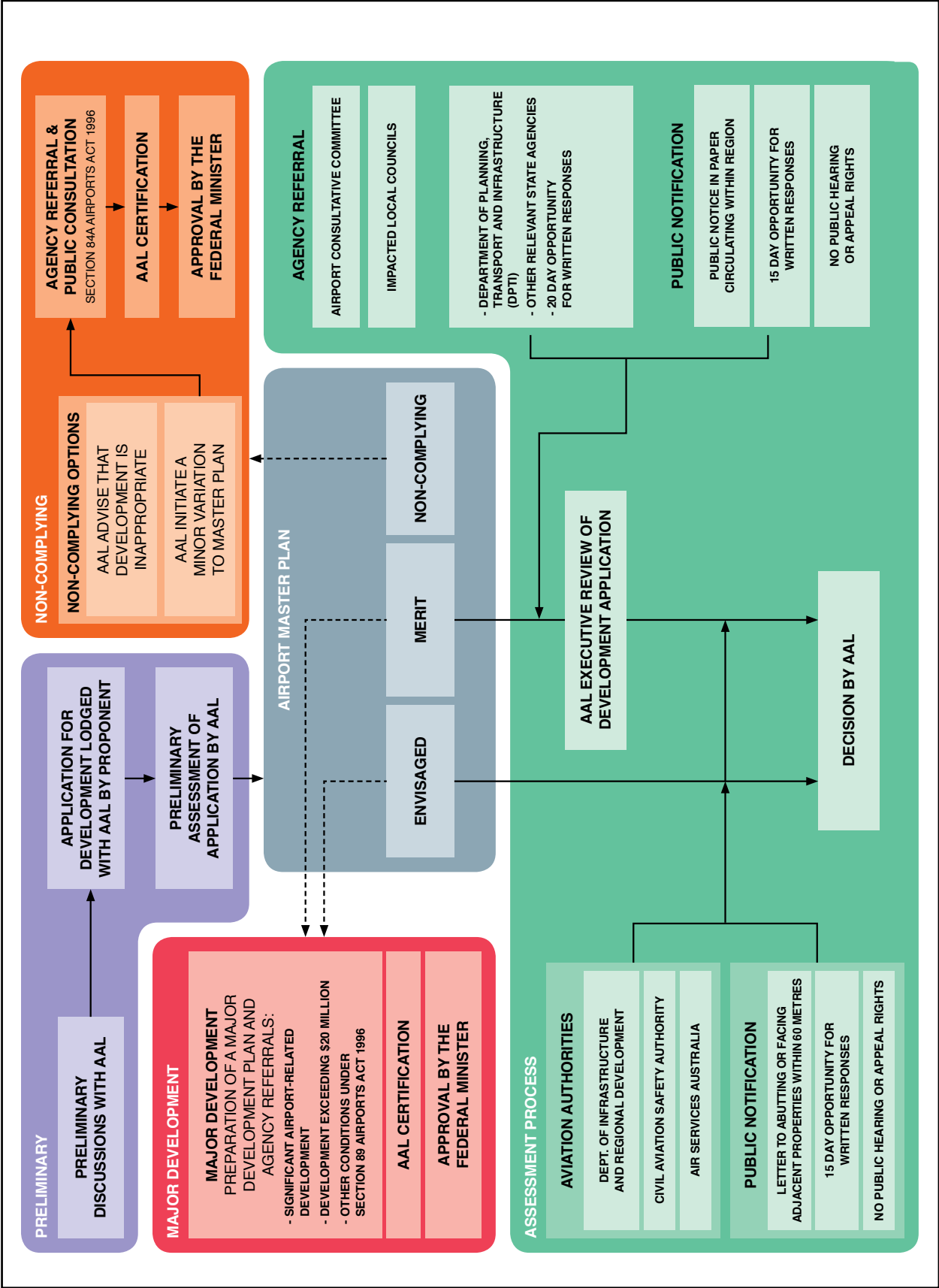


Figure 7.5 Development Decision Matrix

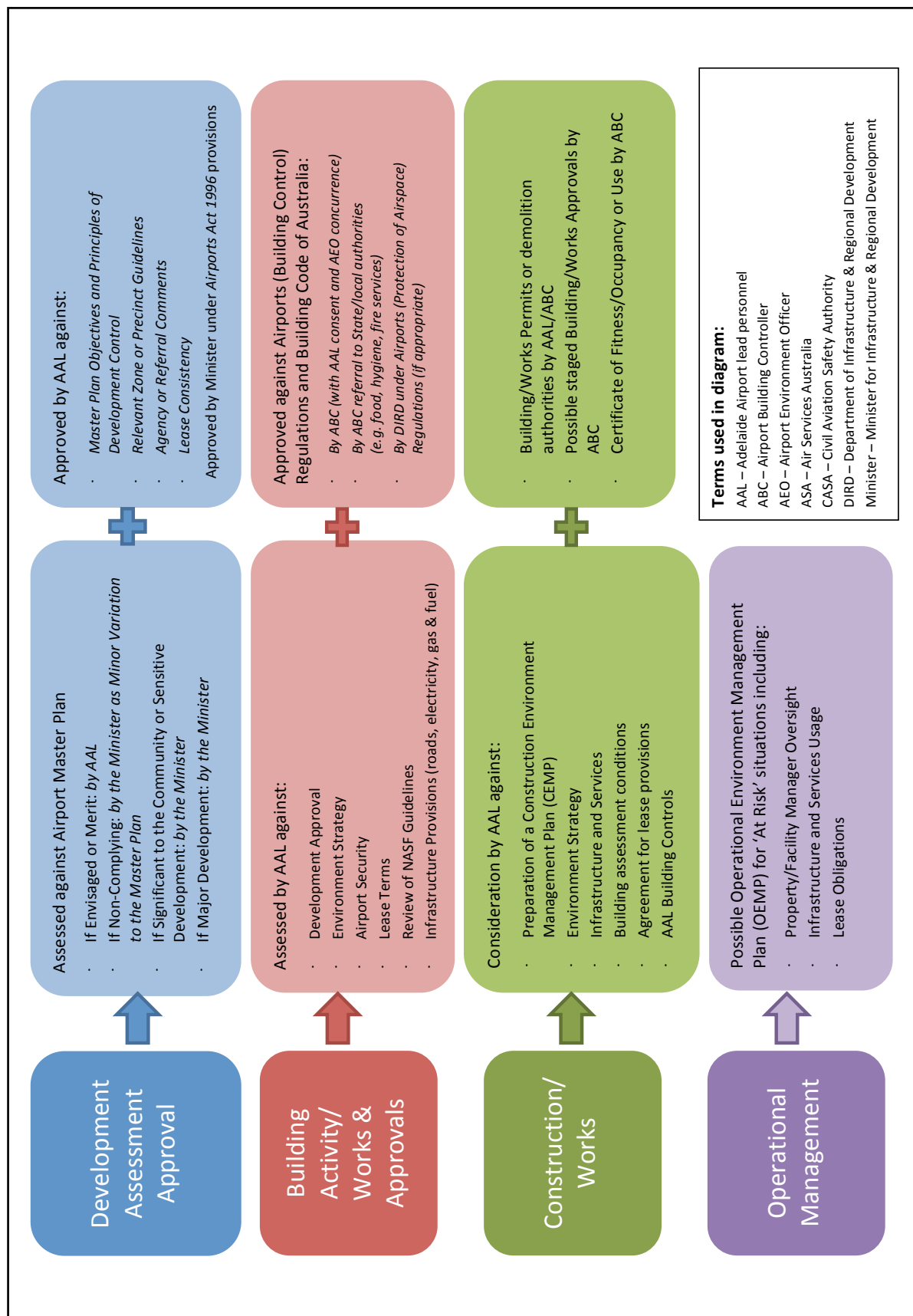


Figure 7.6 Development and Building Approvals Process Diagram

## 7.6 Airport (Adelaide) Zone

### 7.6.1 Introduction

The Airport (Adelaide) Zone is an AAL planning zone that defines the 785-hectare area within which the following land use planning policies apply. These policies consist of Objectives, a Desired Character Statement and Principles of Development Control. These policies provide general guidance as to the forms of development envisaged within the overall zone and provisions to further guide such matters as the design and scale of development.

The zone is further divided into various precincts (a smaller sub-area of the zone) and policy areas, which contain additional specific policies relevant to each identified area. Regard will be given to both the overall zone policies and the more specific precinct policies when assessing whether or not to approve a development proposal.

The Airport (Adelaide) Zone is shown in Figure 7.7.

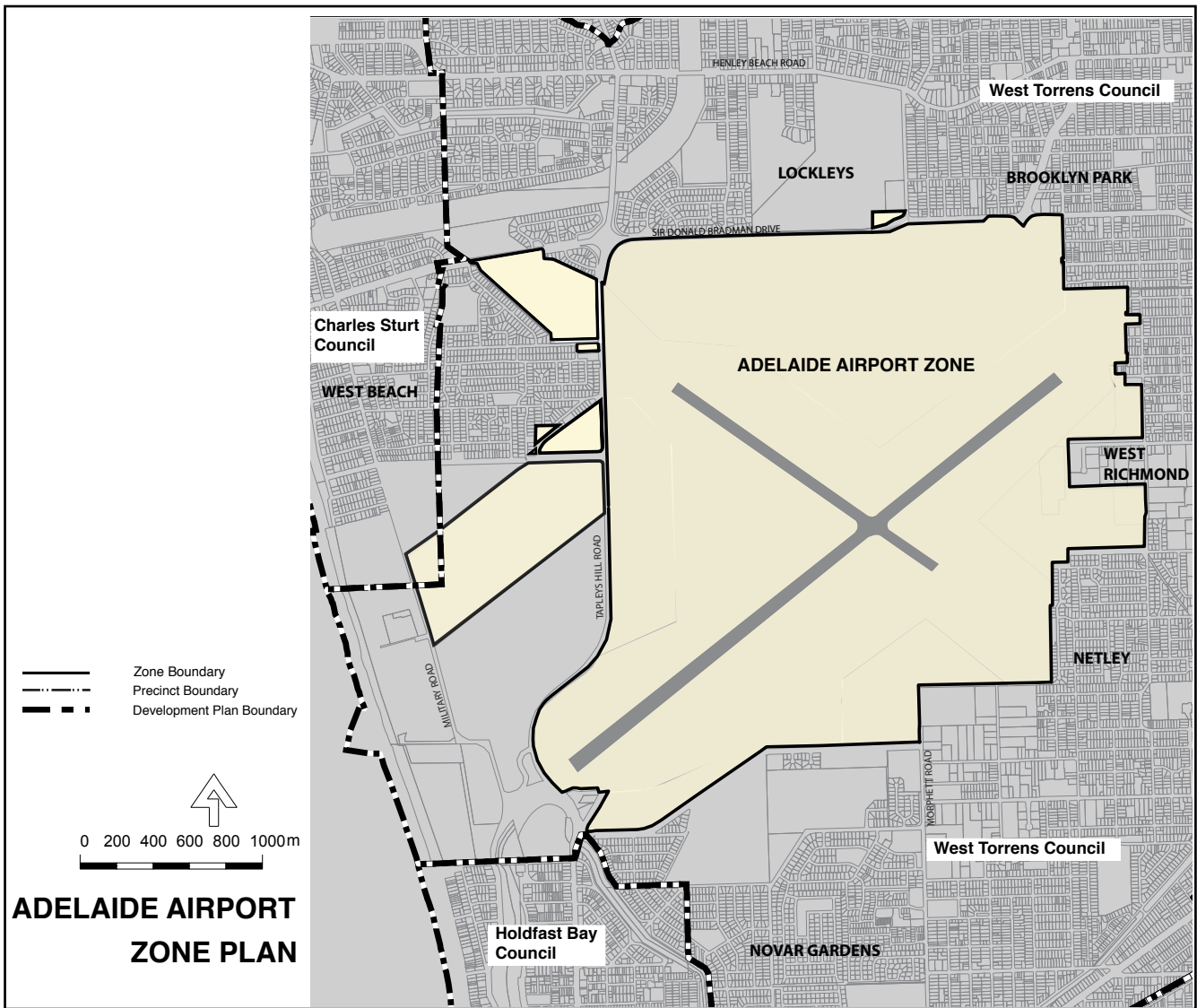


Figure 7.7 Airport (Adelaide) Zone Plan



## 7.6.2 Objectives

The following Objectives apply within the Airport (Adelaide) Zone.

1. Development within the zone which promotes Adelaide Airport's role as:
  - the international, national and regional gateway to South Australia for commuters and tourists;
  - the primary aircraft operations, passenger terminals and airport and aviation related support activities for Metropolitan Adelaide and South Australia;
  - a key element of transport infrastructure for the State, accommodating a range of services and facilities necessary for the safe, convenient, and efficient operation of aviation activities;
  - a major business enterprise providing a transport hub, export facilities, employment and commercial, retail and industrial development opportunities for the western suburbs, Metropolitan Adelaide and South Australia.
2. Development that ensures the long-term operational, safety and commercial aviation requirements of the airport continue to be met.
3. Development of active and passive recreation and other appropriate activities on land restricted by aviation needs.

### Economic Development

4. Development that promotes the economic improvement of Metropolitan Adelaide and the State by:
  - facilitating the movement of passengers and time sensitive freight by infrastructure improvements; and
  - contributing to the viability of the airport as a business enterprise.
5. A zone accommodating a range of airport and export-related industrial and commercial uses, including hotel and ancillary services.
6. Retail development within the zone to include retail shopping facilities that provide a range of convenience and comparison goods to service tourists, visitors and employees of the airport and the surrounding community and other large scale retail facilities with a Metropolitan-wide catchment. Bulky goods retailing is appropriate in parts of the zone.
7. Community facilities within the zone, such as child care, consulting and health care facilities, to service tourists, visitors and employees at the airport and the surrounding community.

### Amenity

8. Development will be acoustically treated to suit forecast noise levels from aircraft operations.
9. Enhancement of the visual and environmental quality of Adelaide Airport through:
  - quality buildings of contemporary design;
  - the provision of aesthetic and screening landscaping;
  - the establishment of landscaped and grassed swales or detention basins
  - where appropriate on-site stormwater management; and
  - sustainable development practices.
10. Development designed and sited to conserve energy and minimise waste.
11. Development located, designed and operated to minimise adverse impact and conflict between land uses, both on the airport and on surrounding areas.
12. The amenity of land and development enhanced with appropriate planting and other landscaping works, using locally indigenous plant species where possible.
13. Development incorporating the principles of water sensitive urban design.
14. Adoption of adequate separation distances between non-aviation and aviation development on airport land, and between development on airport land and off-airport uses, consistent with *Airports (Environment Protection) Regulations 1997*.
15. A safe, secure, crime resistant environment.

### Access and Parking

16. Development that provides for safe and efficient access, movement of traffic, and off street parking.
17. Provision of safe, pleasant, accessible, integrated bike and pedestrian paths.

### 7.6.3 Desired Character

Adelaide Airport is recognised as a gateway to Adelaide and South Australia, providing a significant service of benefit to Metropolitan Adelaide and to South Australia.

Future development will continue to provide economic improvement to Metropolitan Adelaide and the State by:

- maintaining the airport as the international, national and regional gateway to South Australia;
- enhancing the airport as a key element of transport infrastructure;
- facilitating the movement of passengers and time sensitive freight by infrastructure improvements;
- contributing to the viability of the airport as a business enterprise through the provision of commercial, retail and industrial activities; and
- provision of an economic core for the western suburbs of Adelaide and beyond.

Enhanced amenity and environment for the airport is desired through the provision of:

- quality buildings of contemporary, sustainable design; and
- sustainable development activities including, where practical, re-use of recycled water, possible aquifer storage and recovery, improvement of stormwater quality, energy conservation, alternative transport options and the on-site generation of renewable energy.

State and Local authorities control, improve and extend external access to the airport, with internal airport traffic movements generally arranged by AAL unless airport land is licenced to the respective authorities for transport infrastructure purposes. Enhancements include:

- the provision of internal airport roads providing convenient access to the external road system;
- improvements to the surrounding external road system, including the provision of signalised access improvements to and around the airport at key locations;
- the provision of a State public light rail system connecting the airport to the Adelaide CBD; and
- bike and pedestrian paths being provided along some road frontages to the airport, in buffer areas adjacent to creek and drainage lines and in conservation/recreation areas.

### 7.6.4 Principles of Development Control

In determining appropriate development within the Airport (Adelaide) Zone, consideration will be given toward airport sustainability and development principles that successfully meet the economic, social and environmental goals of AAL. These goals are contained within AAL's Sustainability Policy, which is included in the Environment Strategy (Chapter 10) of this Master Plan.

The Principles of Development Control for the Airport (Adelaide) Zone are listed below.

#### Land Use

1. Development of the Adelaide Airport site will accommodate the primary aircraft operations, passenger terminals and airport and aviation-related support activities necessary to support Metropolitan Adelaide and South Australia.
2. A range of services and facilities necessary for the safe, convenient and efficient operation of aviation activities and passenger services at the airport will be provided.
3. Development will ensure that the long-term operational, safety and commercial aviation requirements of the airport continue to be met.
4. The zone should accommodate:
  - a range of airport and export-related industrial and commercial uses; and
  - employment and commercial, retail and industrial opportunities commensurate with the airport's role as a major business enterprise serving metropolitan Adelaide and the State.
5. Development of active and passive recreation and other appropriate greenway activities may occur on land restricted by aviation needs.

#### Form of Development

6. Development should not be undertaken unless it is consistent with the desired character for the zone.
7. Development may be staged, having regard to infrastructure requirements.

#### Retail Development

8. Retail development should be of a size and type, and be located, to reflect its role within the airport's business environment and its standing as a specialised Activity Precinct in the western metropolitan area.

9. Smaller scale retail facilities may be appropriate in some areas, servicing the day-to-day needs of employees and/or the travelling public.
10. Larger scale retail facilities, servicing the needs of the surrounding community or wider regional or metropolitan-wide catchments, should be located to take advantage of the airport's central location and accessibility to major roads.
11. Larger scale retail facilities, including bulky goods, convenience and comparison retailing should:
  - provide choice in the range of goods and services available to the community and visitors;
  - expand retail employment opportunities within the region;
  - provide a competitive environment for the benefit of customers; and
  - have appropriate signage.
12. Bulky goods retailing should provide for pick-up areas to avoid the necessity for customers to carry large items to vehicles.

### Office Development

13. Office development should provide suitable services and be of a size and scale commensurate to the airport's major business enterprise role, and employ sustainable initiatives suited for the age, scale, size and operational efficiency of the facility.

### Industrial Development

14. Industrial development should have an emphasis toward transport and distribution activities, warehousing and storage in appropriate areas, with a focus on interrelationship with aviation, freight, engineering and transport networks, and employ suitable sustainable initiatives such as solar energy, natural light and sun shading as appropriate.
15. Industrial development should be compatible with other industrial developments in adjoining zones or precincts and occur without adverse effects on the health and amenity of occupiers of those adjoining zones or precincts.

### Community Facilities

16. An appropriate range of community facilities, such as childcare, consulting and health care facilities, should be provided to service tourists, visitors and employees at the airport and the surrounding community in appropriate localities.

### Hazards

17. All development will incorporate measures to ensure that the operational integrity of adjacent navigation and communication systems is maintained at all times.
18. Buildings are to be designed and built of external materials that will not result in interference with aircraft navigational facilities located within the airport and not contribute to excessive glare and reflections externally.
19. Landscaping, stormwater management, waste management and construction activities should not increase the attraction of wildlife and birdlife to the airport.
20. Lighting associated with buildings and internal roads should not result in a hazard to aviation operations and should be constructed in accordance with the airport's requirements.

### Building Height

21. Buildings are to be sited and be of a height that will not result in a breach of the OLS and navigational clearance zones (PANS-OPS) associated with airport runways.

### Public Safety Zone

22. Within suitable distance parameters or at the end of runway locations, development should be restricted to those uses that do not result in intense human activities and be left as open space or low-intensity storage facilities.

### Amenity

23. Development should provide clear separation distances from adjoining residential zones and incorporate landscape treatments, and consider building orientation to maintain and enhance residential amenity.
24. Suitable noise attenuation/amelioration measures should be provided to minimise noise impacts on the adjacent off-airport residential areas (noting that some residential areas in sensitive zones have already undergone noise insulation and that any nearby new residential development within these ANEF zones would be expected to have been constructed to Australian Standard – AS2021-2000).
25. Airport buildings should be sited, designed and constructed to protect occupants from aircraft noise in accordance with Australian Standard – AS2021-2000.
26. Development should be located, designed and operated to prevent adverse impact and conflict between land uses, including service/delivery facilities and lighting to be oriented away from facing residential zones.

27. Development and the amenity of land should be enhanced with appropriate acoustic screening, planting and other landscaping works.

### Energy Efficiency

28. Development should be designed and sited to conserve energy by incorporating the following measures:
- suitable insulation, doors and window seals and internal/external blinds;
  - insulation of hot water pipes and fittings and the utilisation of timers and thermostats;
  - selection of heating and cooling including time/occupancy controls;
  - energy efficient lighting and maximising the use of natural light where possible;
  - alternative energy supplies including installation of solar panels, or for larger facilities – on-site cogeneration plant;
  - thermal building performance improvements on new buildings; and
  - metered electricity consumption which is monitored by building area and through smart meters.
29. Development should provide for efficient solar access to buildings and open space all year round.
30. Development should facilitate the efficient use of photovoltaic cells and solar hot water systems by:
- taking into account overshadowing from neighbouring buildings; and
  - designing roof orientation and pitches to maximise exposure to direct sunlight.

### Building Appearance

31. Buildings should be of a high quality standard and visual appearance, and present an attractive façade to adjacent public roads and any internal roads, consistent with building use and corporate images.
32. The design of a building may be of a contemporary nature and exhibit an innovative style provided the overall form is sympathetic to the scale of development in the area and with the context of its setting with regard to shape, size, materials and colour.
33. Development should have a horizontal emphasis incorporating interesting design elements.

34. Buildings should be of solid construction and appearance with façades visible to the public incorporating design elements that achieve visual articulation and relief such as:

- windows;
- canopies;
- porticos and verandas;
- parapet detailing and modelling; and
- sun protection.

35. The external walls of buildings should integrate earthen colours and tones, as well as blues and greys in lighter tones that match the skyline, varying with the size and scale of the development and the locality. Stronger colour schemes may occur to provide visual interest if appropriate to the form of development.

### Access and Parking

36. Access to development should be provided in accordance with the Ground Transport Plan and should take into account the need to accommodate future airport development.
37. On-site parking should be provided that:
- meets the anticipated demand of development, supported by appropriate parking studies;
  - provides flexibility for further increases and taking into account public transport availability;
  - incorporates appropriate bicycle parking;
  - considers opportunities for shared parking arrangements within the airport site.
38. Development should be provided with safe and convenient access to AustRoads criteria, supported by appropriate traffic studies, that:
- avoids unreasonable interference with the flow of traffic on adjoining roads;
  - accommodates the type and volume of traffic likely to be generated by the development or land use; and
  - is sited and designed to minimise any adverse impacts on the occupants of and visitors to neighbouring properties.



39. Development should make sufficient provision on each individual site for the loading, unloading and turning of all traffic likely to be generated.
40. Vehicle parking areas should be sited and designed in a manner that will:
  - not inhibit safe, secure and convenient traffic circulation;
  - result in minimal conflict between customer, employee and service vehicles;
  - minimise the number of vehicle access points to public and internal roads;
  - where possible, provide the opportunity for shared use of car parking and integration of car parking areas with adjoining development to reduce the total extent of vehicle parking areas and the requirement for access points; and
  - enable extensive landscaping that will shade and enhance the appearance of such areas.
41. Bike and pedestrian paths should:
  - be designed to facilitate efficient links to neighbouring paths and facilities; and
  - be designed and provided in accordance with relevant provisions of the Australian Standards and AustRoads *Guide to Traffic Engineering Practice*.

### Service Areas

42. Mechanical plant, storage and service areas required for buildings and structures should be suitably located, designed and screened from public view with noise amelioration measures included to protect adjacent sensitive uses.
43. Storage areas should be suitably screened to present an attractive façade to adjoining development and from public and internal roads, and be of a suitable structure not susceptible to wind damage.

### Waste

44. New developments should aim to reduce the amounts of construction waste going to landfill by preparation of a construction waste minimisation plan for use during construction and suitable waste recycling arrangements post occupancy.

### Landscaping

45. Landscaping should be provided as a part of all development to complement land set aside for buffers and greenways, and should:
  - enhance the visual amenity of the zone;
  - be of a high standard of design and visual appearance;
  - facilitate stormwater management strategies;
  - be undertaken in a manner that will not attract bird life and compromise aircraft operational safety;
  - use locally indigenous plant species where possible;
  - employ plantings that are drought tolerant; and
  - ensure adequate sightlines at access points.

### Water Conservation

46. Development should be designed to maximise conservation and minimise consumption of water through:
  - implementation of automated leak detection devices;
  - use of water saving devices and fittings, such as dual flush toilets and water-saving shower heads;
  - use of water efficient appliances such as suitably rated dishwashers;
  - water consumption metered and monitored by building area; and
  - recycled or treated stormwater utilised from available network supply points around the airport.

### Materials

47. Design, development and construction activities will consider materials selection and use strategies to:
  - encourage recycling or rejuvenation of materials where feasible;
  - use materials low in volatile organic compounds; and
  - encourage selection of building materials that are 100-per-cent recyclable.

### Stormwater Management

48. Development, construction and operational activities will consider stormwater management strategies to:
  - reduce the risk of impacts associated with flooding;
  - improve the quality of stormwater run-off;
  - minimise pollutant transfer to waterways and drainage channels; and
  - provide opportunities for re-use of stormwater and treated waste waters.

49. Development should provide stormwater management strategies that can be adopted for each land parcel, either individually or collectively for groups of buildings, and should incorporate grassed swales, gross pollutant traps and flow retention areas where possible.
50. Stormwater drainage systems should be designed according to function, space and risk of wildlife attraction, be appropriately vegetated, and allow passive and active recreation facilities in suitable locations.
51. Internal roads and car parking areas should be designed to direct stormwater to adjacent landscaping and vegetated stormwater swales, where appropriate. Where possible, porous paving (or pipe drainage to tree root levels) can be considered, as well as 'soft shoulders'.
52. Stormwater runoff from roofing should be separated and treated in a separate manner to ground surface flows where possible, and opportunities for re-use optimised.
53. Stormwater management systems should:
  - maximise the potential for stormwater harvesting and re-use, either on-site or as close as practicable to the source; and
  - utilise, but not be limited to, one or more of the following harvesting methods:
    - the collection of roof water in tanks;
    - the discharge to open space, landscaping or garden areas, including strips adjacent to car parks;
    - the incorporation of retention facilities; and
    - aquifer storage and recovery.

### Recreation and Greenways

54. Recreation areas should provide pleasant, functional and accessible formal and informal open spaces.
55. Bike and pedestrian paths should service recreation areas or be located in close proximity to enable ease of access.
56. Development in recreation areas should not compromise the operational or safety requirements of the airport.
57. Development in recreation areas should:
  - be clustered, where practical, to ensure that the majority of the site remains open;
  - where practical, be developed for multi-purpose use; and
  - be located and designed to maximise safety and security.

58. Recreation areas should be sited and designed to minimise negative impacts on the amenity of the locality.

### Signage

59. Outdoor signage, both free-standing and attached to buildings, should be located, sited, designed, constructed of such materials and be of a size and shape so as to:
  - be in scale and proportion with the development as a whole, the buildings therein and the desired character of the area;
  - be coordinated with and complement the architectural form and design of the building it is to be located on or adjacent to;
  - not distract attention from traffic control information and other directional signage; and
  - clearly identify retailing activity where appropriate.
60. The number of signs associated with a development should be minimised to avoid clutter, disorder and untidiness of buildings and their surrounds.

### Crime Prevention

61. Development should:
  - be designed to provide a safe, secure, crime resistant environment;
  - provide a robust environment that is resistant to vandalism and graffiti;
  - provide lighting in frequently used public spaces and around public facilities such as toilets, telephones, bus stops and car parks;
  - use landscaping to discourage crime; and
  - avoid pedestrian entrapment spots and movement predictors.

## 7.7 Runways Precinct



Figure 7.8 Runways Precinct Plan

### 7.7.1 Objective

The Objective of the Runways Precinct is to provide an area accommodating:

- safe aircraft landing, take off and taxiing operations; both for fixed wing and rotary services;
- aircraft navigation aids, radar and communications equipment;
- air traffic control, aviation rescue and fire-fighting and meteorological services;
- aviation related support industry and training and emergency response services; and
- aquifer storage and recovery, and water harvesting activities in suitable locations.

### 7.7.2 Desired Character

The Runways Precinct occupies 391 hectares (50%) of the airport site, is the major portion of the airport and is bounded by all other precincts. This precinct is an area of the airport to be protected for the operation and movement of aircraft and associated activities.

Development within the Runways Precinct should focus on aviation needs with related ancillary and support facilities enhancing the airport's operation, while also catering for appropriate mechanisms to enhance environmental sustainability.

## 7.7 Runways Precinct

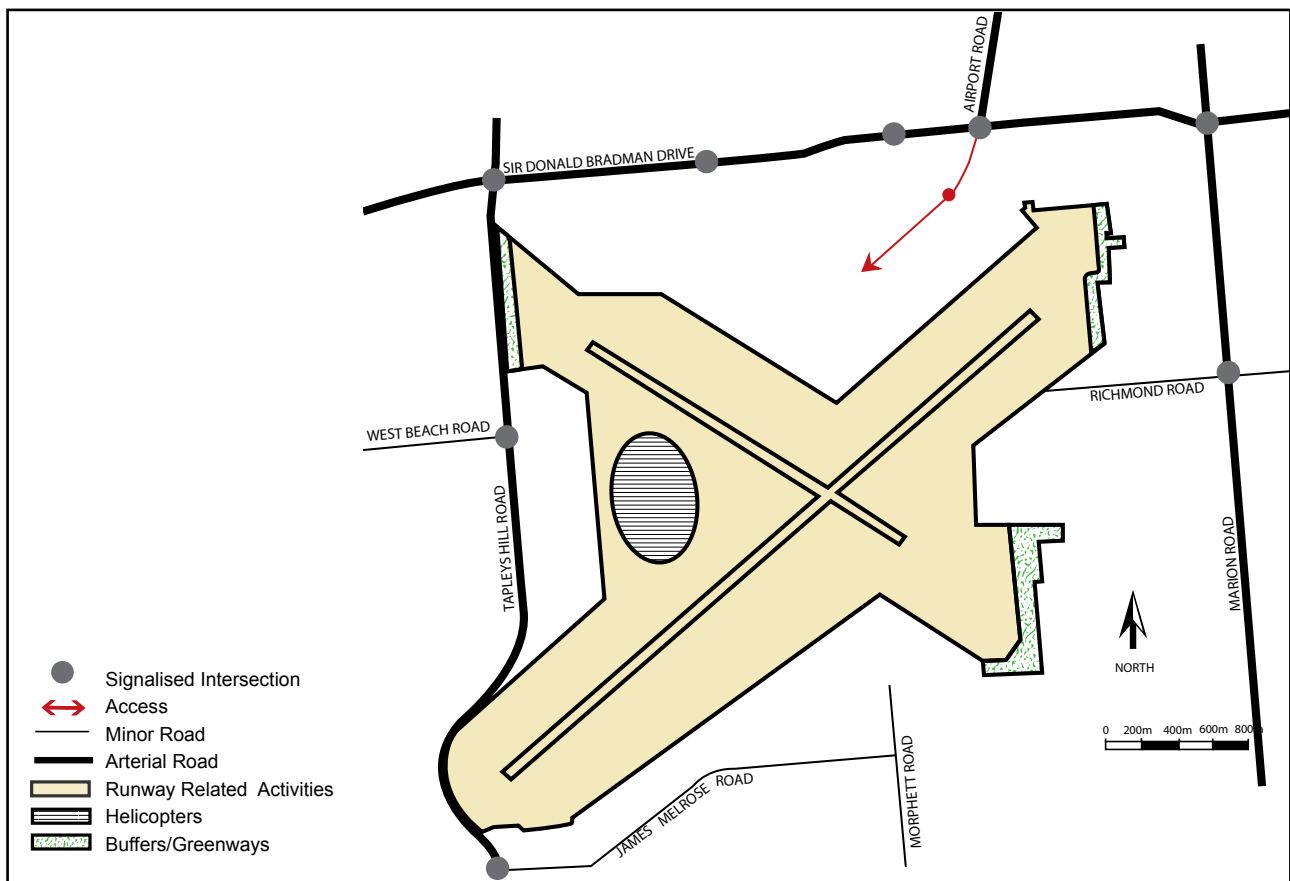


Figure 7.9 Runways Precinct Structure Plan

### 7.7.3 Principles of Development Control

#### Structure Plan

1. Development should be generally in accordance with the Runways Precinct Structure Plan (Figure 7.9) and the forms of development listed as Envisaged Development.

#### General

2. Runways, taxiways and aircraft movement areas should be designed and developed:
  - to maximise the capacity of the existing infrastructure;
  - to ensure safe and efficient movement of aircraft operations;
  - to minimise aircraft noise impacts and environmental impacts generally;

- in a cost effective manner; and
- to comply with national and international mandates and standards.

#### Access

3. Access to the precinct should be strictly controlled and the area suitably secured from adjacent precincts with appropriate security perimeter fencing incorporating access control and surveillance monitoring as necessary.



## 7.7 Runways Precinct

### 7.7.4 Procedural Matters

Outlined below is detail on the types of activities considered suitable for the Precinct, along with the identification of uses deemed inappropriate.

Runways Precinct Uses	
Envisaged Development	Non-Complying Development
Aircraft washdown	Brand outlet centre and associated support retailing
Animal agistment for export purposes	Bulky goods retailing
Area approach control centre	Childcare centre
Aviation-related support industry	Dwelling
Aviation fuel pipeline	Hotel
Car parking	Motel
Communication facilities	Restaurant
Emergency staging area	Retail showroom
Fire-fighting and rescue facilities	Service trade premises
Helicopter landing and parking	Shop
Horticulture	Waste transfer station
Renewable Energy Installations	
Runway-related activities/ facilities	
Soil treatment facility	
Taxi holding area, amenities and fuel depot	

### Agency Referral and Public Notification

Agency Referral and Public Notification is undertaken for all forms of development that are not listed as Envisaged Development in accordance with Figure 7.5 Development Decision Matrix in Section 7.3.1.

## 7.8 Terminals & Business Precinct



Figure 7.10 Terminals & Business Precinct Plan

### 7.8.1 Objectives

The Objectives of the Terminals & Business Precinct are to provide:

- an area primarily accommodating facilities for the safe, efficient and economic handling of aircraft, passengers and freight, and related services and support activities such as car parking and storage, hotel, retailing and offices;
- development of office, commercial, retail and industrial facilities that contribute to the viability of the airport as a major business enterprise, and provide a business core for the western suburbs of Adelaide; and
- an area accommodating business, education, technology and research facilities in an office park-like setting, allowing suitable mixes with warehouse and storage activities and aviation-related support industry.

### 7.8.2 Desired Character

The Terminals & Business Precinct occupies 165 hectares (21%) of the airport site. It is located immediately to the south of Sir Donald Bradman Drive and Tapleys Hill Road to the west. The precinct incorporates the primary road access to the Airport Terminals, being Sir Richard Williams Avenue.

The Terminals & Business Precinct is the area of the airport primarily set aside for the safe, efficient and economic facilitation of passengers and support infrastructure associated with the arrival and departure of persons and freight by air. Future development will be located, designed and operated to enhance this environment, whilst also allowing areas for research, innovation and business development in science, technology and education incorporating complementary freight and distribution services within the precinct.

As the precinct primarily represents the gateway of Adelaide Airport, it is important that development is of a high standard of design that enhances the amenity of the airport environment; particularly where it is in a high exposure location or adjacent the public road network, and should incorporate appropriate landscaping.

A small portion of this precinct is located on the northern side of Sir Donald Bradman Drive adjoining May Terrace. This site is currently used for recreational purposes associated with Kooyonga Golf Course and horticultural activities (such as Trees for Life).

The precinct is divided into five policy areas:

- Terminals & Aviation
- Office Park
- Export Park
- Retail
- Burbridge Business Park

The development intent for each of the policy areas is briefly described below.

### Terminals & Aviation

The Terminals & Aviation Policy Area is the major gateway to Adelaide Airport and is the 'heart' of the major and specialised activity centre for transportation, employment and commercial development for metropolitan Adelaide and the State. The policy area accommodates terminals and related access infrastructure, car parking, retailing activities, hotel, and taxi/bus drop-off and collection services. It also provides ancillary activities such as aviation freight handling facilities including aircraft maintenance buildings, hangars, catering services, commercial/light industrial activities, car rental storage, valet operations and car parking.

### Office Park

The Office Park Policy Area envisages the centralisation of offices that can service the aviation services related to the airport and business with an affinity of travel on a locality central to Metropolitan Adelaide.

### Export Park

The Export Park Policy Area is a multi-purpose commercial park covering approximately seven hectares in area and is located immediately east of the Airport entrance at the intersection of Sir Donald Bradman Drive and Sir Richard Williams Avenue. New and existing development can incorporate commercial offices, office/warehousing, purpose-built aviation freight, engineering, and airport servicing activities that would benefit from the nearby airside accessibility.

### Retail

The Retail Policy Area is directed at bulky goods developments in close proximity to the existing IKEA store so as to establish a pocket of bulky goods retailing that capitalises on the main road frontage.

### Burbridge Business Park

This policy area is being developed as a 'business park' to cater for high technology office, commercial and warehouse developments of varying sizes and ancillary activities to the Terminals and Aviation Support Policy Area such as car parking and storage. It also includes the aviation fuel storage complex.

Development should have regard to, and capitalise on, the adjoining greenway area that fronts Sir Donald Bradman Drive in the form of a landscaped linear park incorporating a bicycle/pedestrian path.

## 7.8 Terminals & Business Precinct

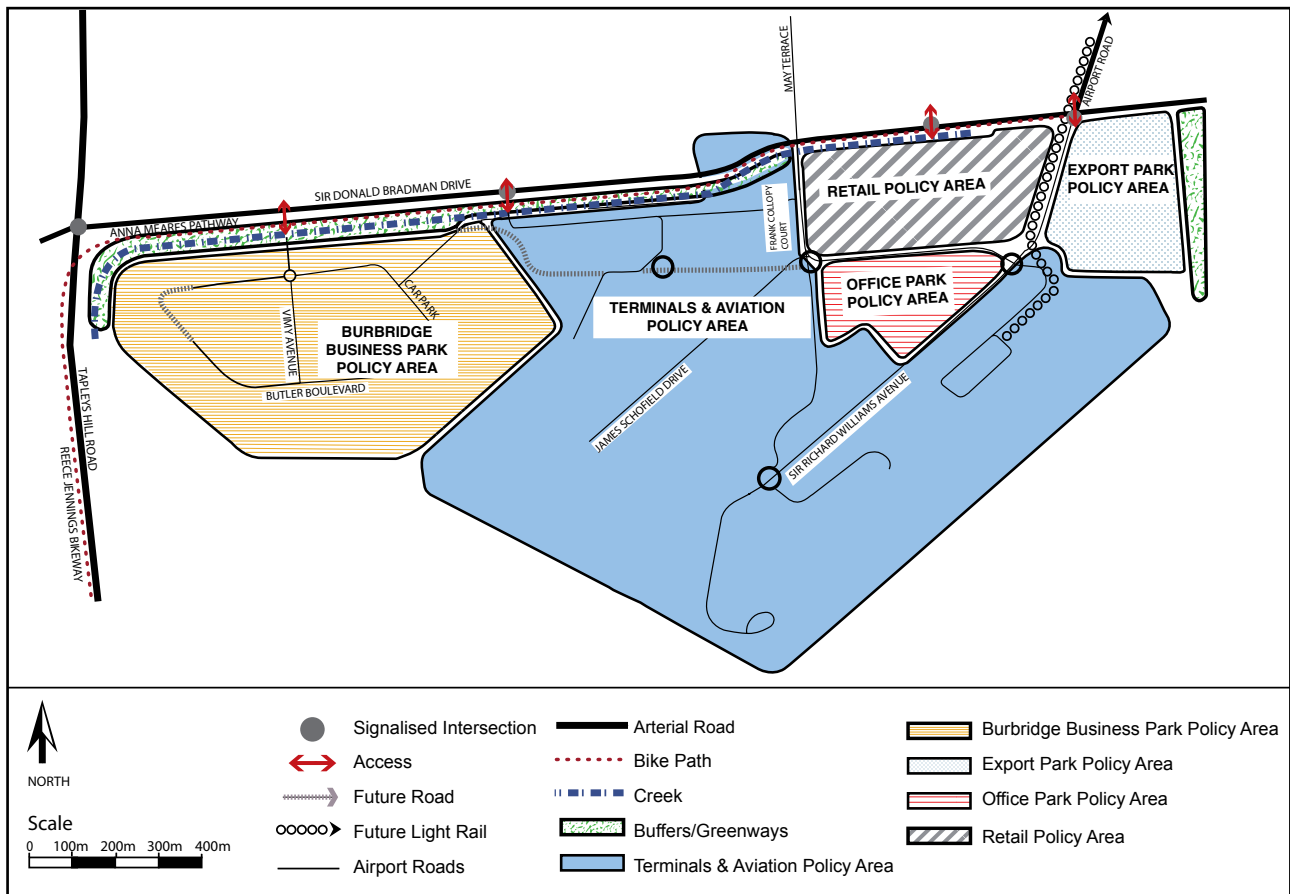


Figure 7.11 Terminals & Business Precinct Structure Plan

### 7.8.3 Principles of Development Control

#### Structure Plan

1. Development should be generally in accordance with the Terminals & Business Precinct Structure Plan (Figure 7.11) and the form of development listed as Envisaged Development.

#### Form of Development

2. Development should take into account the need to minimise disruption to ongoing airport operations and incorporate:
  - concepts that will accommodate future expansion;
  - new technologies; and
  - changes in operations.
3. Development should not compromise aeronautical equipment on-airport, airport operations and aviation-related support activities.
4. Development should be user-orientated and sensitive to the needs of the industry, passengers, employees and the community in general and should consider the following:
  - efficiency of the operation;
  - convenience;
  - safety;
  - security;
  - impact on the environment; and
  - the need for several ingress and egress traffic access routes for passengers.



5. Development of the precinct should minimise the potential for adverse impact on residential areas by:
  - providing landscaping along the frontage of Sir Donald Bradman Drive, resulting in an enhanced amenity and screening for buildings;
  - establishing a park-like setting incorporating integrated and shared landscaping;
  - providing quality buildings of contemporary design, resulting in an attractive appearance;
  - establishing on-site car parking;
  - providing appropriate access to Sir Donald Bradman Drive and an internal road layout catering for the volume and type of traffic generated;
  - providing appropriate stormwater management and drainage systems to minimise flooding risk; and
  - enclose any noise-generating equipment where there is any prospect of the equipment causing a detrimental effect on residential areas.

### Terminals

6. Terminals should be:
  - worthy as gateways to Metropolitan Adelaide and South Australia;
  - a catalyst to the airport's development and economy; and
  - provide a premier service to international, domestic and regional travellers, supporting these groups as appropriate.

### Built Form

7. Commercial and retail development should be designed to complement and expand the commercial and retail activities consistent with the form of Export Park and IKEA retailing activities, and may include other retailing and/or tourism initiatives that will benefit from the economic activity at Adelaide Airport.
8. Development within the Burbridge Business Park Policy Area should be set back from the Sir Donald Bradman Drive and Tapleys Hill Road property boundaries to accommodate drainage swales and landscaping treatment.
9. Building structures are to be compatible with the OLS constraints.



## 7.8.4 Procedural Matters

Outlined below is detail on the types of activities considered suitable for the overall Precinct, along with the identification of uses deemed inappropriate, which takes into account the Desired Character for the specific individual policy areas.

The following table does not apply to new development within the Burbridge Business Park Policy Area. A separate table of Envisaged and Non-Complying uses for the Burbridge Business Park Policy Area follows.

Terminals & Business Precinct Uses (excluding the Burbridge Business Park Policy Area)		
Envisaged Development		Non-Complying Development
Advertisement	Motel	Brand Outlet Centre
Aircraft hangar	Motor Repair Station	Dwelling
Aircraft washdown	Office	Farming
Air traffic control tower/area approach control centre	Office/Warehouse	General Industry
Animal agistment for export purposes	Passenger terminals	Horse keeping and equestrian area
Aviation fuel depot and pipelines	Petrol filling station	Road Transport Terminal
Aviation-related support industry	Police station	Special Industry
Bulky goods retailing	Renewable Energy Installations	Wholesale plant nursery
Bus terminal	Restaurant	
Call centre, or back office	Retail showroom	
Car parking and storage	Runway-related activities/facilities	
Car rental, valet and vehicle storage	Scientific research facility	
Childcare centre	Service trade premises	
Conference facility	Shop	
Consulting room and Medical Centre	Store	
Fire-fighting & rescue facilities	Taxi holding area amenities and fuelling depot	
Freight and distribution centre	Technology and research centre	
Hotel	Telecommunications facility	
Indoor Recreation Centre	Warehouse	

The following table of Envisaged and Non-complying uses relates solely to new development in the Burbridge Business Park Policy Area.

Terminals & Business Precinct Uses (Burbridge Business Park Policy Area only)		
Envisaged Development		Non-Complying Development
Advertisement (except within 40m of Sir Donald Bradman Drive)	Freight and distribution centre	Air traffic control tower/Area approach control centre
Aviation fuel depot and hydrants	Gymnasium/Health centre	Brand outlet centre
Business and Professional Services	Horticulture	Bus terminal
Call Centre, or back office facilities	Office	Community centre
Car parking and vehicle storage	Office/Warehouse	Driver training school
Childcare centre	Recreation	Dwelling
Conference facility	Scientific research facility	General industry
Consulting room and Medical Centre	Shop (to serve the day-to-day needs of the workforce and visitors to the precinct)	Helicopter landing and parking
Educational establishment	Store	Horse keeping and Equestrian area
Fast food outlet (to serve the day-to-day needs of the workforce and visitors to the precinct)	Technology and Research centre	Motor repair station
	Telecommunications tower facility	Passenger terminals
		Petrol filling station
		Place of worship
		Police station
		Road transport terminal
		Service industry
		Special industry

## Agency Referral and Public Notification.

Agency Referral and Public Notification is undertaken for all forms of development that are not listed as Envisaged Development in accordance with Figure 7.5 Development Decision Matrix in Section 7.3.1.

## 7.9 Torrens Precinct



Figure 7.12 Torrens Precinct Plan

### 7.9.1 Objectives

The Objectives of the Torrens Precinct are to provide:

- an area primarily accommodating a range of recreation, leisure and sporting opportunities in an open space environment; and
- residential development for the aged, community housing or like activity, in a suitable location.

### 7.9.2 Desired Character

The Torrens Precinct occupies 19 hectares (2%) of the airport site. It is located to the west of Tapleys Hill Road and to the south of Burbridge Road. Residential development is immediately adjacent the precinct.

In addition to providing a relatively open approach to the runway system to the east of Tapleys Hill Road, the precinct may also be developed with recreation and sporting facilities and accommodation for the aged or community housing. Development will not impact on the continued operations of the airport.

Any development should include sufficient on-site car parking to meet the needs of the development.

## 7.9 Torrens Precinct

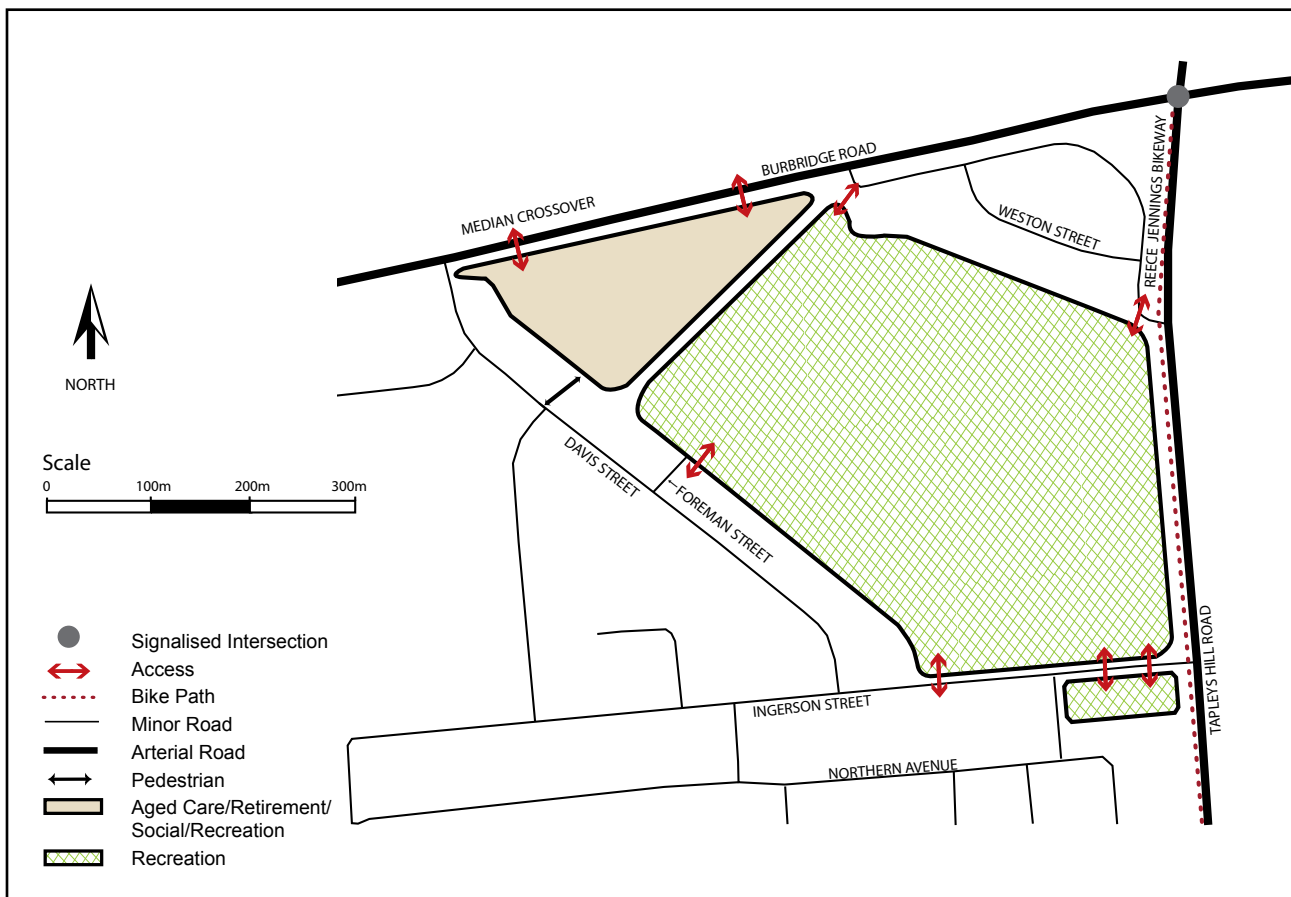


Figure 7.13 Torrens Precinct Structure Plan

### 7.9.3 Principles of Development Control

#### Structure Plan

1. Development should be generally in accordance with the Torrens Precinct Structure Plan (Figure 7.13) and the form of development listed as Envisaged Development.

#### Amenity

2. Any lighting associated with night time usage, including recreation activities and car parking areas, should be located and designed in a manner that promotes the safety of aviation and users of the facilities and avoids excessive light spill beyond the site.

#### Residential Development

3. Residential development for the aged, or community housing should:
  - be designed to provide safe, attractive, convenient and comfortable living conditions for residents;
  - be provided with pleasant and functional open space and landscaping to meet the needs of residents;
  - be of a form and scale that is residential rather than intensively institutional in character; and
  - incorporate any noise control features, consistent with AS 2021-2000 as appropriate.

#### Stormwater

4. Where practicable, recreation areas and associated facilities should be irrigated with, or serviced by the re-use of treated stormwater runoff and/or treated effluent from the Glenelg Waste Water Treatment Plant.



## 7.9 Torrens Precinct

### 7.9.4 Procedural Matters

Outlined below is detail on the types of activities considered suitable for the Precinct, along with the identification of uses deemed inappropriate.

Torrens Precinct Uses	
Envisaged Development	Non-Complying Development
Advertisement	Air traffic control tower
Aged or Residential care facility or a care facility of a similar nature*	Area approach control centre
Car parking and storage	Brand outlet centre
Clubroom and associated community facility (associated with recreation facilities)	Bus terminal
Conference facilities (associated with recreation facilities)	Caravan park
Consulting rooms and Medical Centre	Dwelling (other than aged care facility or a care facility of a similar nature, retirement village or community housing of a similar nature)
Indoor recreation centre and associated facilities	Fire-fighting and rescue facilities
Outdoor recreation including all sporting pursuits such as tennis, cricket, hockey, soccer fields, athletics etc.	Helicopter landing and parking
Restaurant (associated with recreation facilities)	Industry
Retirement village or group or community housing of a similar nature	Motor repair station
	Petrol filling station
	Restaurant (not associated with recreational facilities)
	Retail showroom
	Service trade premise
	Shop
	Warehouse

\*Note: any expansion of the existing aged/residential care facility or creation of a further complex is classified as a Sensitive Development under Section 71A (2) of the *Airports Act 1996*, requiring prior clearance from the Commonwealth Minister on its possible development, and if gained, necessitating a Major Development Plan consultation process.

### Agency Referral and Public Notification

Agency Referral and Public Notification is undertaken for all forms of development that are not listed as Envisaged Development in accordance with Figure 7.5 Development Decision Matrix in Section 7.3.1.

## 7.10 Tapleys Precinct



Figure 7.14 Tapleys Precinct Plan

### 7.10.1 Objectives

The Objectives of the Tapleys Precinct are to provide:

- a highway activity centre primarily accommodating large scale retailing facilities such as a Brand Outlet Centre and associated support retail activities, supermarket and liquor store, bulky goods retailing, retail showrooms and other shops and particularly those with a metropolitan-wide catchment, and those which provide services to the western region of Adelaide; and
- accommodation of aviation services such as air traffic control, air approach control centre, meteorological activities and helicopter support activities, including aviation retrieval facilities and emergency services.

### 7.10.2 Desired Character

The Tapleys Precinct occupies 37 ha (5%) of the airport site. It is located to the east of Tapleys Hill Road, generally opposite the intersection of West Beach and Tapleys Hill Roads.

The precinct has an arterial road location and therefore exposure to a very significant traffic volume along Tapleys Hill Road. Access is gained from the signalised intersection of Tapleys Hill Road and West Beach Road, along with other access points along Tapleys Hill Road.

The Tapleys Precinct can accommodate large-scale retailing facilities of a regional or metropolitan-wide catchment, with supporting shops and services consistent with its highway location. Airport-related activities and emergency services facilities are also located in the precinct, along with associated helicopter support services.

## 7.10 Tapleys Precinct

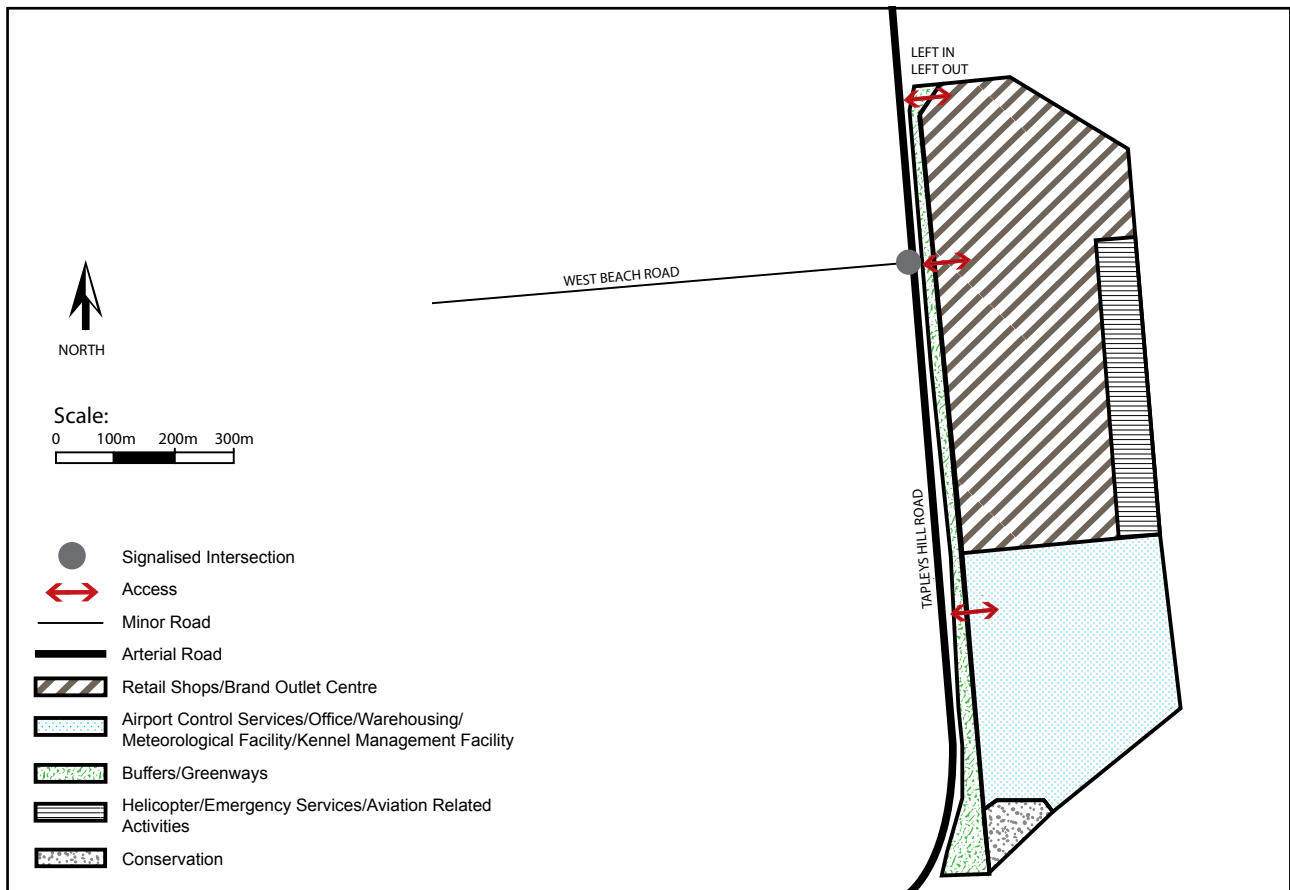


Figure 7.15 Tapleys Precinct Structure Plan

The southern section of the precinct, while currently accommodating aviation services, could allow future retail or commercial expansion, pet kennels and aviation-related support industry and emergency services.

A landscaped buffer is in place along the Tapleys Hill Road frontage, with buildings being of a contemporary design, and with a consistent architectural and signage theme when viewed from Tapleys Hill Road. Buildings are to have a horizontal emphasis and be designed to reduce their visual bulk through design elements such as articulation, colour and detailing and variation to façades.

Car parking areas will be landscaped to enhance amenity and provide screening and shade.

### 7.10.3 Principles of Development Control

#### Structure Plan

1. Development should be generally in accordance with the Tapleys Precinct Structure Plan (Figure 7.15) and the forms of development listed as Envisaged Development.

#### Built Form

2. Development should have a consistent architectural theme and present an attractive and obvious visual appearance particularly when viewed from Tapleys Hill Road.

#### Retail

3. Building and structures should not generally exceed 50% site coverage and the extent of parking and means of safe and convenient access to AustRoads criteria are to be supported by appropriate parking and traffic studies.
4. Development should be setback from the Tapleys Hill Road boundary to enable the progressive remodelling of the open unlined drain to accommodate drainage swales and to maintain an attractive landscape.

## 7.10 Tapleys Precinct

### 7.10.4 Procedural Matters

Outlined below is detail on the types of activities considered suitable for the Precinct, along with the identification of uses deemed inappropriate.

Tapleys Precinct Uses	
Envisaged Development	Non-Complying Development
Advertisement	Dwelling
Area approach control centre	Motel
Aviation-related support industry	Industry
Brand outlet centre and associated support retailing	
Bulky goods retailing	
Car parking and storage	
Conservation activities	
Emergency Services	
Fire-fighting and rescue facilities	
Hotel	
Kennel management facility	
Meteorological services	
Office	
Office/Warehouse	
Petrol filling station and convenience store	
Retail showroom	
Runway-related activities	
Service trade premises	
Shop	
Supermarket and Liquor Store	
Telecommunications facility	
Weather and atmosphere testing facility	

### Agency Referral and Public Notification

Agency Referral and Public Notification is undertaken for all forms of development that are not listed as Envisaged Development in accordance with Figure 7.5 Development Decision Matrix in Section 7.3.1.



## 7.11 West Beach Precinct



Figure 7.16 West Beach Precinct Plan

### 7.11.1 Objectives

The West Beach Precinct is an area for commercial development, but is also an area reserved for a future parallel runway. The Objectives of the West Beach Precinct include:

- an area accommodating commercial facilities capitalising on the exposure to Tapleys Hill Road and West Beach Road;
- recreation activities in support of the adjoining sporting and recreation activities of the West Beach Trust (operating as Adelaide Shores);
- linkage of the remnant Patawalonga Creek as a passive recreation area adjoining nearby pedestrian and bike pathways;
- stormwater drainage systems emanating external to the precinct to control flood risk to the airport land east of the Patawalonga Creek, with some allowance for overflow onto parts of recreation land; and
- stormwater detention areas servicing the West Beach residential area.

AAL will include resumption clauses in any lease agreement over land reserved for a parallel runway as specified by the Commonwealth.

## 7.11 West Beach Precinct

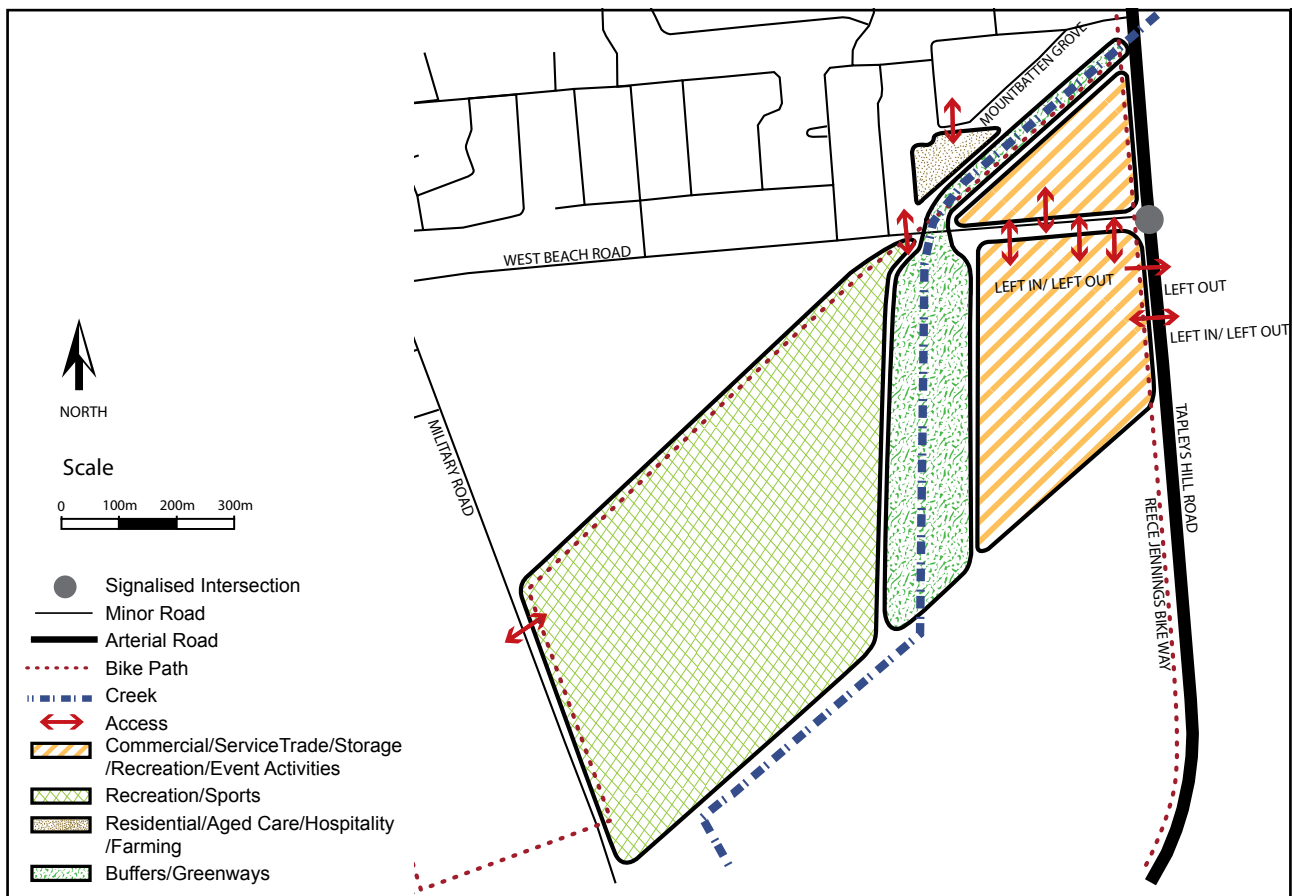


Figure 7.17 West Beach Precinct Structure Plan

### 7.11.2 Desired Character

The West Beach Precinct occupies 56 ha (7%) of the airport site. It is located to the west of Tapleys Hill Road, opposite the highway activity centre of Harbour Town, and is found to the north and south of West Beach Road, and extends to the west fronting Military Road.

The precinct can accommodate commercial development and service trade premises suitable to the Tapleys Hill Road arterial road status, which has exposure to significant traffic volumes. Given the nature of Tapleys Hill Road, access for these uses will be mainly limited to the existing access points, or from West Beach Road and Military Road.

An aged-care facility or community garden/horticulture, may be considered on the southern side of Mountbatten Grove, forming a logical extension to existing residential development.

The promotion of event activities, passive and active recreation and sporting activities, and car parking within the precinct is desirable, incorporating suitable pedestrian and bike pathways. New development in the recreation area should, where practical, be clustered to minimise impacts and located to accommodate existing and future stormwater drainage arrangements.

## 7.11 West Beach Precinct

### 7.11.3 Principles of Development Control

#### Structure Plan

1. Development should generally be in accordance with the West Beach Precinct Structure Plan (Figure 7.17) and the forms of development listed as Envisaged Development.

#### Built Form

2. Development should be suitably landscaped and provide landscaped car parking areas.

### 7.11.4 Procedural Matters

Outlined below is detail on the types of activities considered suitable for the Precinct, along with the identification of uses deemed inappropriate.

West Beach Precinct Uses	
Envisaged Development	Non-Complying Development
Advertisement	Brand outlet centre
Aged or Residential care facility or care facility of a similar nature (Mountbatten Grove locality)*	Bus terminal
Amusement Park	Helicopter landing and parking
Aquifer storage and recovery/Stormwater harvesting	Industry
Aviation fuel pipeline	Passenger terminals
Car parking and storage	
Consulting rooms	
Event activities	
Farming	
Horticulture / Community Gardens	
Indoor recreation centre	
Motor repair station	
Petrol filling station (with associated convenience store and car wash facilities)	
Recreation	
Service trade premises	
Sporting activities and complexes	
Store	
Stormwater detention	
Telecommunications facility	

#### Agency Referral and Public Notification

Agency Referral and Public Notification is undertaken for all forms of development that are not listed as Envisaged Development in accordance with Figure 7.5 Development Decision Matrix in Section 7.3.1.

\*Note: any creation of an aged/residential care facility is classified as a Sensitive Development under Section 71A (2) of the *Airports Act 1996*, requiring prior clearance from the Commonwealth Minister on its possible development, and if gained, necessitating a Major Development Plan consultation process.



## 7.12 Morphett Precinct

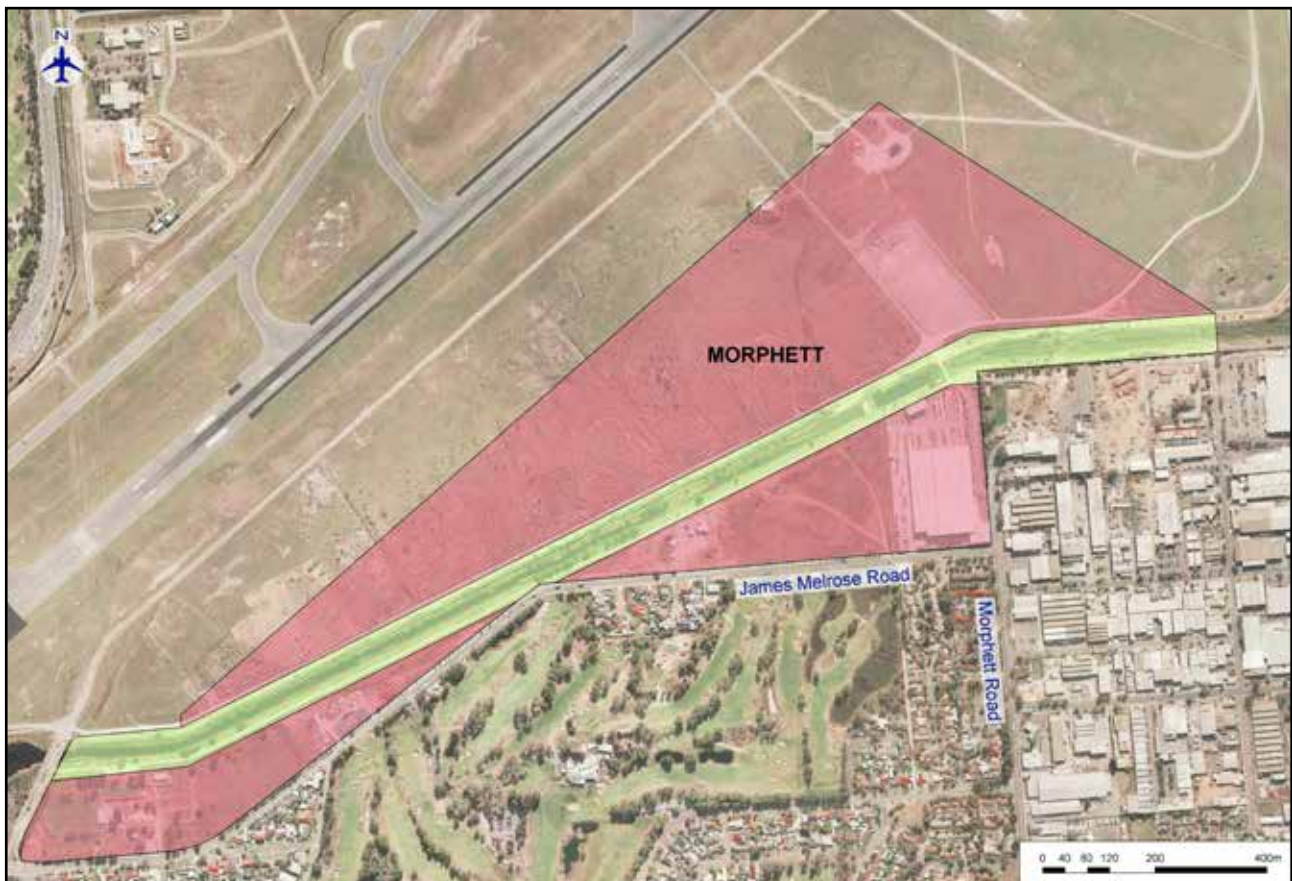


Figure 7.18 Morphett Precinct Plan

### 7.12.1 Objectives

The Objectives for the Morphett Precinct are:

- an area accommodating a mix of activities, including industry, office/warehouse, commercial and aviation-related support industries; and
- an area accommodating a small portion of interim uses of recreation, leisure and sporting activities; and
- future development directed to commercial services, stormwater harvesting opportunities and a linear park, including a shared use pedestrian/bike path linking Tapleys Hill Road and Watson Avenue in Netley.



## 7.12 Morphett Precinct

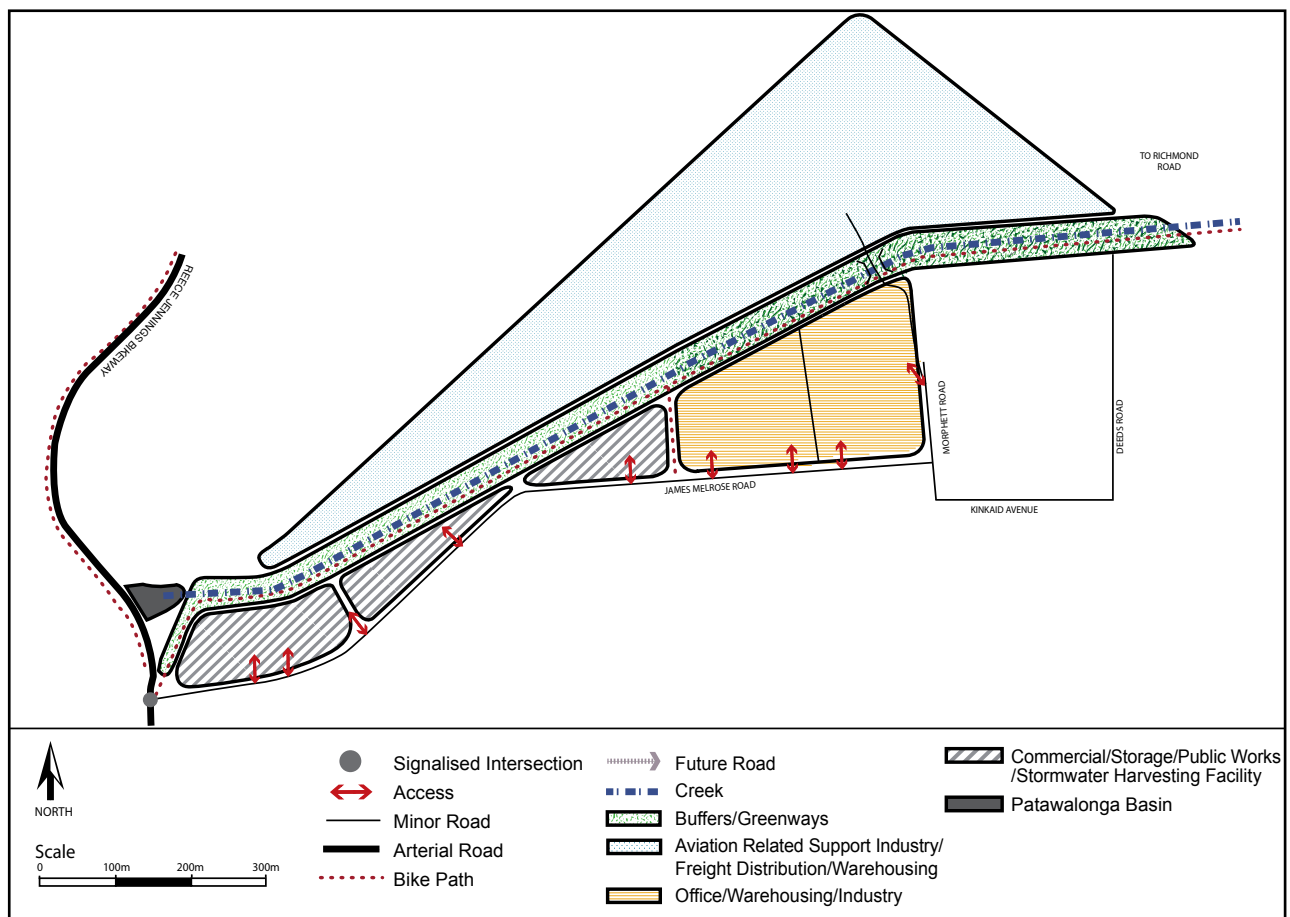


Figure 7.19 Morphett Precinct Structure Plan

### 7.12.2 Desired Character

The Morphett Precinct occupies 81 hectares (10%) of the airport site. It is located to the east of Tapleys Hill Road, with a frontage to Warren Avenue and James Melrose Road at the end of Morphet Road. The precinct is in proximity to the City of West Torrens Waste Transfer Station and the industrial areas of North Plympton and Camden Park.

The Morphett Precinct will include a mix of industrial and aviation-related support industries, bisected by the buffer/linear park adjacent to the drainage channel of the Brownhill and Keswick Creeks. The linear park provides for passive recreation and also accommodates a bike and pedestrian path linking Tapleys Hill Road to the west and Watson Avenue to the east.

Additionally, interim activities within the precinct will be for recreation, leisure, sport and horse keeping, with future development to comprise commercial activities such as plant nurseries, service trade premises and recreation activities.

The land also provides stormwater harvesting associated with aquifer storage and recovery systems and the enhancement of the buffer/linear park located along the drainage channel of the Brownhill and Keswick Creeks.

Development will take into account potential impacts on residential areas located to the south of the precinct. Allowance is made for a possible future road link between Morphet Road and Richmond Road through the edge of the West Torrens Council Waste Transfer Station or via Deeds Road. This road link is consistent with the draft Integrated Transport and Land Use Plan prepared by the South Australian Government (DPTI).

## 7.12 Morphett Precinct

### 7.12.3 Principles of Development Control

#### Structure Plan

1. Development should be generally in accordance with the Morphett Precinct Structure Plan (Figure 7.19) and the forms of development listed as Envisaged Development.
2. Development having a frontage to James Melrose Road should incorporate landscaping to enhance the amenity of the area and to provide a screening effect when viewed from the road or the residential area to the south.
3. Development should be designed and operated and/or incorporate acoustic treatments and equipment to minimise potential noise and air quality impacts on adjoining developments and residential areas.
4. Development should be compatible with and enhance the establishment of a park-like setting within the buffer/linear park adjacent to the drainage channel of the Brownhill and Keswick Creeks.
5. Where possible, development should provide access to the buffer/linear park and the shared use bike and pedestrian path.

#### Access and Movement

6. Development to the northern side of the buffer/ linear park should not restrict a possible future road link between Morphett Road and Richmond Road.

#### Built Form

7. Buildings should be constructed of materials compatible with aeronautical equipment facilities and operations.

#### Form of Development

8. Commercial activities, including such uses as plant nurseries and service trade premises, should generally be located in the western end of the precinct, closer to Tapleys Hill Road.
9. Where possible, development should provide an outlook and access to the buffer/linear park adjacent to the drainage channel of the Brownhill and Keswick Creeks and the shared use bike/pedestrian paths.
10. Development should consider the proximity of aviation runways and the associated need for noise attenuation and satisfy AS 2021-2000.
11. Existing sporting and recreation activities and horse keeping may continue, provided they comply with relevant Standards and Codes, but further intensification of these activities should be limited.
12. Aquifer storage and recovery systems are provided, adjacent to the Brownhill Creek easement and opposite the Glenelg Golf Club, and designed and operated to avoid any increase in bird populations.

#### Appearance

13. Development should have an attractive appearance when viewed from Warren Avenue and James Melrose Drive and should be sited and designed to minimise the potential for adverse impact on adjoining residential areas.

## 7.12 Morphett Precinct

### 7.12.4 Procedural Matters

Outlined below is detail on the types of activities considered suitable for the Precinct, along with the identification of uses deemed inappropriate.

Morphett Precinct Uses	
Envisaged Development	Non-Complying Development
Advertisement	Brand outlet centre
Aircraft washdown	Bus terminal
Aquifer storage and recovery/Stormwater harvesting	Caravan park
Aviation-related support industry	Dwelling
Car parking and storage	Educational establishment
Clubrooms and associated sporting facilities	Hotel
Emergency staging area	Industry on Commercial/Storage/Public Works/Stormwater Harvesting Facility area shown on Figure 7.19
Equestrian area	Place of worship
Fire-fighting and rescue facilities	Shop (other than to service the day-to-day needs of the workforce and visitors to the Precinct)
Freight and distribution centre	Special industry
Horse keeping	
Horticulture	
Industry (except Special Industry or industry within the Commercial/Storage/Public Works/Stormwater Harvesting Facility area shown on Figure 7.9)	
Office/Warehouse	
Plant nursery (including Wholesale plant nursery)	
Recreation	
Service trade premises	
Telecommunications facility	
Warehouse	

#### Agency Referral and Public Notification.

Agency Referral and Public Notification is undertaken for all forms of development that are not listed as Envisaged Development in accordance with Figure 7.5 Development Decision Matrix in Section 7.3.1.

# 7.13 Airport East Precinct



Figure 7.20 Airport East Precinct Plan

## 7.13.1 Objectives

The Objectives for the Airport East Precinct are to provide:

- an area accommodating aviation maintenance and freight capacity to meet future demand from the aviation industry, along with other freight distribution and storage activities; and
- management of industrial and aviation activities on the airport, taking into consideration the proximity of surrounding residential development, consistent with the *Airports (Environment Protection) Regulations 1997*.

## 7.13.2 Desired Character

The Airport East Precinct occupies 37 hectares (5%) of the airport site. It is within the eastern sector of the airport and is surrounded largely by industrial development of a freight and distribution or public service depot nature. Office/warehousing and storage activities also occur.

The area can accommodate aircraft maintenance facilities, aircraft hangars, and ancillary aviation-support activities such as avionics/equipment maintenance and air freight.

The Airport East Precinct presents a logical expansion to the adjoining off-airport industrial, warehouse, distribution and logistics operations and general transport related uses and will provide for uses that have a relationship to the airport or would benefit from an airport location.

In addition to the landscaped buffers proposed, development with minimal impacts will be located to also act as a buffer to nearby residential areas to the north, east and south of the precinct.



## 7.13 Airport East Precinct

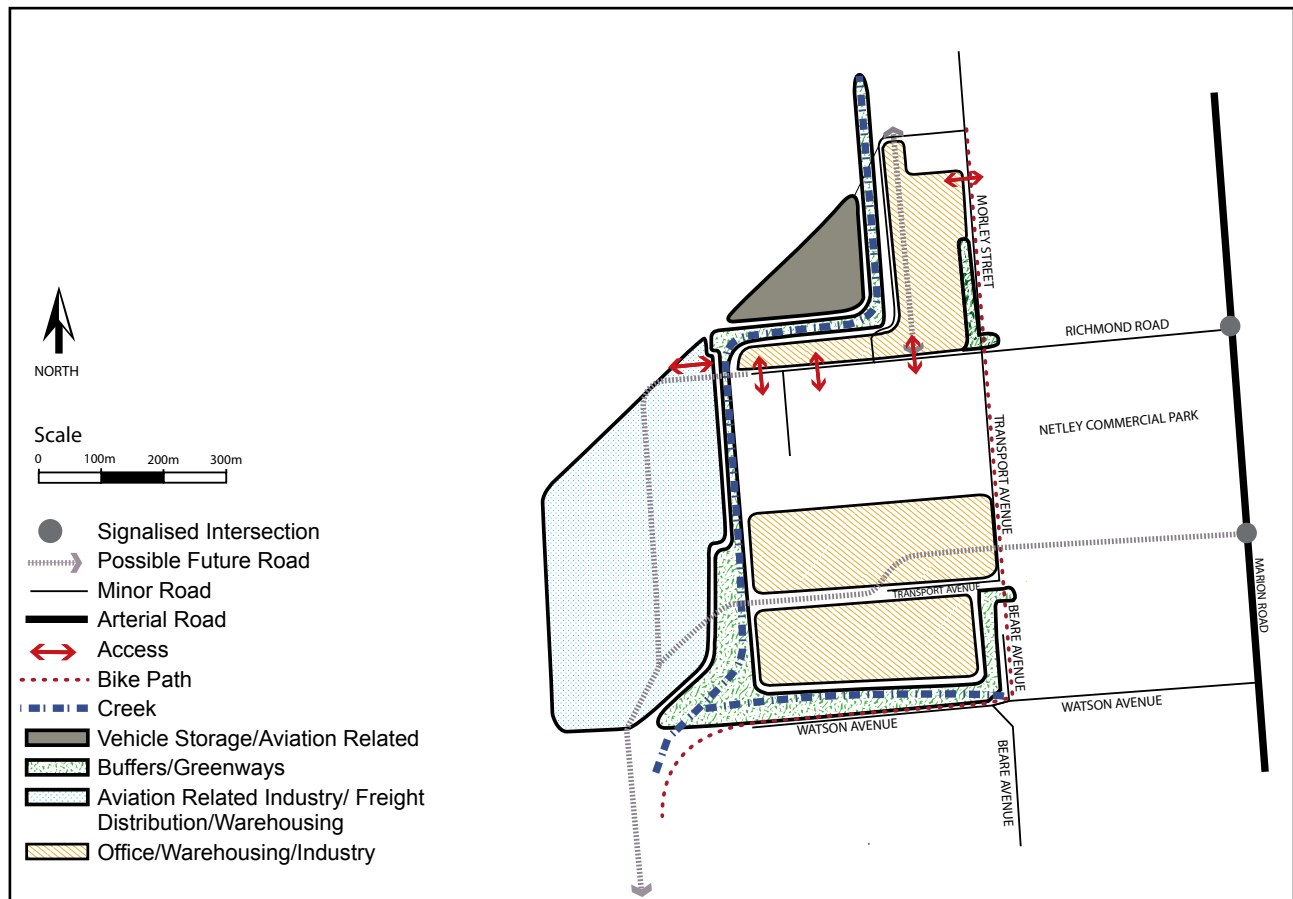


Figure 7.21 Airport East Precinct Structure Plan

### 7.13.3 Principles of Development Control

#### Structure Plan

1. Development should be generally in accordance with the Airport East Precinct Structure Plan (Figure 7.21) and the forms of development listed as Envisaged Development.

#### Amenity

2. Development should minimise its impact on adjacent residential areas by appropriate means, including:
  - the design and style of buildings and the layout of vehicle parking areas;
  - the provision of landscaped earthen mounds in buffer areas facing Watson Avenue and landscaped parks fronting Beare Avenue;

- the provision of landscaped acoustic treatments facing Morley Street; and
- the orientation of loading bays to be positioned away from residential areas.

3. Lighting servicing industrial facilities should be positioned so as to minimise any impact on surrounding residential development and to be compatible with aviation services.

#### Access and Movement

4. Development of the precinct should provide for a possible future road link between Richmond and Morphett/Deeds Roads, and also between Richmond Road and the Terminals & Business Precinct.

## 7.13 Airport East Precinct

### Built Form

5. Buildings should be compatible with aeronautical equipment or facilities, and be of a height that does not infringe the OLS as detailed in Section 7.16.2.
6. Industrial buildings, including associated activities such as forklift services, freight loading vehicles or aircraft engine testing, are to be constructed to prevent any noise emissions external to the premises or from the airport site that exceed relevant acoustic standards and controls, consistent with the *Airports (Environment Protection) Regulations 1997*.

### 7.13.4 Procedural Matters

Outlined below is detail on the types of activities considered suitable for the Precinct, along with the identification of uses deemed inappropriate.

Airport East Precinct Uses	
Envisaged Development	Non-Complying Development
Aircraft hangar	Brand outlet centre
Animal agistment for export purposes	Caravan park
Aviation-related support industry	Clubrooms
Bus terminal	Community centre
Car parking and vehicle storage/holding and servicing	Dwelling
Fire-fighting and rescue facilities	Helicopter landing and parking
Freight and distribution centre	Hotel
Industry	Motel
Motor repair station	Shop (other than to service the day-to-day needs of the workforce and visitors to the precinct)
Office/Warehouse	Special Industry (except existing Concrete Batching facility)
Runway-related activities and facility	
Shop (to service the day-to-day needs of the workforce and visitors to the precinct)	
Store	
Technology facilities	
Telecommunications facility	
Warehouse	

### Agency Referral and Public Notification

Agency Referral and Public Notification is undertaken for all forms of development that are not listed as Envisaged Development in accordance with Figure 7.5 Development Decision Matrix in Section 7.3.1.

## 7.14 Surrounding Land Uses

### 7.14.1 Introduction

AAL will continue to monitor off-airport development, including the preparation of planning policies and master plans affecting the ongoing airport operations. Specific issues for consideration relate to the location of sensitive land uses, along with height and scale of development which may negatively impact upon such airport operations.

### 7.14.2 Land Use near the Airport

The main land use zones surrounding the broader Adelaide Airport site are Residential, Industry, Community and Recreation Uses. The airport site is surrounded by several large areas of open space incorporating the Adelaide Shores Complex to the west, Kooyonga Golf Club to the north and the Glenelg Golf Club to the south.

The Adelaide Shores complex is one of the largest community uses within the vicinity of the airport and is located to the west and south-west of the airport in the suburb of West Beach. This is discussed in further detail below.

The next largest community use is the Kooyonga Golf Club measuring approximately 58 hectares in size located directly to the north of the airport site within the suburb of Lockleys. The golf course is privately owned and operated, and is surrounded by residential development to the north, east and west. A second golf course, the Glenelg Golf Club, is located to the south of the airport site within the suburb of Novar Gardens. The Glenelg Golf Club is 49 hectares in size and is also privately owned and operated.

The two key industrial precincts surrounding the airport are the Netley Commercial Precinct located directly to the east adjoining the Airport East Precinct, and a pocket of industrial development to the south-east within the suburb of North Plympton.

The remaining land surrounding the airport site is zoned residential and includes the suburbs of West Beach, Lockleys, Mile End, West Richmond, Kurralta Park, Plympton, North Plympton and Glenelg North. These residential areas are all within the three Council areas of West Torrens, Charles Sturt and Holdfast Bay.

### Adelaide Shores Complex

The Adelaide Shores complex totals 228 hectares in size and is composed of a caravan park, function rooms, Adelaide Shores Golf Course and Adelaide Shores Resort. There are also sporting and recreation facilities within the site.

Adelaide Shores is administered by the West Beach Trust which is the statutory authority that was continued under the latest *West Beach Recreation Reserve Act 1987*. Approximately 30 hectares of the land forms part of the broader Adelaide Airport site and is currently leased to the West Beach Trust pending any resumption for future long-term aviation usage. The 1987 Act confirmed the continuance of the West Beach Trust and established the associated Board to manage the reserve and facilities on-site, and develop the site in recognition of the presence of the airport and its future expansion, and in accordance with the Adelaide Shores strategic plan.

The State Government Minister for Planning has recently undertaken a Development Plan Amendment for the site to update the zone policies in line with the Adelaide Shores Master Plan. The three affected Development Plans include: West Torrens Council, Charles Sturt Council and Land Not Within a Council Area (Metropolitan). The proposed policy changes seek to facilitate further development of the site and introduce a new Concept Plan for future development to allow further recreation, conference and tourist facilities. In addition, the land leased to Adelaide Shores by AAL is subject to the Adelaide Airport Master Plan policies, but while leased is to accord with State Government planning and development principles and controls.

### Netley Commercial Park

The Netley Commercial Park precinct is located directly to the east of the airport and measures approximately 13.5 hectares in size. The area is currently developed with industrial, office, warehousing and storage uses, with a large focus on freight-related industries. This is complementary to the adjacent Airport East Precinct within the Master Plan.

### Waste Transfer Station

A commercial waste transfer station, designed for temporary storage and handling of general, organic and recyclable wastes, is located immediately adjacent the southern airport boundary. The site is owned by West Torrens Council and supports a land use that is generally incompatible with aviation activity and development due to safety risk relating to litter and wildlife attraction. However, AAL actively engages with the site operator on management strategies to minimise the risks.

### 7.14.3 Adelaide Central Business District

The Adelaide Central Business District is located around eight kilometres to the east of Adelaide Airport and is the capital of South Australia. The CBD is the centre for business, administration, retail and commercial uses within the State. Adelaide Airport is located within an existing urban city context, and therefore the links between the airport, CBD and freight logistics facilities are crucial to the economy of the State. Furthermore, Adelaide Airport is the only international airport for South Australia and provides the international gateway for tourism.

### 7.14.4 Building Heights and Aviation Safety

Obstacles in the vicinity of an airport, whether they are natural or constructed, may seriously limit the scope of its operations. Whilst it is generally appreciated that tall structures can impact upon airport operations, this is often only considered within the immediate approach and take-off areas, and of structures that are located a short distance away from the airport. While this is of primary concern, it is equally true that objects up to 15 kilometres from the airport and apparently unrelated to the runway alignment can impact upon aircraft approaching or departing an airport; particularly in poor weather conditions or in instances of engine malfunctions.

There are a set of invisible surfaces used to define these airspace requirements and to assess the significance of an existing or proposed object to the Obstacle Limitation Surfaces which are shown in Figure 7.22. This is discussed further below.

#### Obstacle Limitation Surfaces (OLS)

The OLS are a number of reference surfaces in airspace, which determine when an object may become an obstacle to aircraft manoeuvring in the vicinity of an airport, during approach or departure or during circuit flying. The OLS defines protection requirements for the initial and final stages of a flight. During these manoeuvres, appropriate visibility must be maintained in order for the pilot to see and maintain visual reference to the airport and take responsibility for obstacle avoidance and separation from other aircraft.

The objective of the OLS is to define a volume of airspace, in proximity to an airport, which is to be kept free of obstacles that may endanger aircraft in visual operations or during the visual stages of an instrument flight. The intention is not to restrict or prohibit all obstacles but to ensure that either existing or potential obstacles are examined for their impact on aircraft operations and that their presence is properly taken into account.

As the OLS is relevant only to visual operations, in exceptional instances it may be sufficient to ensure that the obstacle is conspicuous to pilots, and this may allow it to be marked and/or lit with a beacon. Each new obstacle will in some way inhibit the freedom of aircraft operations and inevitably contribute to air traffic congestion and delays. If an obstacle is located in the approach and take-off areas, pilots will be forced to make adjustments to their normal take-off and landing to make sure of obstacle clearance. This may restrict use to less than the full runway length available, and thereby may impose significant operational penalties such as fewer passengers, less cargo and fuel uplift and economic restraints, and also impact upon public safety.

The most stringent requirements apply on the extended centre line of a runway in the approach and take-off areas. Depending on the type of aircraft able to use the runway, the approach and take-off surfaces may extend for as little as 2.5 kilometres or as much as 15 kilometres from the runway strip end. At either side of the runway strip and the approach surface are two OLS components called the transitional surfaces. These are intended to protect an aircraft that encounters severe cross winds during the final phase of the approach to land and may then drift sideways as the pilot decides to 'go around' for another attempt.

There are two, or in some cases three, other surfaces that provide obstacle protection for aircraft circling to land: the inner horizontal surface, the conical surface and the outer horizontal surface. Depending on aircraft size and the type of activities catered for by the airport, their combined effect may extend up to a 15-kilometre radius of the airport.

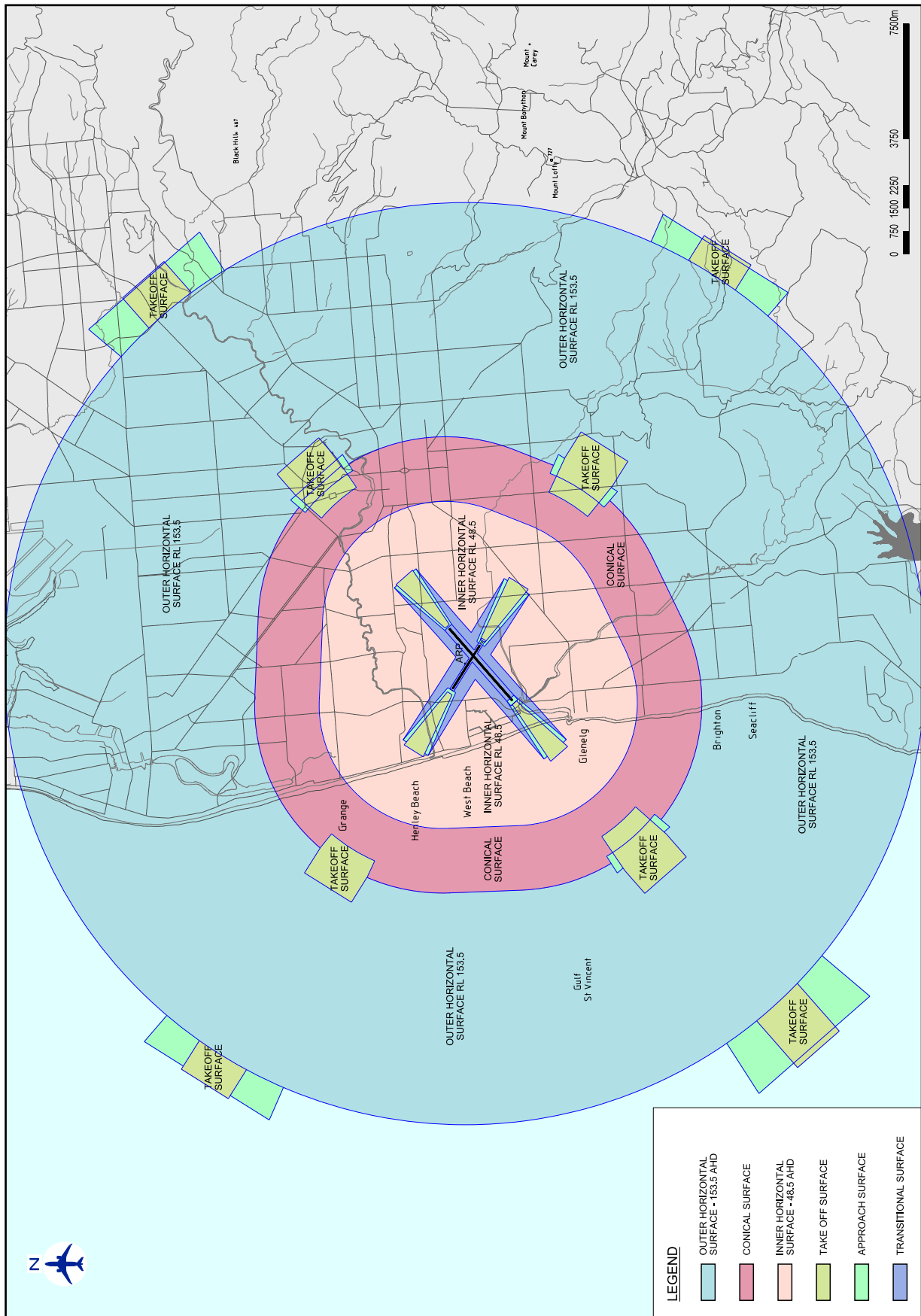
Figure 7.22 displays the OLS Plan for Adelaide Airport under the current runway configuration. An OLS Plan representing the reservation of a third runway will eventually be developed.

#### Civil Aviation Safety Regulations (CASR)

Consistent with aviation safety on and around Adelaide Airport, it is necessary for new development to accord with the following CASR Parts, and the associated Manual of Standards:

- CASR 139 (Aerodromes);
- CASR 171 (Aeronautical Telecommunication Service and Radio Navigation Service Providers); and
- CASR 172 (Air Traffic Service Providers).





### Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS)

Adelaide Airport's OLS was declared as prescribed Airspace in January 2009 by the Department of Infrastructure and Regional Development. Since that time, AAL has prepared a PANS-OPS surface for the airport based on the Departure and Approach Procedures Charts. These are procedures for instrument flight rules which depend on having ground based instrument landing and departing equipment at the airport, and this PANS-OPS surface is included in this Master Plan (Figure 7.23). These surfaces are also taken into account in the assessment of short-term OLS penetrations by mobile cranes to verify that the possible PANS-OPS is not infringed in any way.

In contrast to the OLS, which defines when objects are to be considered as obstacles and assessed for their impact on aircraft operations, PANS-OPS surfaces cannot generally be infringed in any circumstances.

The height of the tallest structure or natural feature underneath a PANS-OPS surface determines its altitude or elevation and forms an envelope over the existing obstacle environment. This is because instrument procedure designers have to be able to guarantee that an aircraft will have a specified minimum clearance above any accountable obstacle in situations where the pilot is relying on the information derived from cockpit instruments and may have no external visual reference to the ground, to obstacles or to other aircraft.

The minimum obstacle clearance requirement is simply added to the height of the tallest object under the PANS-OPS surface to determine the minimum or lowest safe altitude to which a pilot may descend in attempting to establish visual reference to the airport. The landing cannot be made unless the pilot 'is visual' at or before reaching this minimum descent altitude. If the minimum for an instrument procedure has to be raised to account for new buildings or other structures, there may be direct impact on airport useability. The higher this altitude needs to be, the less likely it becomes that a pilot will be able to land during low visibility conditions.

There are no changes to PANS-OPS surfaces attributable to this Master Plan timing horizon.

### 7.14.5 Airspace Protection

The Minister for Infrastructure and Regional Development can protect the airspace surrounding an airport in accordance with the directions provided in the *Airports Act 1996* and *Airports (Protection of Airspace) Regulations 1996*. In addition, the Civil Aviation Safety Regulations Part 139 also apply. These regulations set the standards for the establishment of OLS at an airport, and regulate the development of instrument procedure designs (subject to which PANS-OPS surfaces are determined) by CASA and approved entities, including AsA.

An airport operator can make an application to DIRD for the Minister to protect future airport operations by managing the airspace around the airport.

#### Air Traffic Services

Airservices Australia is responsible for the airspace surrounding Adelaide Airport. Within this airspace, it provides aerodrome and approach control services to arriving and departing aircraft, as well as ground control for taxiways and runways. Airservices Australia also provides services to aircraft transiting the designated control zone in which Adelaide Airport is situated.

These operations are conducted in accordance with published procedures, requirements and air traffic control clearances and instructions.

#### Monitoring

Adelaide Airport Limited conducts regular consultative meetings with the airline industry and AsA to maximise the use of these facilities and minimise arrival, departure and circuit impacts on the community.

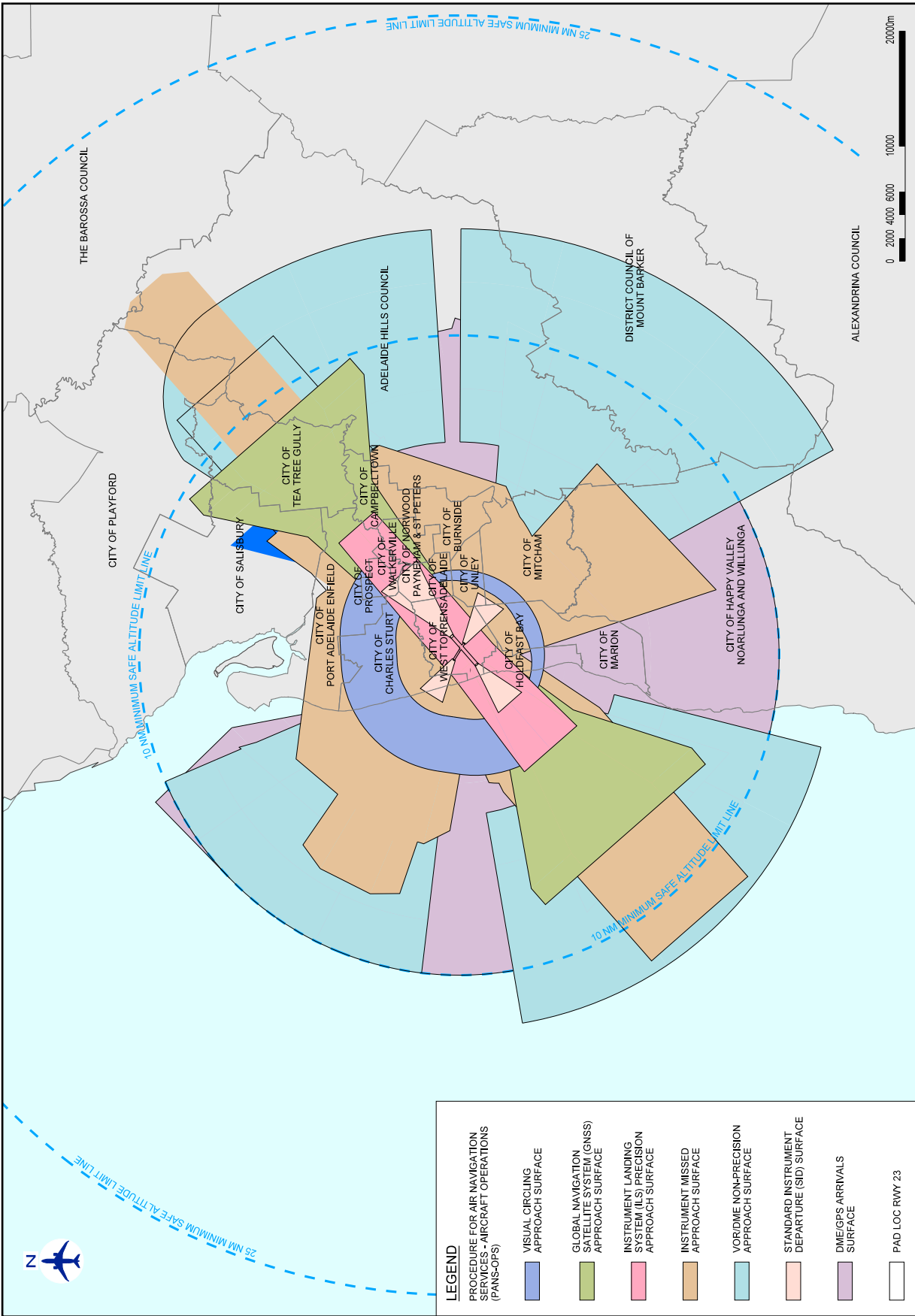


Figure 7.23 Procedures for Air Navigation Services Aircraft Operations (PANS-OPS)

### 7.14.6 Hazardous Lighting

Local authorities' planning policies should recognise the potential hazard of inappropriate lighting by specifying appropriate performance standards for lighting installations in proximity to airports.

Developers and designers of lighting within a six-kilometre radius of Adelaide Airport are required to comply with lighting guidelines to ensure ground lighting does not interfere with pilot vision on landing approach. Advice is available in the Civil Aviation Authority, *Manual of Standards*, Part 139 – Aerodromes, Chapter 9, Section 9.21 which can be made available on request. The CASA manual also applies to on-airport developments including aeronautical infrastructure and facilities. This is further stipulated in the NASF guidelines discussed below.

State and Local Government, developers and any stakeholders can obtain relevant maps and information about restrictions on lighting around Adelaide Airport from the relevant authorities or AAL. The prescribed zones are identified in the *Civil Aviation Authority, Manual of Standards Part 139 – Aerodromes, Chapter 9, Section 9.21*.

### 7.14.7 National Airports Safeguarding Framework Guidelines

The National Airports Safeguarding Advisory Group (NASAG) has produced the National Airports Safeguarding Framework (NASF) that includes a statement of over-arching principles and a suite of six guidelines for land use planning measures associated with airports. The intent is to manage the impact of noise disturbance from airports and to preserve the ongoing safety of the community and aircraft by ensuring that aviation safety requirements are recognised in land use planning decisions. These principles and guidelines were formally agreed by all jurisdictions on 18 May 2012 with the intention of their subsequent endorsement by the Council of Australian Governments.

NASAG has yet to finally settle the issue of the Public Safety Zones as well as the protection of off-airport communications, navigation and surveillance infrastructure.

The NASF Guidelines are aimed at safeguarding airports and surrounding communities through implementing appropriate planning schemes around airports by providing guidance to decision-makers in all levels of Government.

The six overarching guidelines are:

- Guideline A: Measures for Managing Impacts of Aircraft Noise
- Guideline B: Managing the Risk of Building Generated Windshear and Turbulence at Airports
- Guideline C: Managing the Risk of Wildlife Strikes in the Vicinity of Airports
- Guideline D: Managing the Risk of Wind Turbine Farms as Physical Obstacles to Air Navigation
- Guideline E: Managing the Risk of Distractions to Pilots from Lighting in the Vicinity of Airports
- Guideline F: Managing the Risk of Intrusions into the Protected Airspace of Airports

A detailed overview of each of the NASF Guidelines is provided in Appendix C – NASF Guidelines Overview.





# SERVICES AND INFRASTRUCTURE

# 8



# SERVICES AND INFRASTRUCTURE

## 8.1 Introduction

The major utilities, including SA Power Networks, Envestra, Telstra and SA Water, have services located within, or in close proximity to, the airport. These utilities are able to service the current and future developments described in this Master Plan to cater for equitable service delivery to businesses on-airport.

As a result, there are a number of easements contained within the airport site that must be taken into consideration when contemplating the development of new structures and this is discussed further below.

## 8.2 Existing Interests and Easements

### 8.2.1 Pre-existing Leases

Adelaide Airport Limited inherited several ongoing leases pursuant to the *Airports (Transitional) Act 1996*, which were issued prior to the transition of the management of the airport from the Federal Airports Corporation (FAC) to AAL. Some of these leases continue to operate, and the associated lessor obligations have been assumed by AAL, with their uses generally incorporated into the respective precincts as 'Envisaged Activities'.

Any existing leases that might be now categorised as 'Non-Complying', or not separately identified, are able to continue as existing activities while remaining within their current locality on-airport. Similarly, any leases that are now in existence, or have been duly approved under the process of the *Airports Act 1996*, or where there may be some anomalies in planning terminology definitions, have been categorised as 'Envisaged'.

Figure 8.1 depicts the building ownership and tenancy at Adelaide Airport.

### 8.2.2 Other Interests – Easements

AAL also became the head-lessor under the airport lease subject to a number of other interests in the airport land (such as easements). Some of these contractual and other rights remain in existence while others have expired. Of note are the contractual obligations and conditions that exist between the Commonwealth Government as grantor of the interest and the party who receives the benefit of that interest that protects these easements; arguably outside of the provisions of the subsequent *Airports Act 1996*.

In any proposal for future development on airport land, AAL will act consistently with any such obligations or interests that exist at the relevant time. Details of registered easements over the airport land are included on the Certificates of Title available from the State Government Lands Titles Office.

A map of the easements on airport land understood to be in existence at privatisation in 1998 is shown in Figure 8.2 below. The numbers on the plan indicate the quantity of easements for a particular location.



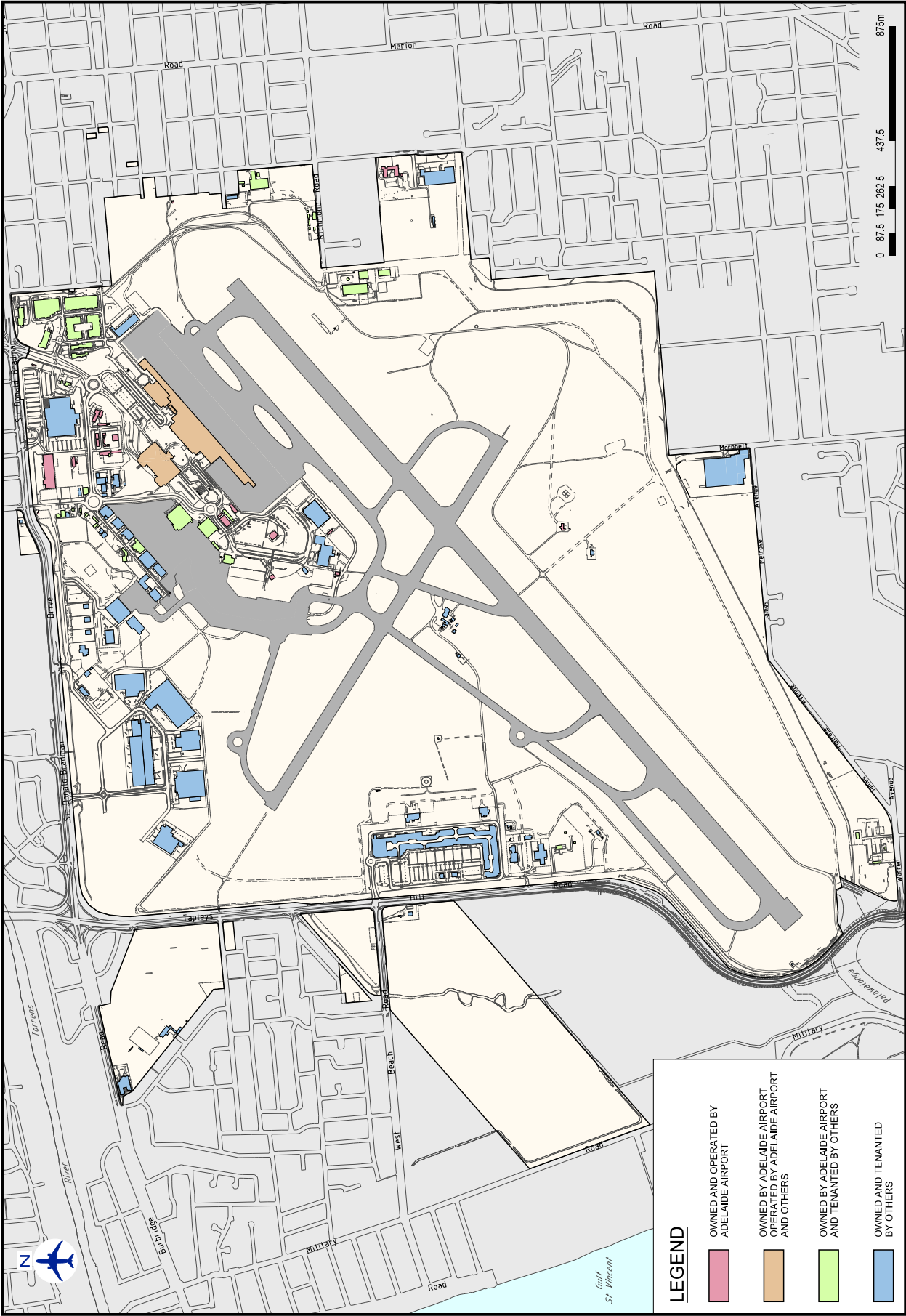


Figure 8.1 Building Ownership and Tenancy at Adelaide Airport



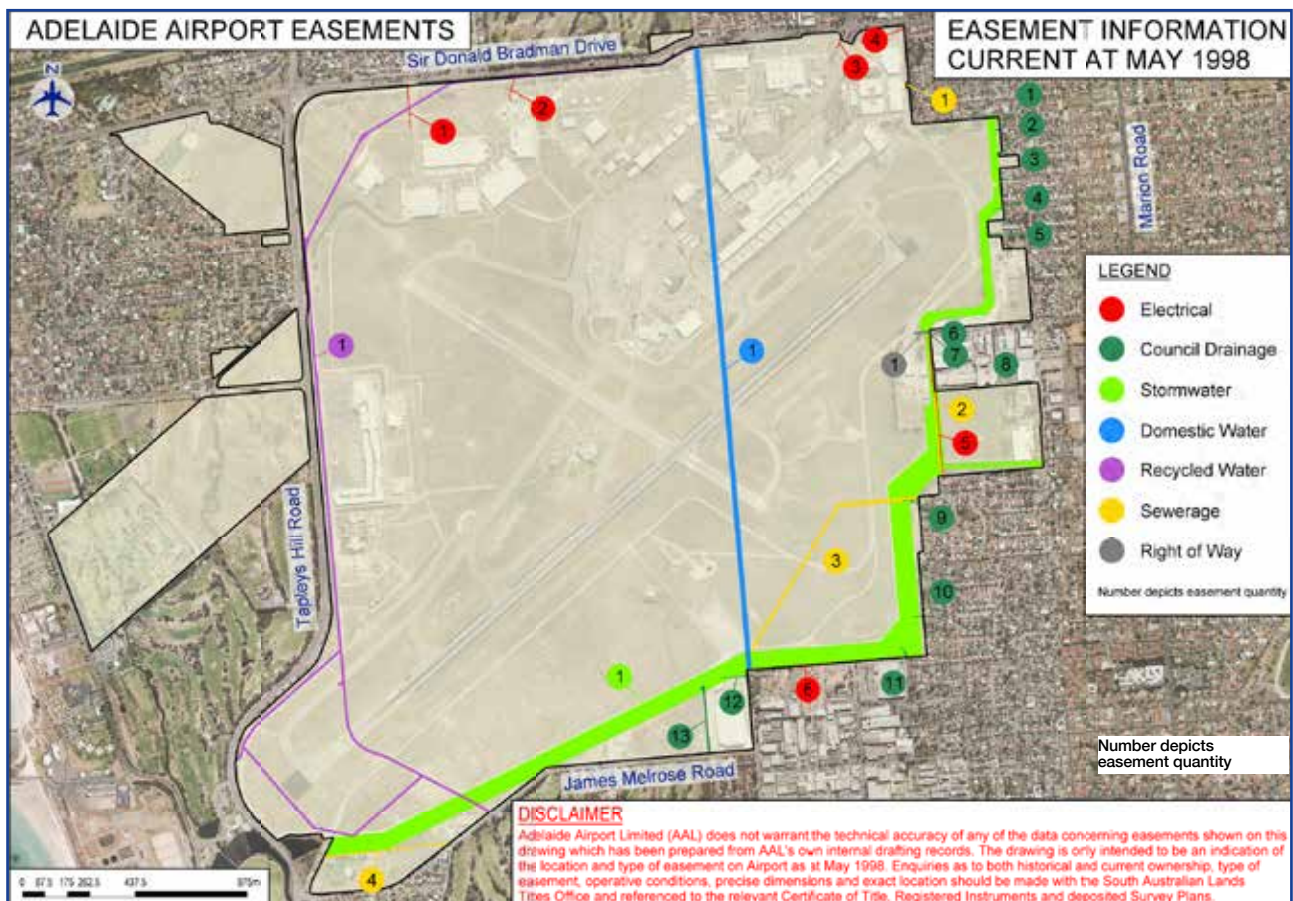


Figure 8.2 Easements on the Adelaide Airport site (as of privatisation in 1998)

## 8.3 Services

### 8.3.1 Gas

Envestra has a number of low, medium and high pressure gas mains around most of the interface with the airport as well as several Site Licence Agreements for gas mains within airport land, specifically in the Terminals & Business Precinct.

These Site Licence Agreements cater for relocation of gas mains as required for future development. Envestra has indicated it would provide a gas supply to any development on the airport if the anticipated gas demand makes it economically viable.

### 8.3.2 Electricity

SA Power Networks has indicated it can service proposed development on the airport from a network of high voltage electricity mains and substations located around the periphery of the airport and investigates the optimum means of electricity delivery for airport projects, including contingency back-up where additional feeders are supplied when overall loads to an individual specific development site exceeds four megawatt volt amperes (MVA).

The various SA Power Networks switching cubicles and lines located on-airport are either within existing easements to the Commonwealth, or are progressively being placed under a Grant of Easement related to the Adelaide Airport head lease.

### 8.3.3 Water

#### Potable and Fire Water

SA Water has indicated that there is a sufficient network of water mains adjacent to the airport to supply the projected Master Plan developments to each precinct. Under this arrangement, the water is supplied to the airport site boundary, with airport owned pipelines connected to the SA Water mains supply and reticulated to individual airport tenancies and sites. Metering of water consumption occurs at the SA Water mains site, with the cost of water consumption recovered from individual tenancies based on sub-metering installed on Adelaide Airport water networks.

#### Recycled Water

Recycled water is supplied to the airport from the effluent treatment plant at Glenelg North and through reticulated recycled water pipelines on the western, northern and southern boundaries of the airport land. It is used for irrigation of lawns and gardens and toilet flushing within Terminal 1 (T1) and also potentially available for other new developments in the Terminals & Business, Torrens and Tapleys Precincts.

AAL has entered into a long-term Supply Agreement with SA Water that allows for four supply points of recycled water on the north/west boundaries, and three take-off points along the southern perimeter of the Adelaide Airport site for irrigation purposes within the Morphett and Airport East Precincts.

In the West Beach Precinct, there are a number of supply points under direct contract arrangements between Adelaide Shores (an airport lessee) and SA Water. Figure 8.3 identifies the various existing or approved recycled water supply/take off points located both on-airport and at Adelaide Shores, including the respective recycled water mains traversing or surrounding the airport.

#### Treated Stormwater

In 2013, SA Water completed a Treated Stormwater Project along the southern boundary of the airport, which sources water from the Brownhill-Keswick Creek easements, purifies it, and injects it into underground aquifers for distribution around the airport, as identified also on Figure 8.3.

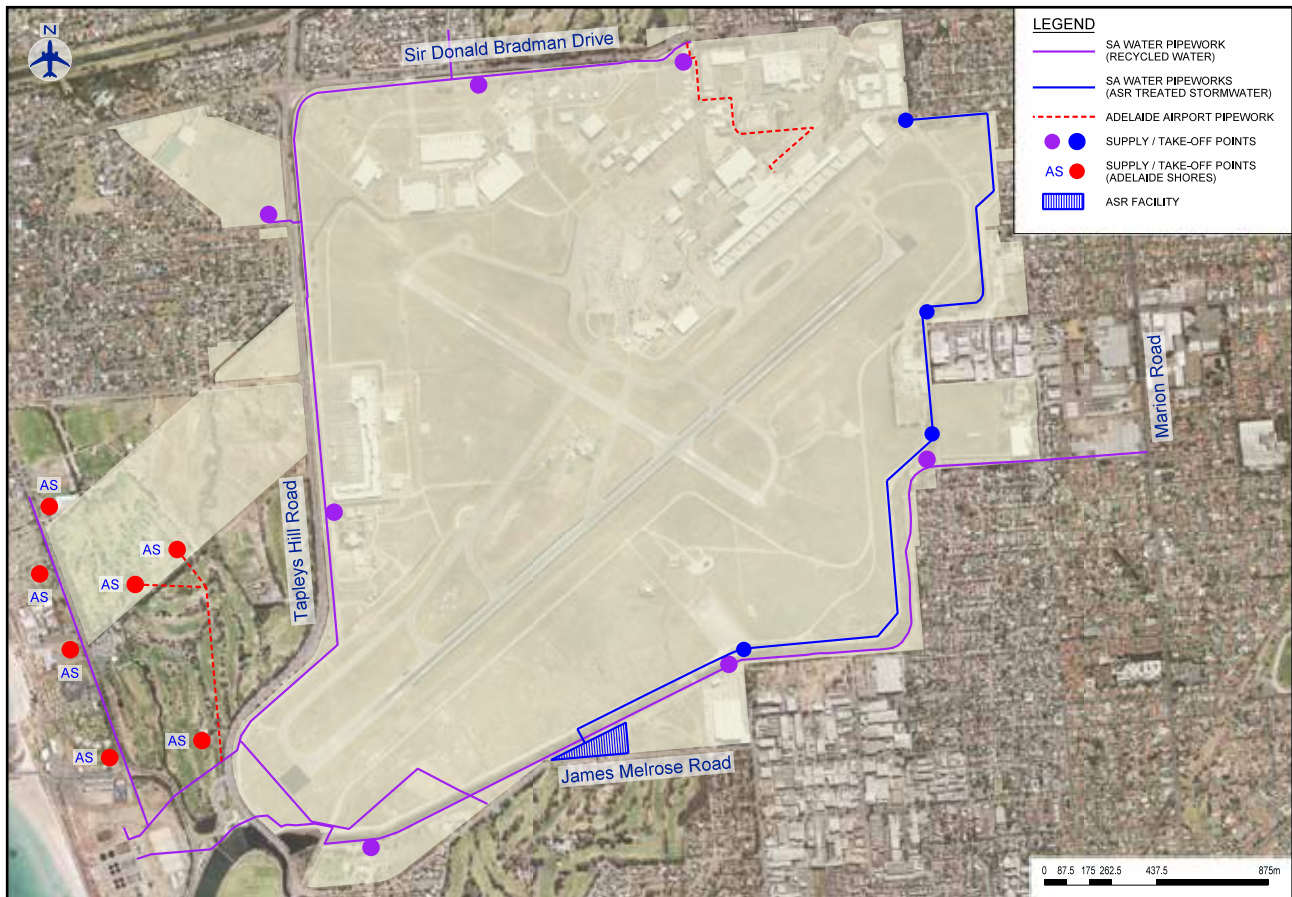


Figure 8.3 Outline of the various Existing or Approved Recycled Water Supply/Take Off Points On-Airport and at Adelaide Shores



### 8.3.4 Sewerage

SA Water will provide one boundary (airport) connection point for new developments in suitable locations within each airport precinct, from which AAL will provide airport owned sewerage infrastructure pipelines, some of which may require pumping stations.

### 8.3.5 Telecommunications

Telstra has either a single supply-point (on-boundary) with AAL to provide conduit and the airport tenant to pay for the consumer line through the conduit to the supply point, or in some instances, Telstra has its own conduit networks around airport roadways, as do other telecommunications providers. There are sufficient telecommunication services surrounding the airport to meet the expanding need of the future developments on airport land.

Mobile telecommunications facilities exist on-airport from which individual providers have equipment located on leased sites. Consolidation of the equipment of the respective providers is intended in the short term to several towers in a central location located on the Adelaide Airport multi-level car park within the Terminals & Business Precinct. The provision of an in-building system is present within T1, which is being readily expanded to include all carriers and also service the external plaza area.



## 8.4 Stormwater

### Stormwater Drainage

Adelaide Airport is located within the Patawalonga Catchment, downstream from several large urban stormwater catchments. The airport site abuts the Keswick and Brownhill Creeks through an easement to SA Water, the Sir Donald Bradman Drive drain (being the responsibility of the City of West Torrens), the Patawalonga Creek and the Patawalonga Basin leading to the Barcoo Outlet to the sea.

Upstream catchment flows independent of the airport have not been suitably upgraded to the levels consistent with the capacity of the existing drainage systems and the maintenance of the system around the airport in easements or adjacent channels has at times been inadequate in terms of vegetation and contaminated silt control. However, the respective authorities are continuing to progress strategies to manage future flows from upstream, and intensity suitable desilting programs.

The drainage system on the airport as represented in Figure 8.4, has been assessed by specialist consultants, and new airport developments can be readily accommodated, with airport drains leading to the Barcoo Outlet having been designed and sized for this purpose.

For this reason, new developments within the Terminals & Business and Tapleys Precincts will generally use the internal airport drainage networks assisted with suitable detention arrangements, but with current and accepted water flows also to the Cowandilla-Mile End outfall drain abutting Sir Donald Bradman Drive along the northern perimeter of the airport site. It is noted that hydraulic assessments recommend early release of stormwater flows rather than detention so that downstream and airport water flows have passed through to the stormwater system before pressure occurs from upstream stormwater.

Should new airport developments drain to the external drainage system adjacent to Sir Donald Bradman Drive, appropriate arrangements will be made where possible so that the aggregate quantity of airport outflow is not greater than current outflows. It should be noted that the development of T1 has re-directed water flows away from Sir Donald Bradman Drive in order to use sized detention basins to the south-eastern side of the T1 apron, and thereby to a system of on-airport drains. This has significantly reduced the load on the perimeter drainage system to allow future development along the northern side of the Terminals & Business Precinct to direct stormwater flows into the drain alongside Sir Donald Bradman Drive.

This drain extends for over three kilometres along the perimeter of the airport, and has been benched on to airport land and landscaped to form a linear park with associated pedestrian/bicycle pathways. This occurred under a Site Licence Agreement with the City of West Torrens for flood mitigation purposes due to the increasing water flowing from the upstream Cowandilla-Mile End catchment.

Under legal agreements between the Commonwealth, State and Local Governments in the years 1963/1964, parts of the airport drainage system were transferred to the State or Local Government to aid upstream water flows. One-off payments were made by the Commonwealth on the basis that airport stormwater flows, both current and future, could continue to flow into the Keswick Creek, Brownhill Creek and the drain alongside Sir Donald Bradman Drive, could be crossed as necessary, and would be maintained by the respective authorities.

These agreements have been used as the basis for the overall stormwater management arrangements on airport. The stormwater catchments impacting upon Adelaide Airport are shown at Figure 8.5.

AAL has entered into an agreement with SA Water to capture excess water flows and store them in an aquifer underlying airport land to reduce the extent of water passing directly out to sea, with the location adjacent to James Melrose Road within the Morphett Precinct. This water is available as treated stormwater for on-airport use.



Figure 8.4 Drainage Systems on Airport



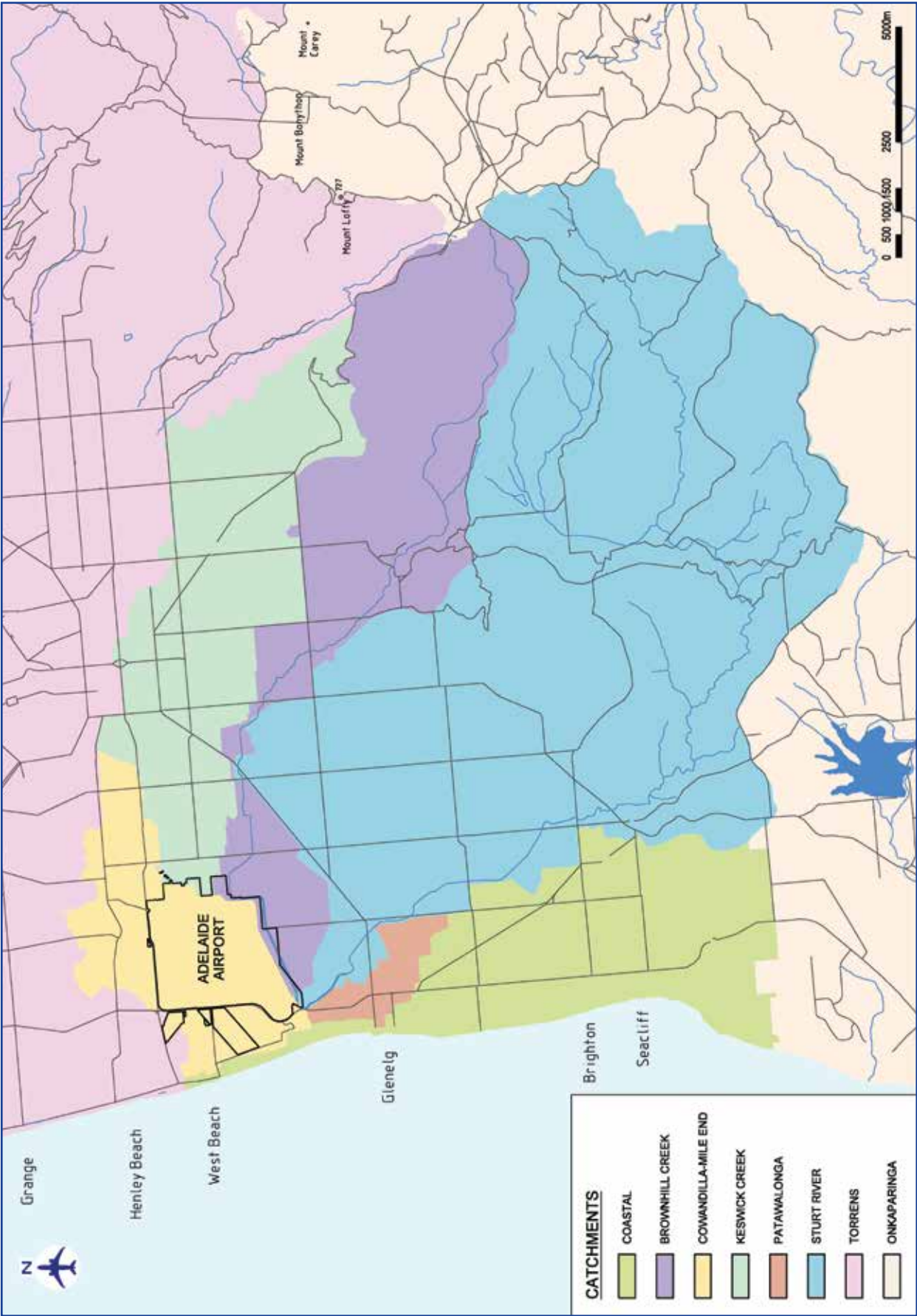


Figure 8.5 Major Airport Stormwater Catchments

## 8.5 Aviation Support Operations

### 8.5.1 Catering

In 2013, a new airline catering service was developed by Alpha Catering in the Terminals & Aviation Policy Area of the Terminals & Business Precinct, with direct airside access and thereby accessibility to Terminal 1 using airside roads. Further landside options may be possible in the Export Park Policy Area adjacent to the specialist cold store over time to cater for increasing air traffic, including international flights. Alternate development sites also exist adjacent to Alpha Catering or within the Airport East Precinct.

### 8.5.2 Cold Storage

A dedicated cold storage facility of 3,200m<sup>2</sup> with airside access is present in the Terminals & Aviation Policy Area, immediately to the north of T1. The cold store has several dedicated aviation freight operators specialising in the processing and export of meat, fish and fresh produce. With the prospect of increasing exports to international locations, there is the potential of further cold storage space within the existing structure if necessary, or to extend the facility to the north of the existing cold store.

### 8.5.3 Aircraft Refuelling

The Joint Oil Storage Facility (JOSF) located in the Aviation Support Policy Area caters for the bulk storage of Avgas and Jet A1. The JOSF is connected by a Joint User Hydrant Installation (JUHI) to Terminal 1 and has direct airside access for hydrant dispensers and refuelling tankers to service both the T1 and General Aviation precincts.

At present, there are two bulk fuel storage tanks with a combined capacity of 2.8 million litres each; with the annual consumption being 278 million litres. Against the forecast increase in aviation services as detailed at Chapter 4, further tanks of 3 million litres each are expected to be necessary between 2017 and 2024. Area is available onsite for the installation of these tanks or in the near vicinity.

Delivery of fuel to the JOSF is through road tankers, which source the aviation fuel supplies from Largs Bay or Birkenhead, and the route taken is generally via Tapleys Hill Road into the airport from the intersection at Fred Custance Street. Assessment is currently underway of utilising a portion of the previous Port Stanvac to Birkenhead multi-fuel line for aviation fuel purposes.

This prospect is made possible by installing a fuel pipeline link from Military Road, West Beach through the West Beach Precinct, under Tapleys Hill Road and into the Terminals & Business Precinct.

Overall, the provision of Aviation Fuel Services is able to continue at Adelaide Airport for over the next 20 years from the current location of the JOSF within the Terminals & Business Precinct. This will also allow adequate space for expanded fuels bulk storage, modified roadway configurations and the potential installation of a new fuel pipeline link to the former multi-fuel service pipeline located in Military Road, West Beach.

### 8.5.4 Airservices Australia

In 2012, AsA developed a new Control Tower within the Terminals & Business Precinct, which was operational and opened in 2013. The previous Control Tower, located centrally in the Runways Precinct, is to be decommissioned and removed from the current site in the near future.

The Aviation Rescue and Fire Fighting (ARFF) services continue to operate from its locality within the Runways Precinct, however is expected to be replaced with a new 'Category 101' facility within the next five-years, with timing likely to be directed to coincide with any new Code F aircraft activity (e.g. A380) at Adelaide Airport. Prospective locations include a site in close proximity to the existing ARFF facility, or possibly one within the Tapleys Precinct to the northern side of the existing helicopter services. The latter site has both airside and landside accessibility, and less chance of any impediment to possible long-term taxiway alterations.

AsA currently holds leases for an existing Fire Training Ground within the Runways Precinct and also a former Fire Training Ground facility within the Morphett Precinct. The unused facility within the Morphett Precinct has been decommissioned, though a lease is still held by AsA pending future analysis of any onsite contamination from PFOS/ PFOA (Per fluoroocane sulfonate / Per-fluoro-octanoic Acid) fire-fighting foam. Testing of the site for contamination is to be undertaken by AsA in conjunction with the Department of Environment towards establishing an appropriate standard of management, amelioration and disposal practices for any contaminated soil or water. Following completion of testing or any remediation, the lease is to be surrendered to allow future development at this portion of the Morphett Precinct.

### 8.5.5 Air Freight

In order to segregate landside freight from passenger terminals and associated road access, future air freight cargo facilities at Adelaide Airport are to be progressively relocated from the southern side of the Terminals & Aviation Policy Area, within the Terminals & Business Precinct, and directed to airside sites within the Airport East Precinct. This relocation is more suitable to Airport operations, with the Precinct located within several kilometres of the Cold Storage complex and also T1. The new locality will have direct access to existing transport corridors around Richmond Road, Netley and links to major arterial roads such as Marion Road, South Road and Greenhill / Glen Osmond Roads.

To ensure maximum economy, efficiency and availability of suitable airside operational areas, a Common User Air Cargo freight facility is currently under review, which would allow air freight companies with limited need for full time airside access to functionally operate air freight services.

The overall approach will be to focus on quality and time-critical cargo in the closest proximity to T1, transport networks and airside logistic areas, and with suitable freight tug movements within the airfield. It is recognised that the majority of air freight is transported in the hold of scheduled passenger airline services including exports from Australia, such as fresh, chilled or frozen fruit or vegetables, fish, wine and livestock, as well as high value pharmaceutical goods. Mail and parcel services into airports in Australia are also an expanding activity using both passenger aircraft and dedicated freight aircraft.



### 8.5.6 Aviation Engineering

Aligned with the relocation of air freight to the Airport East Precinct, current larger-scale hangar facilities within the Terminals & Aviation Policy Area are also intended for progressive relocation to the Airport East Precinct. Again, this location is suitable for direct airside access and has landside functionality. These progressive relocations will allow the continuing expansion of passenger services through the expansion of T1 and ancillary facilities.

Smaller-scale aviation engineering services are expected to continue operating within the Terminals & Aviation Policy Area in the vicinity of James Schofield Drive and National Drive for the foreseeable future.

Allowing for the progressive and centralised relocation of both cargo freight and aviation hangars to the Airport East Precinct, there is adequate land supply to meet the evident short-term demand for each activity. For the medium-to-longer-term, land within the Morphett Precinct will be developed for aviation-related support industries. Additionally, future aviation infrastructure, such as aprons, taxiways, hardstand and roadways, will be also required in both the Morphett and Runways Precincts.

### 8.5.7 Aircraft Approach Lighting

Aircraft approach lighting is located at the ends of the Adelaide Airport runways, extending into residential areas at West Richmond for Runway 23 where such lighting is held generally under easement or by ownership of specific allotments. The long-term continuity of this lighting in the vicinity of the current sites is aligned with aviation services at Adelaide Airport, and it is possible that such lighting will be replaced with more efficient systems within the next 5-20 years. The approach lighting locality of West Richmond is now identified under NASF principles as generally unsuitable for close density residential development, due to the impacts of airport operations. However, AAL has in the past acquired further premises to ensure the long-term protection of the runway approach lighting corridor.

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# GROUND TRANSPORT PLAN

# 9



# GROUND TRANSPORT PLAN

## 9.1 Introduction

As Adelaide Airport grows, it is critical that adequate consideration be given to future ground transport demands within and adjacent the airport. Accordingly, the *Ground Transport Plan* (GTP) has been prepared to review existing traffic, access and parking conditions associated with the airport and identifies key transport infrastructure strategies. The GTP focuses on the next five-year period (2014–2019), however, includes consideration of medium-term transport requirements up until 2034.

The primary objectives of the GTP are to:

- identify the existing ground transport infrastructure associated with the airport;
- identify existing ground transport limitations and forecast future ground transport demands;
- identify transport initiatives and actions to accommodate the forecast increases in ground transport demands and future growth of the airport; and
- address the requirements of the *Airports Act 1996*.

The GTP addresses the requirements of the Act as it details the following:

- a road network plan;
- the facilities for moving people (employees, passengers and other airport users) and freight at the airport;
- the linkages between those facilities, the road network and public transport system at the airport, and the road network and public transport system outside of Adelaide Airport;
- the arrangements for working with the State or local authorities or other bodies responsible for the road network and the public transport system;
- the capacity of the ground transport system at the airport to support operations and other activities at the airport; and
- the likely effect of the proposed developments in the Master Plan on the ground transport system and traffic flows at, and adjacent, the airport site.

## 9.2 Background

### Access Study

A detailed *Adelaide Airport Access Study* was prepared by Murray F Young and Associates (MFY) in 2007, with this Access Study forming the basis of the *Surface Access Plan in the Adelaide Airport Master Plan (2009)* and which has now been updated for the preparation of this Ground Transport Plan.

The previous study detailed access and infrastructure requirements to accommodate future growth in passenger demands and development opportunities within the airport site, with allowance given toward airport developments for over 20 years. As noted in the Surface Access Plan Section of the previous Master Plan “airport developments did not create intense additional traffic loading on the road networks, with often peak demand on the arterial roads being at different times to the activity occurring at Adelaide Airport in terms of retailing uses and aviation scheduling”.

Since the preparation of the *Adelaide Airport Access Study* (2007), a number of the developments proposed have been realised, while others have not been undertaken. Table 9.1 summarises the development opportunities reviewed in the *Access Study (2007)* and provides an update on the status of each proposal.

The *Adelaide Airport Access Study (2007)* identified a number of road network infrastructure upgrades to accommodate the developments outlined in Table 9.1, with the progress of the various recommendations included in the following Table 9.2.



Table 9.1 Development Proposals Considered in the Adelaide Airport Access Study (2007)

Development	Current status
<b>Stage 1 – Terminals &amp; Business and Burbridge Precinct</b>	
Vacant land east of Sir Richard Williams Avenue (expansion of Export Park)	Partially developed
IKEA and Masters bulky goods developments	Completed
Burbridge Business Park	Partially developed
<b>Stage 2 – Tapleys and West Beach (Formerly Patawalonga) Precincts</b>	
Harbour Town expansion – two stages – 7,500m <sup>2</sup> additional floor area for retail brand outlet stores and supermarket	Completed
Tapleys North Precinct – bulky goods and possible retail or service trade	Not yet developed
<b>Stage 3 – Airport East and Morphett Precincts</b>	
Air freight and distribution activities up to 16,000m <sup>2</sup> in the Airport East Precinct	Not yet developed
General industry development totalling up to 30,000m <sup>2</sup> in the Morphett Precinct	Partially developed (Manuele Engineering)

Table 9.2 Transport Infrastructure Recommendations Identified in the Adelaide Airport Access Study (2007)

Intersection/road section	Upgrade requirements	Planning Criteria	Expected Timing	Current status
<b>Stage 1 – Airport access requirements to/from Sir Donald Bradman Drive (north of the Airport)</b>				
Sir Donald Bradman Drive/ AQIS (left-in/left-out access)	Left-in/left-out access for AQIS	Commercial Development	2003	Completed 2003
Sir Donald Bradman Drive/ Sir Hubert Wilkins Avenue/ Fred Custance Street	Construct new signalised intersection including two eastbound approach lanes and three westbound approach lanes	Commercial Development	2004	Completed 2004
Sir Donald Bradman Drive/ Vimy Avenue (left-in/ left-out access to/from Burbridge Business Park)	Construct new left-in/ left-out (unsignalised) intersection to service Burbridge Business Park	Commercial Development	2004	Completed 2004
Sir Donald Bradman Drive/ IKEA dedicated access	Convert existing left-in/ left-out access to warehouse to signalised intersection for IKEA	Commercial Development	2006	Completed 2006
Sir Donald Bradman Drive/Sir Richard Williams Avenue/Airport Road (signalised intersection)	Create an extra westbound lane on Sir Donald Bradman Drive	National Land Transport Network	2007	Not undertaken
	Create separate through and right-turn lanes on Sir Richard Williams Avenue	National Land Transport Network	2009	Not undertaken
	Create an additional through and right-turn lane from Airport Road	National Land Transport Network	2011	Not undertaken
	At-grade option – provide an additional eastbound through lane on Sir Donald Bradman Drive	National Land Transport Network	2016	Future need
	At-grade option – alter phasing to diamond overlap by realigning right-turn lanes on Airport Road and Sir Richard Williams Avenue	National Land Transport Network	2018	Future need
	– Add second right-turn lane from Sir Donald Bradman Drive to Sir Richard Williams Avenue or alternate overpass option	National Land Transport Network	2021	Future need



Intersection/road section	Upgrade requirements	Planning Criteria	Expected Timing	Current status
<b>Stage 2 – Airport access requirements to/from Tapleys Hill Road (west of the Airport)</b>				
Tapleys Hill Road between Burbridge Road and Ingerson Avenue	No access to Tapleys Hill Road	Recreational Development	N/A	Complied with in 2007.
Tapleys Hill Road/ West Beach Road/ Sir Reginald Ansett Drive (signalised intersection)	Upgrade significantly via the provision of extra lanes, and signal variations	Retail Development	2009	Upgrades undertaken on Sir Reginald Ansett Drive approach with new slip lane extension in 2013. Any further airport works related to expanded on-airport retail.
New access point to the Tapleys North Precinct	Provide a left-in/left-out access to the north of the existing intersection	Retail Development	New Development initiated	Not undertaken (associated development has not occurred).



Intersection/road section	Upgrade requirements	Planning Criteria	Expected Timing	Current status
<b>Stage 3 – Airport access requirements to/from the eastern and southern sides of the Airport</b>				
Richmond Road to Terminals Precinct, including Richmond Road / Marion Road Intersection	Feasibility assessment to identify the viability of a controlled access for taxis, buses or commercial vehicles only or for all vehicles	State Integrated Transport & Land Use Study	N/A	Adopted as a surface transport recommendation in the 2009 Master Plan and retained in this Master Plan.
Morphett Road	Provide access to the Morphett Precinct	Commercial Development	2009	Access adjacent Manuele Engineering completed in 2009.
James Melrose Road (or Mooringe Avenue)	Upgrade and/or maintain collector road(s) and subsequent intersections (e.g. Marion Road/Mooringe Avenue) to accommodate B Double vehicles	Local Operations	Not specified	Not undertaken.
Morphett Road link to Richmond Road (Southern Collector)	Provide future allowance for B-Double corridor from Morphett Road to Richmond Road, possibly through Netley Commercial Park	State 30-Year Plan for Greater Adelaide and State Infrastructure Plan	10 year prospect	Not undertaken, but road corridor reservation maintained on airport land.

On the basis of the above table, it can be seen that the recommended upgrade requirements for commercial airport developments have been met, except where the envisaged development has not transpired. Continued growth in general traffic will place increased pressure on the external ground transport network, with this now recognised in the State Government *Integrated Transport and Land Use Plan, 2013*, with major intersections linking Adelaide Airport to the City identified for upgrading, and Richmond Road connectivity proposed for Taxi, Bus and controlled vehicle access into Adelaide Airport.

## 9.3 Existing Ground Transport Infrastructure

### 9.3.1 External Road Network

Sir Donald Bradman Drive and Tapleys Hill Road are dual lane, separate carriageway, major arterial roads under the control of the State Government's Department of Planning, Transport and Infrastructure. James Melrose Road and Warren Avenue are both collector roads under the care and control of the City of West Torrens, comprising single traffic lanes in each direction.

Military Road is a collector road under the care and control of the City of Charles Sturt (northern section) and City of West Torrens (southern section). Similarly, West Beach Road is a collector road under the care and control of the City of Charles Sturt, for the western section, and the City of West Torrens, for the eastern section. Both roads comprise a single traffic lane in each direction separated by a painted centreline. A service road is also provided parallel to West Beach Road which provides parking and access for adjacent sites to the south.

Access arrangements for the various updated precincts via the external road network are as follows:

- *Runways Precinct*
  - secure airside area accessed via controlled access points; and
  - a number of secured emergency only access points around the perimeter of the site.
- *Terminals & Business Precinct*
  - the primary access for the overall Airport site is provided via the Sir Donald Bradman Drive/Airport Road/Sir Richard Williams Avenue signalised intersection;
  - a secondary signalised access provided for the IKEA/MASTERS development on Sir Donald Bradman Drive;
  - a minor access (left-in/left-out) to the Department of Agriculture building on Sir Donald Bradman Drive;
  - an access provided via the signalised intersection of Sir Donald Bradman Drive/Fred Custance Street; and
  - an access provided via the unsignalised intersection of Sir Donald Bradman Drive/Vimy Avenue (left-in/left-out).

- *Torrens Precinct*
  - access points provided via the Burbridge Road service road, Ingerson Avenue and Foreman Street.
- *Tapleys Precinct*
  - an access provided via the signalised intersection of Tapleys Hill Road/West Beach Road/Sir Reginald Ansett Drive (at the northern end of the Harbour Town development); and
  - a left-in/left-out/right-in unsignalised access (at the southern end of the Harbour Town development).
- *West Beach Precinct*
  - four currently gated access points on West Beach Road (or its service road); and
  - indirect access to the golf course via the adjacent Adelaide Shores property access points.
- *Morphett Precinct*
  - five access points (four of which are gated) on James Melrose Road, including the access for the Manuele Engineers development; and
  - a secure access on the continuation of Morphett Road (currently providing controlled and emergency only access to the airside area).
- *Airport East Precinct*
  - a number of access points are provided to individual developments within the Airport East Precinct including access points along Transport Avenue, Richmond Road and Morley Street.

Figure 9.1 depicts the respective existing traffic movements on the various major roads surrounding the airport and internally along Sir Richard Williams Avenue as at March 2014. The traffic counts have been derived by the State Government Department of Planning, Transport and Infrastructure, and are subject to regular updating during each year.

Figure 9.2 illustrates the locations of the existing and future key access points for the airport site.

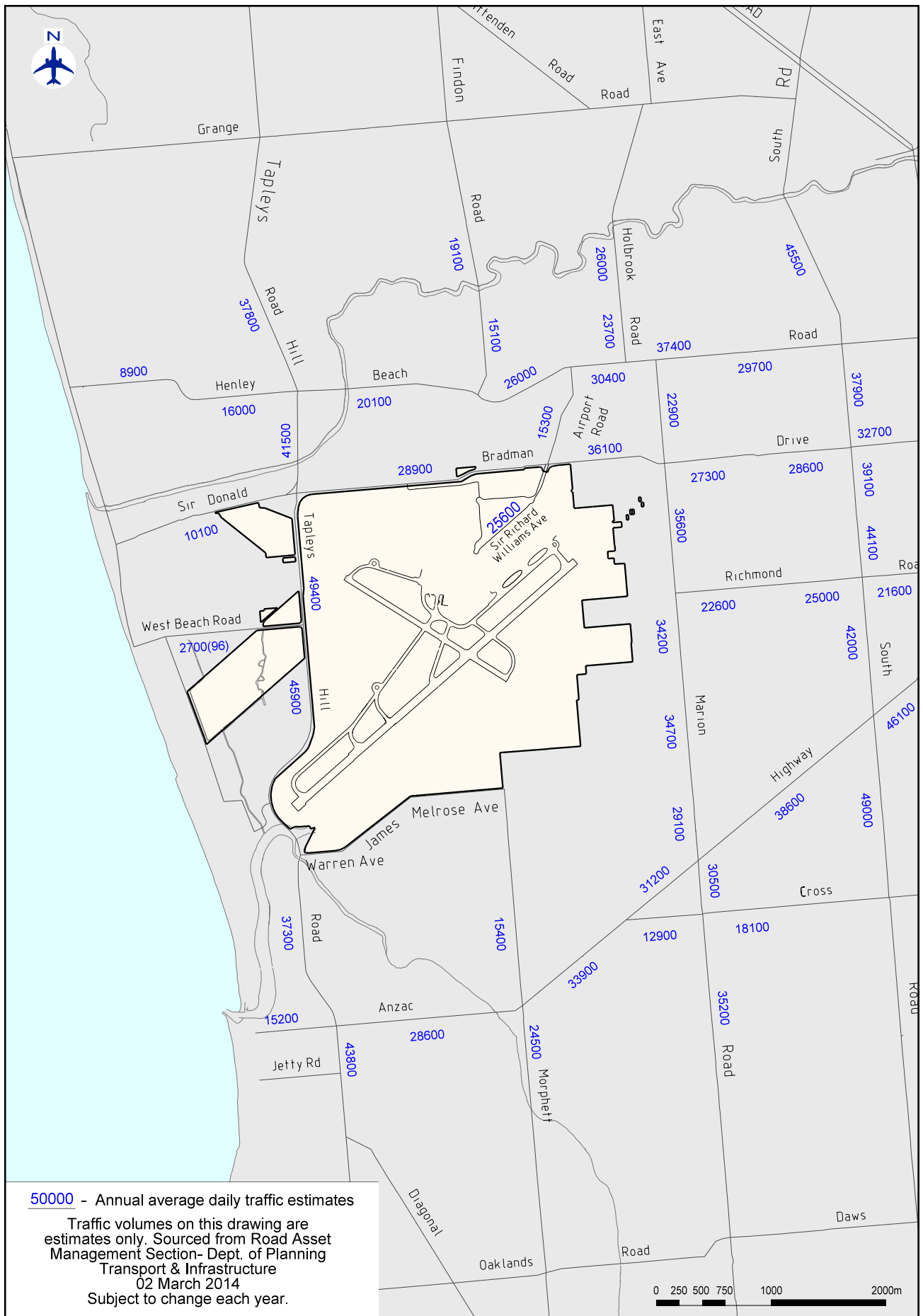


Figure 9.1 Average Annual Daily Total Traffic Estimates of Major Roads surrounding Adelaide Airport



### 9.3.2 Internal Road Network

#### (a) Runways Precinct

A network of secure internal access roads extending for over 23 kilometres is provided within the Runways Precinct for airside access. Public access to the airside roads is restricted.

#### (b) Terminals & Business Precinct

The majority of Adelaide Airport's internal road network of around 16 kilometres is provided within the Terminals & Business Precinct. Sir Richard Williams Avenue provides the primary access connection between the external road network and T1. This network accommodates movements to/from the passenger set-down/pick-up facility, short-stay and long-stay car parks, staff car parks, car hire collection/drop-off and the taxi holding area.

Sir Richard Williams Avenue comprises a two-way dual lane separated carriageway between Sir Donald Bradman Drive and James Schofield Drive.

Between James Schofield Drive and the Western Link Road, Sir Richard Williams Avenue separates to provide a one-way passenger set-down/pick-up facility (underneath the multi-level short-stay car park) and ingress/ egress lanes to the multi-level car park. South-west of the Western Link Road, Sir Richard Williams Avenue forms a one-way (dual lane) loop around the staff and long-stay parking areas.

The passenger set-down/pick-up facility for the Terminal is comprised of two traffic lanes and a short-term standing lane. Approximately 20 to 25 vehicles can be accommodated in the parking lane. The facility accommodates set-down/pick-up by domestic vehicles as well as set-down of passengers arriving by taxi. Taxi pick-up is accommodated via a separate facility to the south of the short-stay car park building.

Western Link Road and James Schofield Drive complete the primary access route for passenger movements entering and exiting the site via the main access point.

Both roads provide dual lane carriageways separated by central medians. Roundabouts are provided at the intersections of the three primary internal roads to safely and efficiently accommodate vehicle movements.

Sir Hubert Wilkins Avenue provides a secondary access route for drivers travelling between the secondary signalised intersection on Sir Donald Bradman Drive and the Terminals & Business Precinct. The road also provides access for the current car hire storage facilities and a link between the Terminals & Aviation Policy Area and the Burbridge Business Park Policy Area via Fred Custance Street.

Both Sir Hubert Wilkins Avenue and Fred Custance Street comprise single traffic lanes in each direction separated by line-marked centrelines, except at the intersection with Sir Donald Bradman Drive where additional turn lanes are provided.

A partially completed loop road (Butler Boulevard) and Vimy Avenue form a central link through the western side of the Terminals & Business Precinct to Sir Donald Bradman Drive. These roads generally comprise wide carriageways (to accommodate large commercial vehicles including B-Doubles) with single lanes in each direction. The northern intersection of Vimy Avenue and Butler Boulevard forms a four-way intersection which is controlled by a roundabout.

Additional minor internal roads are provided throughout the Terminals & Business Precinct which provides access for individual developments and airport related activities.

#### (c) Torrens Precinct

The Torrens Precinct is largely undeveloped, with the only internal access road provided for access to/from the Adelaide University hockey grounds (via Burbridge Road) and direct access into the aged-care facility.

#### (d) Tapleys Precinct

Sir Reginald Ansett Drive provides access for the Tapleys Precinct (including the Harbour Town Shopping Centre and aviation support developments).

#### (e) West Beach Precinct

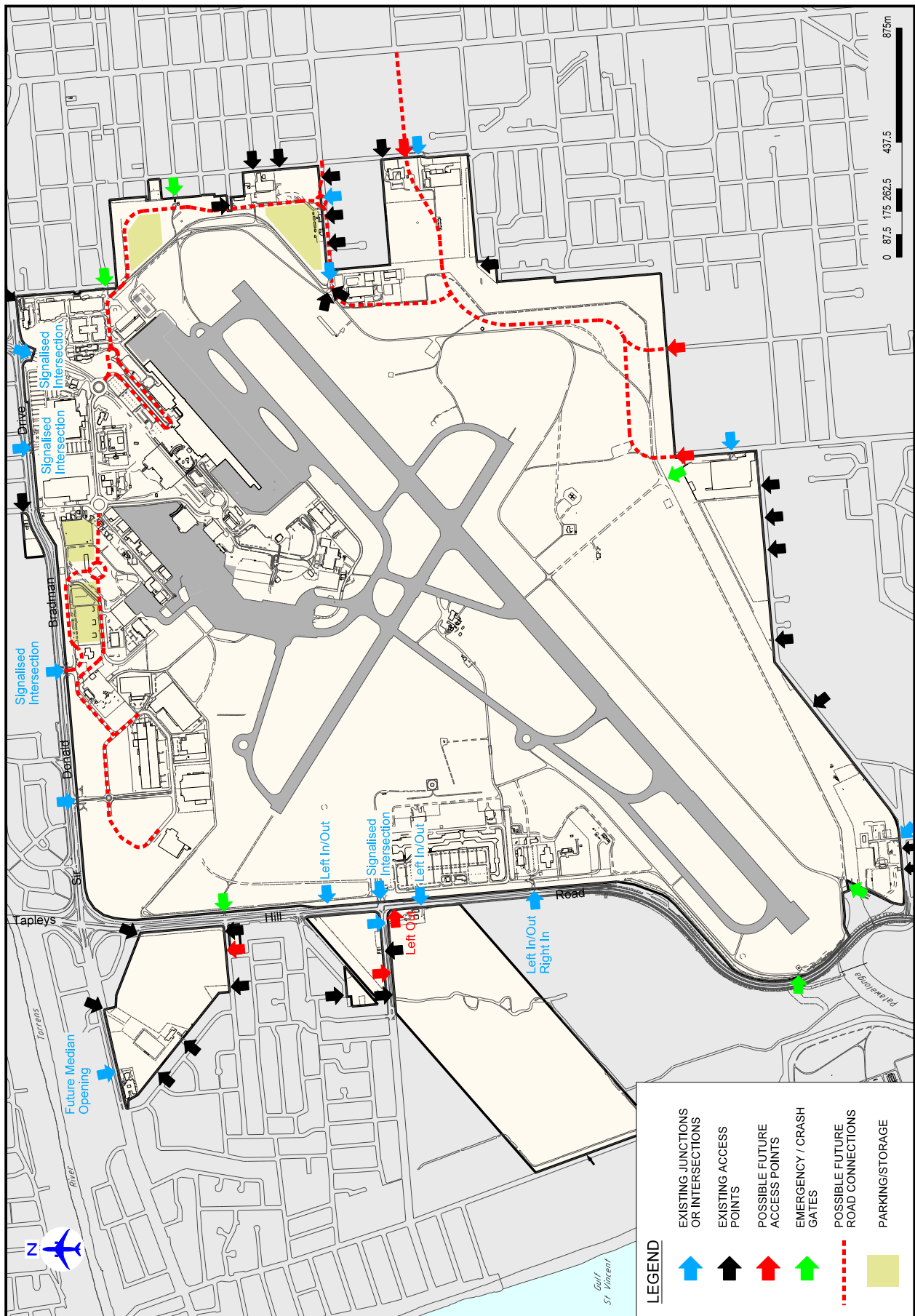
The West Beach Precinct has limited internal access provision (limited to minor maintenance roadways). Access to/from the precinct is general provided via adjacent public roads, namely West Beach Road, Military Road and Tapleys Hill Road.

#### (f) Morphett Precinct

Internal roads within the Morphett Precinct are limited to individual property access points for the few existing developments within the Precinct.

#### (g) Airport East Precinct

Internal roads within the Airport East Precinct are limited to individual property access points for the existing developments within the Precinct, with the exception of the extension of Transport Avenue (at its south-western end).



### Figure 9.2 Adelaide Airport access points

### 9.3.3 Parking

A substantial extent of car parking is provided across the Adelaide Airport site. Parking provision for airport operations includes short-stay, long-stay and staff parking and General Aviation Terminal car parking.

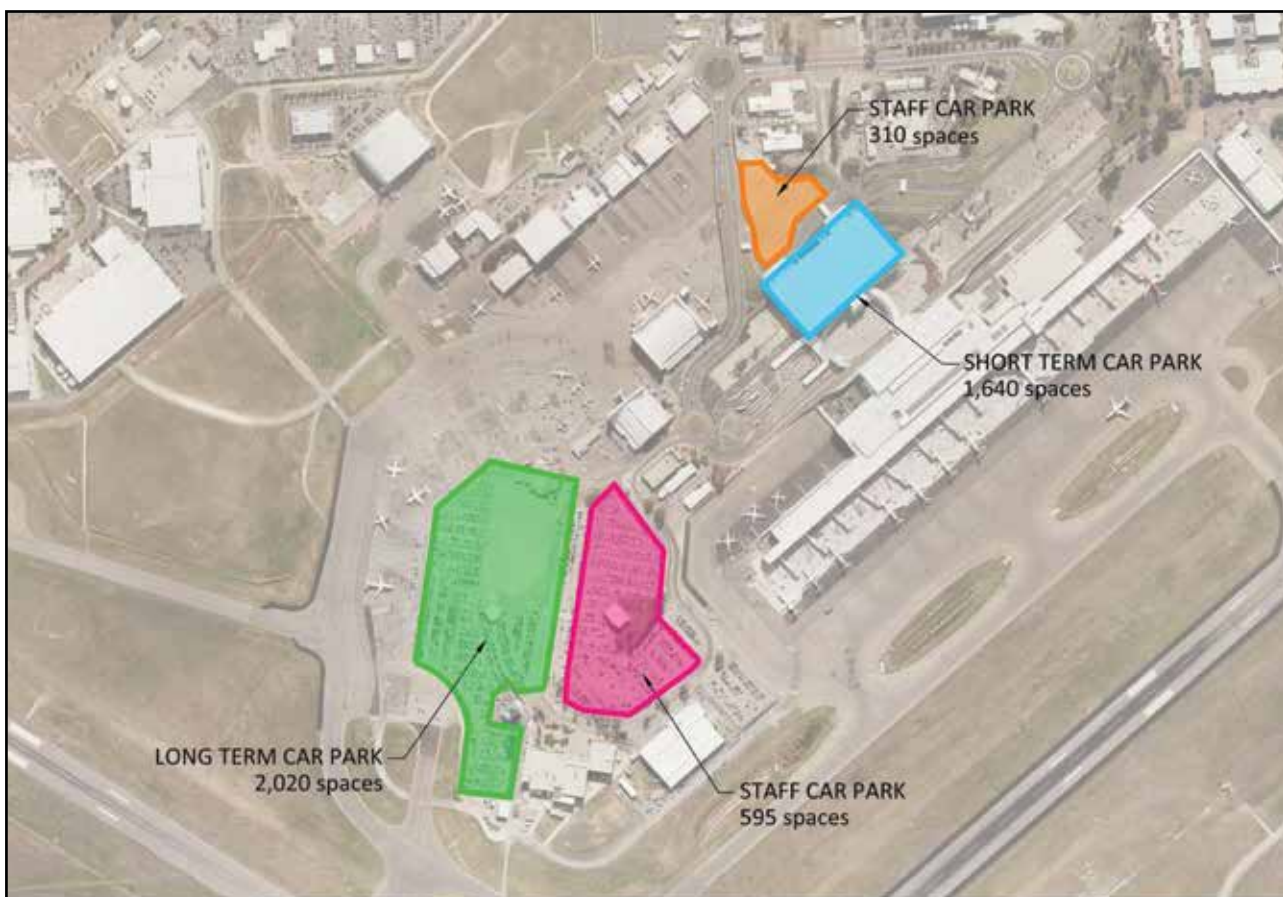
Short-stay parking is provided within a multi-level car park located to the north-west of T1 and accessed via Sir Richard Williams Avenue. The short-stay car park contains 1,640 parking spaces provided over four levels. Ingress and egress movements are controlled by boom gates associated with paid parking controls.

Long-stay parking is provided adjacent the south-western end of Sir Richard Williams Avenue. Access to the long-stay car parking area is controlled by boom gate facilities. A total of 2,020 spaces are provided for long-stay parking as at 2014. Passengers utilising the long-stay parking facilities can access the Terminal via the shuttle bus service or walk approximately 400 metres. In addition to the onsite long-stay parking facilities, off-site operators also provide long-stay parking facilities with associated shuttle bus facilities.

Staff parking is provided in two parking areas within the Terminals & Business Precinct. The first car park contains 595 parking spaces and is located at the south-western end of Sir Richard Williams Avenue (to the east of the long-stay car park). The second staff car park is located to the north of the short-stay car park and contains 310 spaces.

Figure 9.3 illustrates the locations of the current 2014 key parking facilities within the Terminals & Business Precinct.

Parking for vehicles associated with development sites and airport support services are provided within individual parking areas associated with each land use.





### 9.3.4 Public Transport

Public transport access to and from Adelaide Airport is currently limited to bus services. Presently six bus routes regularly service the airport, namely:

- Route J1 – Glenelg interchange to City;
- Route J1A – City to Adelaide Airport;
- Route J2 – Harbour Town Centre interchange to City;
- Route J7 and J8 – West Lakes Centre interchange to Marion Centre interchange; and
- Route 300 – Suburban Connector (ring route) including servicing of Harbour Town interchange.

Buses operating on the above routes (with the exception of Route 300) utilise Sir Richard Williams Avenue to provide access to and from the Terminals & Business Precinct with 3 bus stops strategically sited for ready commuter accessibility. Buses servicing routes 300, J1, J1A and J2 also enter the Harbour Town Centre interchange via Reginald Ansett Drive.

In addition to the above routes (which enter the Airport site), Route 162 operates between West Beach and the City via Sir Donald Bradman Drive and is utilised for access to the Terminals & Business Precinct by some airport users.

Routes 167 and 168 provide access to the south-east of the Airport site along Mooring Avenue and Marion Road. These routes could be utilised by users associated with the Airport East and Morphett Precincts.

Figure 9.4 illustrates the current routes utilised by the services detailed above as at February 2014. These are subject to ongoing revision from time to time by DPTI.

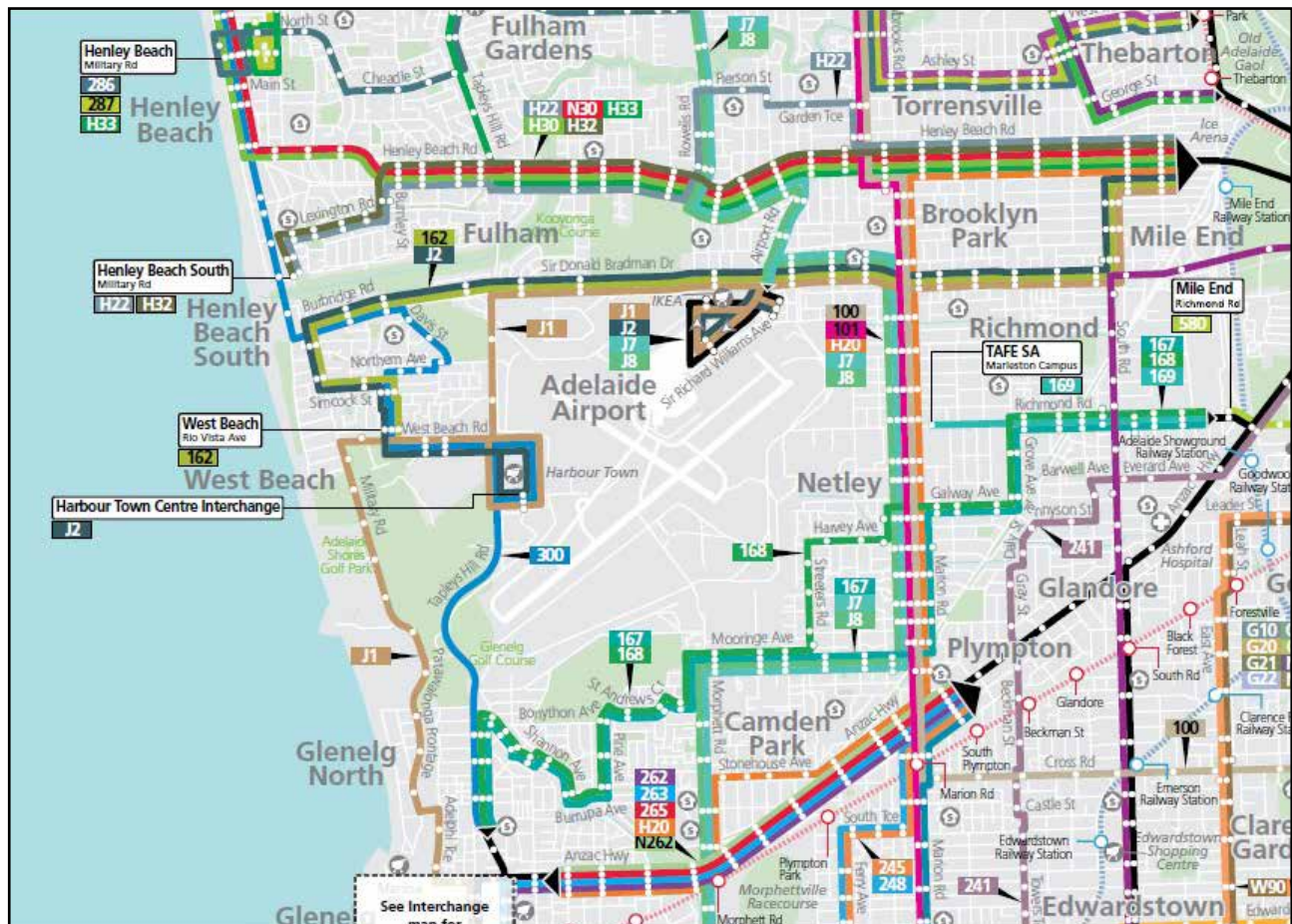


Figure 9.4 Public Transport Network Map (Source: Adelaide Metro, January 2014)



### 9.3.5 Taxis/Limousine/Tour Buses

Taxi services are a key component of the ground transport system and accommodate a large proportion of passenger access demands for Adelaide Airport. Taxi services operate within the Terminals & Business Precinct under a specific arrangement overseen by the South Australian Taxi Council. Facilities include a taxi lay-off area (with current capacity for approximately 350 vehicles and an associated driver amenity facility) and a passenger loading (pick-up) rank including concierge service (with capacity for approximately 45 taxis). Taxi passenger drop-off is accommodated within the general passenger set-down/pick-up underneath the short-stay car park building, with a possible dedicated set down facility to the northern end of the Terminal Plaza under evaluation in 2014/15. Similarly, limousine car parking adjoins the taxi holding areas as do facilities for Tourist Buses.

### 9.3.6 Car Hire and Valet Services

Car rental facilities are provided within the Terminals & Business Precinct. The facilities include service offices within the ground floor of the multi-level car park and kiosks within Terminal 1. Rental cars are collected and dropped off by customers at the ground level of the multi-level car park. Additional car storage facilities are provided for the rental companies along Sir Hubert Wilkins Avenue.

Qantas operates a valet service for customers' cars at Adelaide Airport with 50 parking spaces and a valet kiosk at the southern side of the Terminal building. Longer term storage for valet cars is provided in a secure compound fronting Sir Hubert Wilkins Avenue.

### 9.3.7 Walking and Cycling

Pedestrian paths connect Terminal 1 with the set-down/pick-up, short-stay, long-stay and staff parking areas. Additional paths are also provided along Sir Richard Williams Avenue to accommodate pedestrian movements to and from the external road network.

On-road bicycle lanes are provided on Sir Donald Bradman Drive along the frontage of the airport site. The following shared (pedestrian and cyclist) paths are also provided adjacent the Airport:

- the Anna Meares Bike Path – which extends along Sir Donald Bradman Drive, between Tapleys Hill Road and Frank Collopy Court;
- the Reece Jennings Bikeway – which extends along Tapleys Hill Road, between Anderson Avenue (south of the airport) and the River Torrens Linear Park shared path (north of the airport); and

- the Captain McKenna Shared Use Pathway – which extends along the airport's southern boundary, between Warren Avenue and Lew Street/Watson Avenue.

Internal cyclist movements within the Airport Precincts are shared within the road carriageways. Figure 9.5 illustrates the major transport routes, including the cycling network, surrounding the airport site.

Parking for bicycles is currently accommodated in a free facility on the ground floor of the multi-level car park. The bicycle parking is being utilised for passengers and employees and there is capacity to expand the facility as demand warrants.

### 9.3.8 Commercial Development Opportunities

The commercial development opportunities within Adelaide Airport remain consistent with the previous potential yields reviewed as part of the *Adelaide Airport Access Study (2007)* with the exception of the expanded portion of the Morphett Precinct to the northern side of the Keswick/Brownhill Creek drainage easement. A number of the developments reviewed as part of the 2007 study have since been undertaken and, as noted above, associated road infrastructure upgrades (where the responsibility of AAL) have been completed. In some precincts, development opportunities compared to the previous assumptions may be of a lower scale, so that the traffic demand is less intensive than the conservative estimates used for the previous *Adelaide Airport Access Study (2007)* and updated in 2013.

The following potential commercial development uses (excluding airport facilities and service industries) have been identified within the various precincts:

- Terminals & Business Precinct – hotel/conference facilities, offices and hardware retail.
- Torrens Precinct – recreational use and aged care facilities.
- Tapleys Precinct – expanded retail, bespoke commercial uses and industrial/aviation support uses.
- West Beach Precinct – bespoke commercial uses and tourist/recreation facilities (associated with Adelaide Shores).
- Morphett Precinct – transport/logistics facilities, industrial and commercial uses.
- Airport East Precinct – transport/logistics facilities, industrial uses and alternate aviation-related support industry.

### 9.3.9 Freight and Logistics

Adelaide Airport is an important freight hub within Adelaide and South Australia. Freight and logistics operators are primarily located within the Terminals & Business and Airport East Precincts. A number of freight and logistics businesses operate with secure airside access.

Freight and logistics operators generate higher demands for the use of commercial vehicles compared with other uses utilising the internal landside and external road networks. This includes heavy rigid trucks, semi-trailer and B-Double vehicles.

Access by B-Double vehicles is accommodated to/from a number of the airport precincts by gazetted routes. On the adjacent arterial road network, Sir Donald Bradman Drive, Tapleys Hill Road and Richmond Road are gazetted B-Double routes. A number of roads within the airport site are also gazetted for B-Double operation, including Sir Richard Williams Avenue, James Schofield Drive and a number associated with Export Park and Burbridge Business Park. Figure 9.5 illustrates the gazetted B-Double road network surrounding and within the airport site.

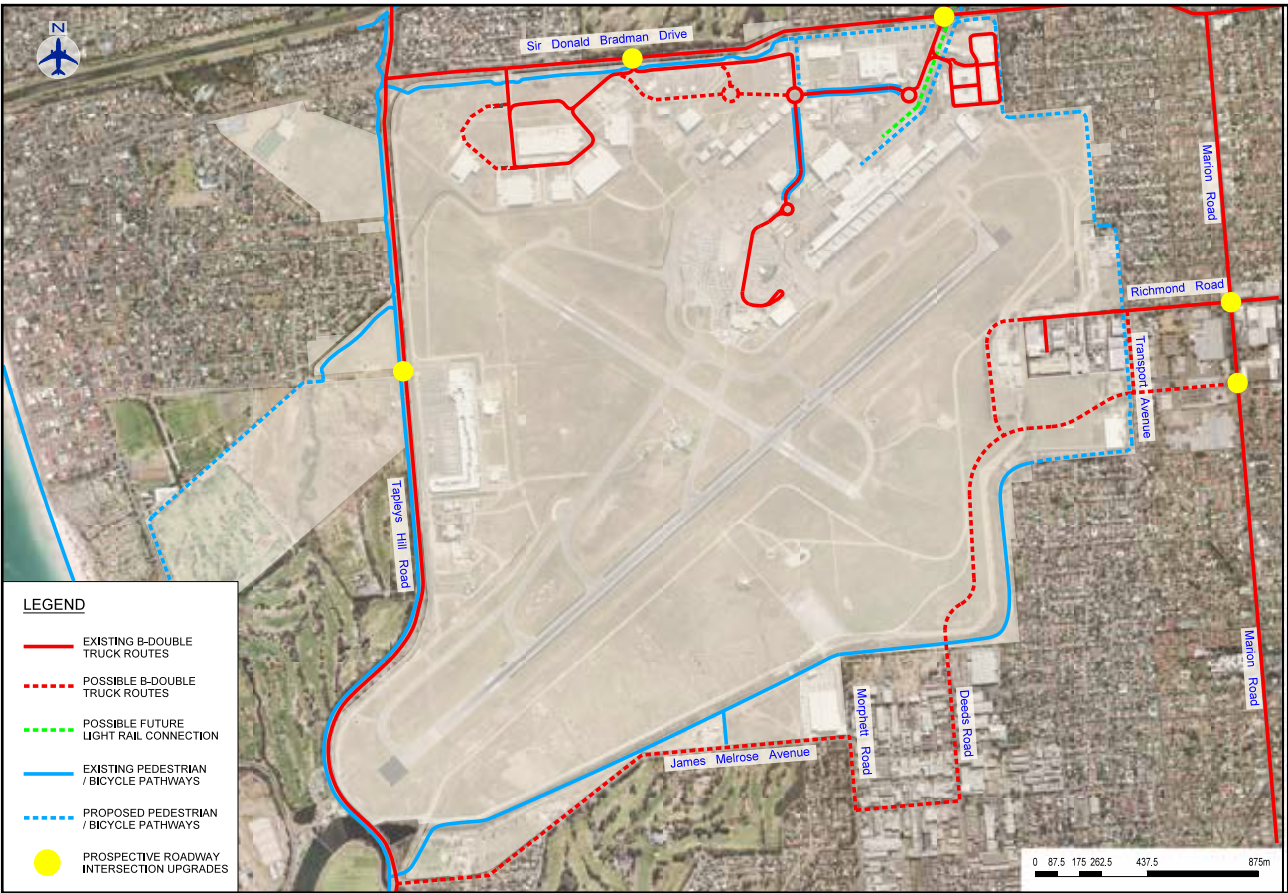


Figure 9.5 Transport Corridor Routes Surrounding Adelaide Airport

## 9.4 Ground Transport Demands

Ground transport demands for airports depend on a variety of factors, including (but not limited to) mode availability, cost, travel times and trip purpose. Different user groups will place varying importance on the factors when assessing appropriate modes. For instance, mode reliability is a primary concern for passengers (to reach flights on-time), however, it would be a lesser factor for Adelaide Airport staff.

In order to assess the adequacy of the existing road networks and consider appropriate improvements as further airport growth occurs, identification of existing ground transport demands is required. The following traffic volume data was obtained to assist in preparing the GTP:

- The 2013 vehicle turning volume data (Sydney Coordinated Adaptive Traffic System (SCATS) signal controller) for weekday peak periods (am and pm) were provided by DPTI for the following intersections:
  - Sir Donald Bradman Drive/Sir Richard Williams Avenue/Airport Road intersection.
  - Sir Donald Bradman Drive/Tapleys Hill Road intersection.
  - Tapleys Hill Road/West Beach Road/Sir Reginald Ansett Drive.
  - Sir Donald Bradman Drive/Marion Road.
  - Marion Road/Richmond Road.
- Queuing and delay surveys were undertaken in May 2013 at the Sir Donald Bradman Drive/Airport Road/Sir Richard Williams Avenue and Sir Donald Bradman Drive/Marion Road intersections during the different peak periods associated with airport traffic and primarily passing commuter traffic.
- The forecast turning counts for 2036 were prepared by DPTI for the road network surrounding the Airport. These forecast volumes include projected growth on the road network associated with any growth at Terminal 1 and existing land uses.

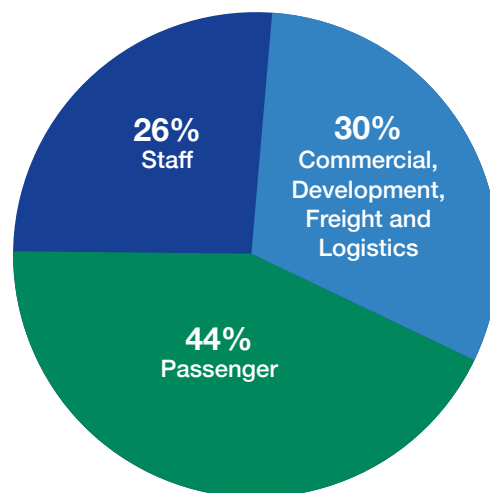
In addition to the traffic volume data, the following additional information relating to transport modes was collated:

- airport data identifying the daily and hourly breakdowns of taxi movements within the holding and pick-up areas;
- DPTI's Public Transport Services Division data identifying patronage associated with bus routes servicing the airport;
- airport data identifying daily short-stay and long-stay parking demands; and
- survey data collated by MFY identifying the classification of vehicle types utilising the set-down/pick-up area (i.e. domestic

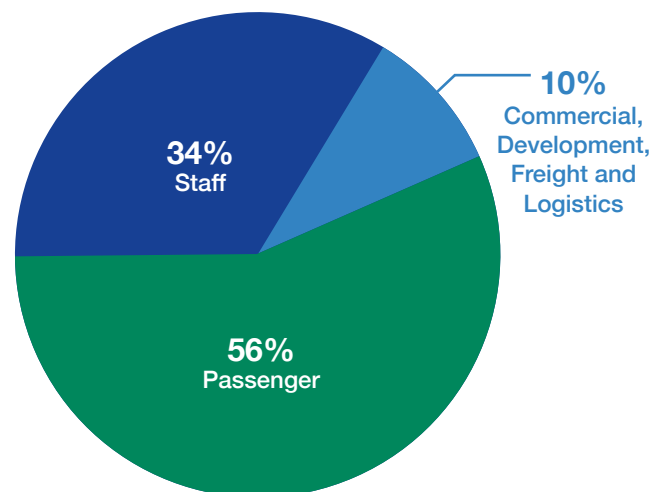
vehicles, taxis, shuttle buses, public transport buses etc.).

Based on a review of available ground transport demand data, Figure 9.6 illustrates the proportion of average daily traffic demands associated with user types within the overall airport site as well as the Terminals & Aviation Policy Area. In both instances, movements associated with airport passengers comprise the largest user group.

### Overall Airport Site



### Terminals Policy Area Only



**Figure 9.6 Traffic Demands by user type for the overall site and for the Terminals and Aviation Policy Area only**  
(Source: Murray F Young and Associates, 2013)

## Passenger Growth

The movement of passengers to, from and within Adelaide Airport is a primary consideration of the GTP. Data currently indicates that approximately 7.56 million passengers per annum use ground transport to gain access to/from the airport with this number forecast to grow to 18.4 million passengers by 2034. Such increases in passenger numbers will generate significant increases in traffic movements and parking demands within and adjacent the airport. Figure 9.6 illustrates the projected increases in average annual passenger numbers to 2034.

A review of the modes of transport utilised by passengers has been undertaken. Figure 9.7 illustrates the breakdown for each available mode based on the number of vehicle trips accommodated on the ground transport system.

Current traffic data for the various access points associated with the Airport indicate that approximately 20,000 trips per day are associated with passenger trips (equating to an average of approximately one daily vehicle trip per passenger). Assuming the anticipated growth rate in passenger numbers is realised and that current transport mode patterns remain unchanged, vehicle trips associated with passengers could increase to more than 49,000 vehicle trips per day over the next 20 years.

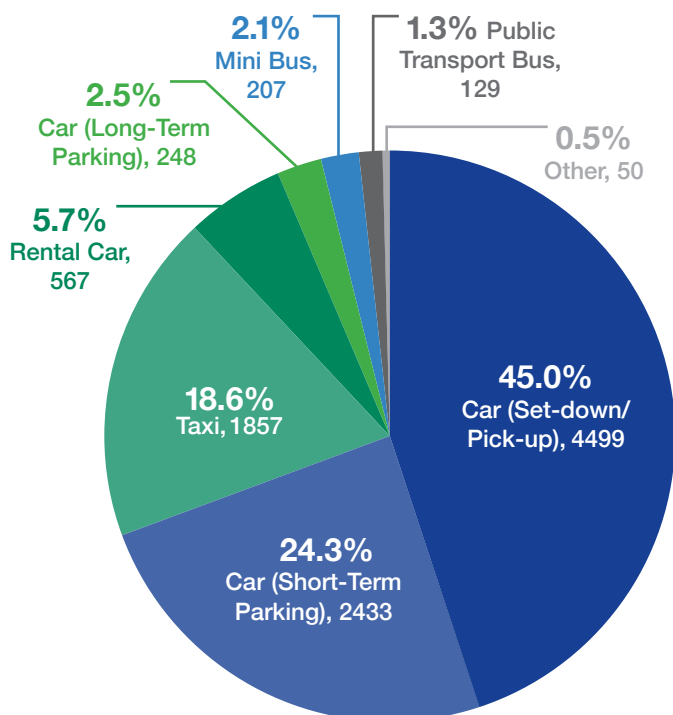


Figure 9.7 Proportion of Transport Mode Use (by vehicle trips) associated with Airport Passengers (Source: Murray F Young and Associates, 2014)

## Employment Trips

The Adelaide Airport site currently provides employment for an estimated 8,726 people. It is anticipated that this number will more than double in the next 20 years. Current data indicates daily vehicle movements associated with employees equates to approximately 12,000 vehicle trips per day (the majority of which would be undertaken via private vehicle). The anticipated growth in vehicle movements associated with employees could be in the order of 25,000 vehicles per day by 2034 as illustrated in Figure 9.8.

## Commercial, Freight And Logistics

Available data suggests that approximately 14,000 vehicle trips per day are associated with commercial development, freight and logistics operations within the overall airport site. Approximately 10% of these movements are undertaken by commercial vehicles (including rigid trucks, semi-trailer and B-Double vehicles).

Based on the anticipated potential for additional commercial development within all of the precincts, it is projected that an additional 6,000 vehicle trips per day could be generated by commercial, freight and logistics uses by 2034 totalling over 20,000 vehicle trips per day. Such growth is in line (or less than) previous forecasts identified as part of the *Adelaide Airport Access Study (2007)*. Figure 9.8 illustrates the forecast growth in daily traffic volumes associated with future commercial development and growth in freight and logistics demands.

## Total Projected Vehicle Demand

Assuming that transport mode patterns remain as they currently are, the total vehicle movements associated with all airport precincts will increase to over 90,000 vehicle trips per day by 2034. While reduced reliance on private motor vehicles in the future could result in a lower daily volume being realised, the above forecast provides an upper estimate for conservative assessment of future ground transport system requirements. Figure 9.8 illustrates the projected increases in total vehicle trips for the overall airport site for the next 20 years.



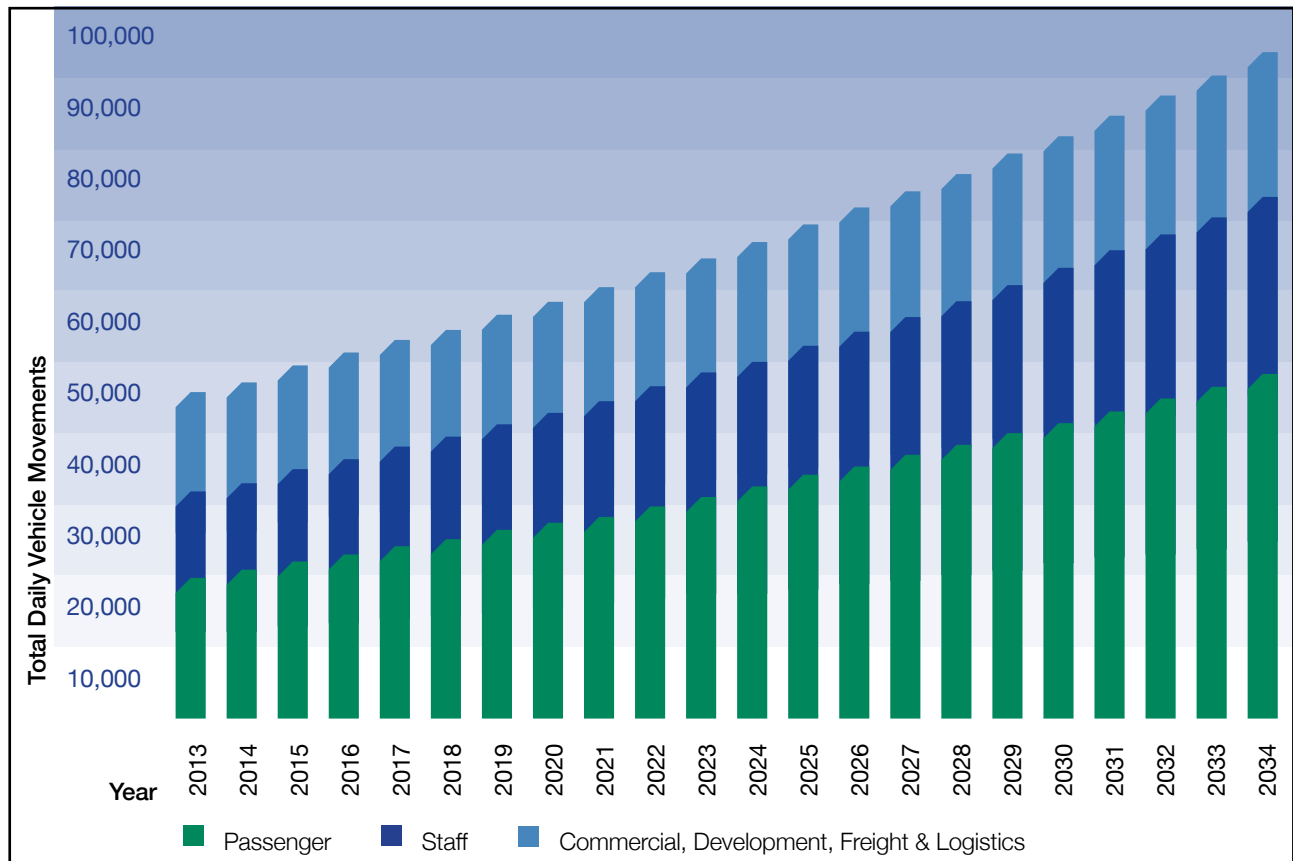


Figure 9.8 Proportion of Transport Mode Use – Overall Airport  
(Source: Murray F Young and Associates, 2014)

## 9.5 Future Ground Transport Infrastructure

In order to accommodate future growth associated with increased passenger demands and future development opportunities within the airport, upgrades will be required to the ground transport network. Key intersections on the adjacent external road network will require upgrade to accommodate additional movements associated with the airport as well as general non airport related growth on the external road network. The internal road network will require significant realignment and upgrade to adequately accommodate future ground transport demands.

### 9.5.1 External Road Network

A number of upgrades to the external airport road network identified as part of the previous *Adelaide Airport Access Study (2007)* have not yet been undertaken due to funding constraints associated with the National Land Transport Networks. Such upgrades are required, particularly at peak times to accommodate non-airport related traffic to/from the Western Suburbs and existing and future aviation growth needs. Further technical analysis has identified additional upgrade prospects including those included in the draft *Integrated Transport and Land Use Plan (2013)*. These include:-

### (1) Sir Donald Bradman Drive / Sir Richard Williams Avenue / Airport Road

As identified in Table 9.2, this primary access intersection into the airport, which forms part of the National Land Transport Network, continues to require significant alterations to meet peak traffic demand. This requirement is recognised in the State draft *Integrated Transport and Land Use Plan* (ITLUP), which identifies that all major intersections along Sir Donald Bradman Drive are to be upgraded in the short to medium term. In addition, the ITLUP also identifies the future allowance for a light rail spur to enter the airport from Airport Road, which will need to be considered against the various intersection alterations.

### (2) Sir Donald Bradman Drive / Sir Hubert Wilkins Avenue

As outlined in the *Airport Master Plan (2009)*, the current assessment of future ground transport demands has supported the need for a second major access to service the Terminals & Business Precinct to minimise upgrade requirements at the existing primary access point at Sir Donald Bradman Drive / Sir Richard Williams Avenue. Opportunities to provide a second major access for the airport are constrained. However, for the short-to-medium-term, it has been identified that the upgrade of Sir Donald Bradman Drive/Sir Hubert Wilkins Avenue intersection (along with internal road alterations detailed below) will accommodate the provision of a second terminal access. The intersection upgrade comprises an additional right-turn lane on Sir Donald Bradman Drive and internal alterations to increase queuing distances and remove the internal intersection immediately adjacent the access.

### (3) Richmond / Marion Roads – Airport Link

As included in the State draft *Integrated Transport and Land Use Plan (2013)* the transfer of taxis, buses and controlled commercial vehicles through a new route along Richmond Road and extending to the Export Park Policy Area of the airport will lower traffic demands using Sir Donald Bradman Drive and entering along Sir Richard Williams Avenue. This will entail improvements to the Marion Road / Richmond Road intersection (which was identified as being at capacity in the aforementioned *Adelaide Airport Access Study 2007*), possible enhancements along Richmond Road and the development of a new link roadway from Richmond Road abutting the Keswick Creek at West Richmond into the Export Park Policy Area.

### (4) Morphett / Deeds Road to Richmond Road (Southern Collector Route)

The State *30-Year Plan for Greater Adelaide* included the provision of a new collector route adjacent the south eastern corner of the airport (between the Morphett and Airport East Precincts). This new route could connect through the Netley Commercial Park to Marion Road or alternatively via Richmond Road and emanating from either Morphett Road or Deeds Road, with the primary aim to cater for commercial traffic to and from Camden Park / North Plympton. Airport developments and non-airport related feeder traffic using the new Southern Collector will contribute to increased traffic on Richmond Road. Reservation of land for this collector route within the airport continues to be maintained (refer Figure 9.5). The current study suggests greater functionality should the collector route have passage through the Netley Commercial Park, where a four way intersection at Desmond Avenue would require signalisation to safely and efficiently accommodate traffic movements.

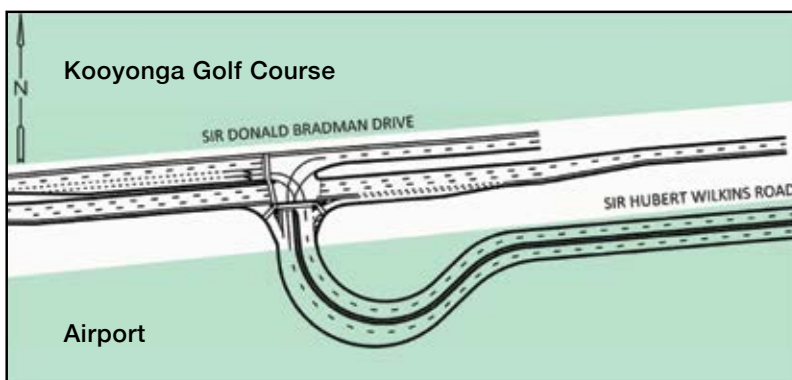


Figure 9.9 Upgrade of Sir Donald Bradman Drive/Sir Hubert Wilkins Avenue Intersection to Provide Short to Medium-Term Second Major Terminal Access Point (Source: Murray F Young and Associates, 2014)

### 9.5.2 Internal Road Network

In order to accommodate the altered access arrangements on the surrounding external road network, a number of alterations to Adelaide Airport's internal road network will be required.

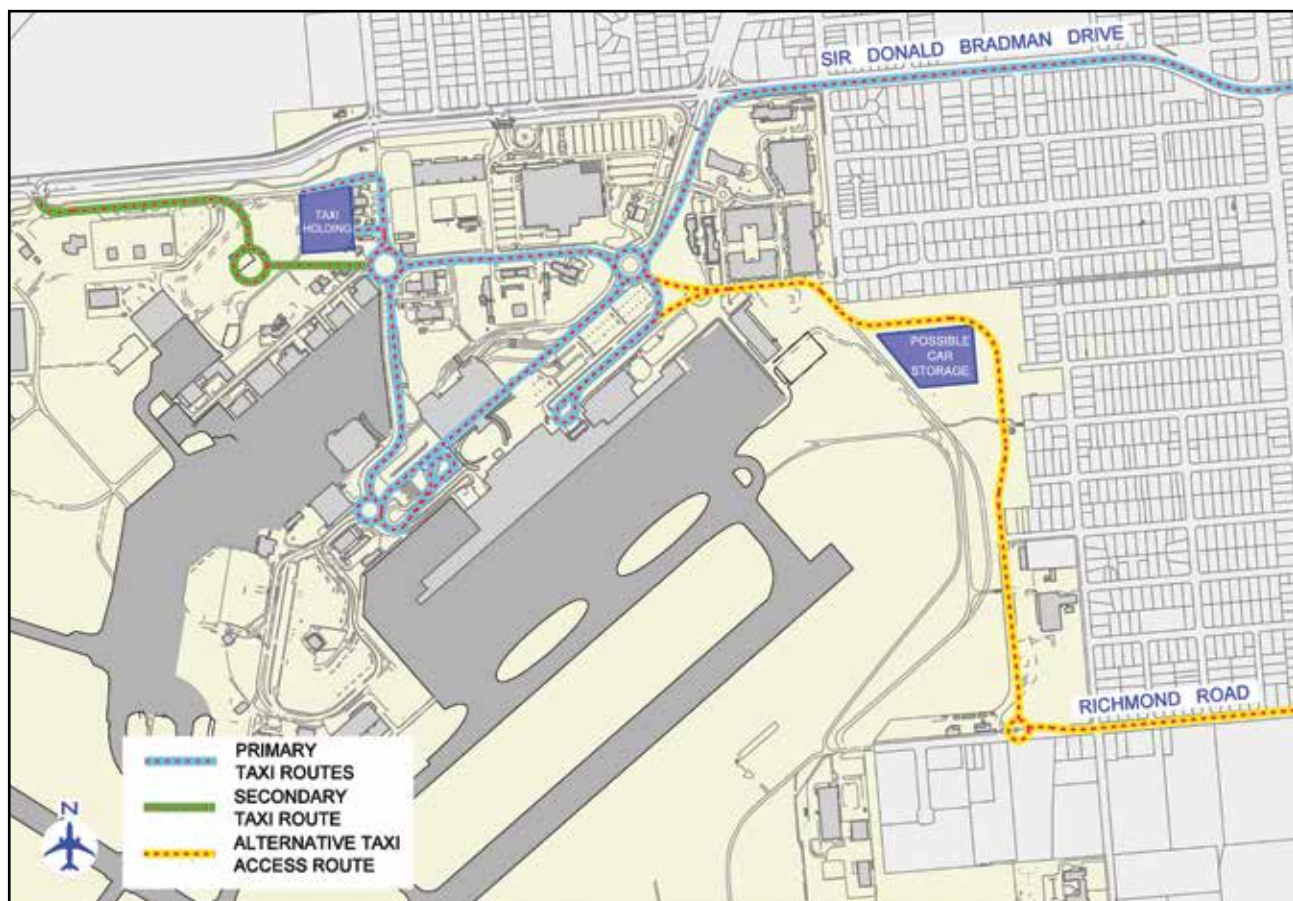
#### New Taxi Access Link

It is proposed to provide a new access connection from Airport East to the eastern side of the Terminal & Business Precinct within five years. The access road will allow a new route for taxi movements into the airport from Richmond Road via the existing Richmond Road/Marion Road intersection. The State Government has included this alternative taxi access route for the airport within its draft *Integrated Transport and Land Use Plan*.

Access to the internal connection will be secured and provided for taxis, buses and controlled commercial vehicles (or other authorised airport vehicles). It will not provide a road connection for public access. Figure 9.10 illustrates the existing primary, secondary and alternate routes.

#### Realignment of Internal East-West Road Connection

The upgrade of Sir Donald Bradman Drive/Sir Hubert Wilkins Avenue intersection to provide the short-to-medium-term second terminal access will require realignment of adjacent internal roads within five years. This will include the creation of a new link road between the Terminals & Aviation and the Burbridge Business Park Policy Areas, and diversion of Sir Hubert Wilkins Avenue to provide a major internal connector route. The intersection of Sir Hubert Wilkins Avenue and the Terminal-Burbridge connector roadway would be controlled by a dual lane roundabout. The connection could also allow movements associated with a new long-stay parking facility in the Burbridge Business Park Policy Area. Figure 9.12 illustrates the possible concept alignment of the internal Terminals-Burbridge connector roadway in the longer term through a Western Link Road realignment.



176 Figure 9.10 Proposed Taxi Route and Holding Area and realignment of internal east-west road connection

Western Link Road Realignment

The potential expansion of the short-stay car park will require alteration of the existing alignment of the southern end of the Western Link Road. Future design of an expanded Multi-Level Car Park will need to ensure adequate accommodation of vehicle movements in this area, including egress from the short-stay car park, the rental car facilities and the passenger set-down/pick-up facility. The realignment of the southern end of the Western Link Road is shown at Figure 9.11.

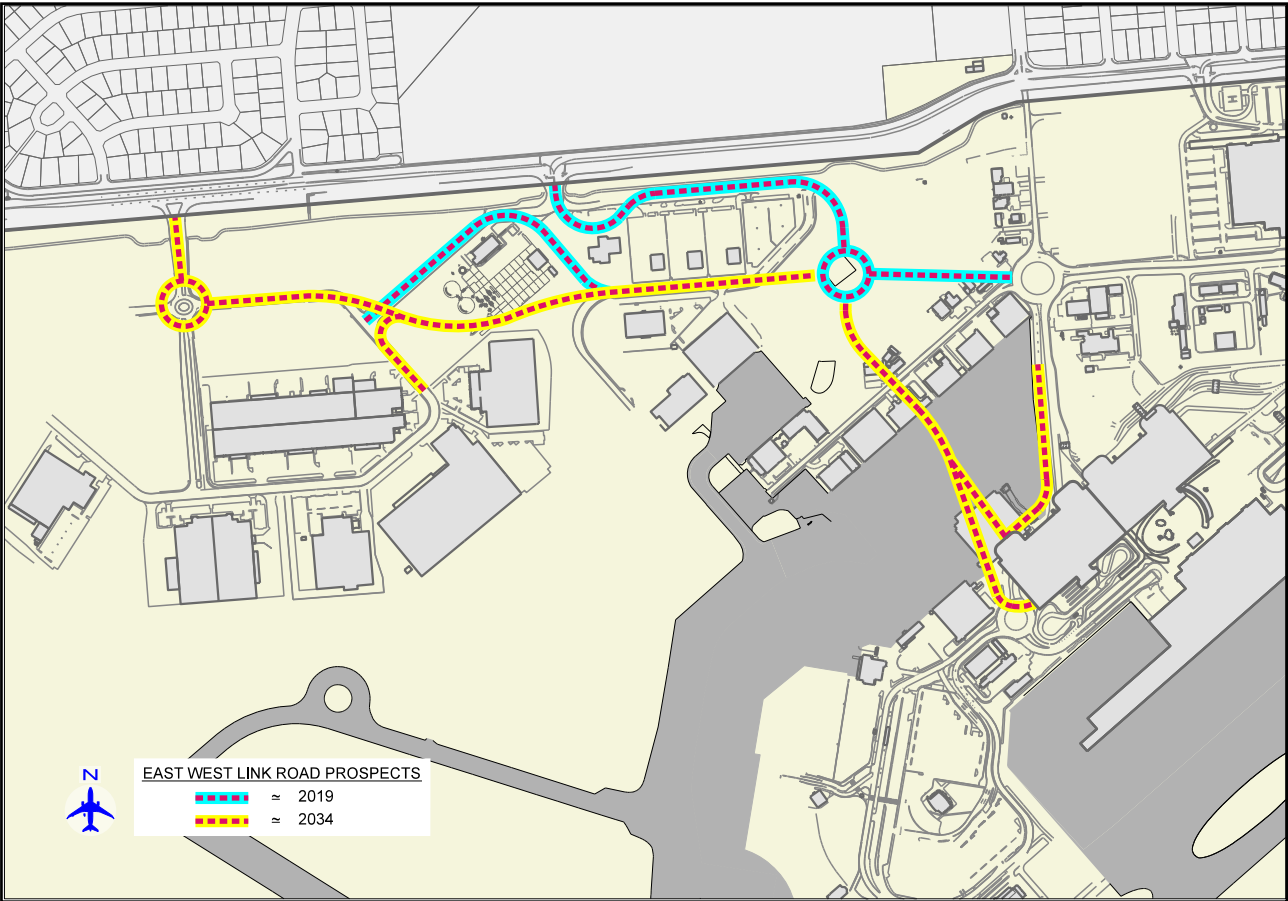


Figure 9.11 Proposed East-West Link Road



### 9.5.3 Parking

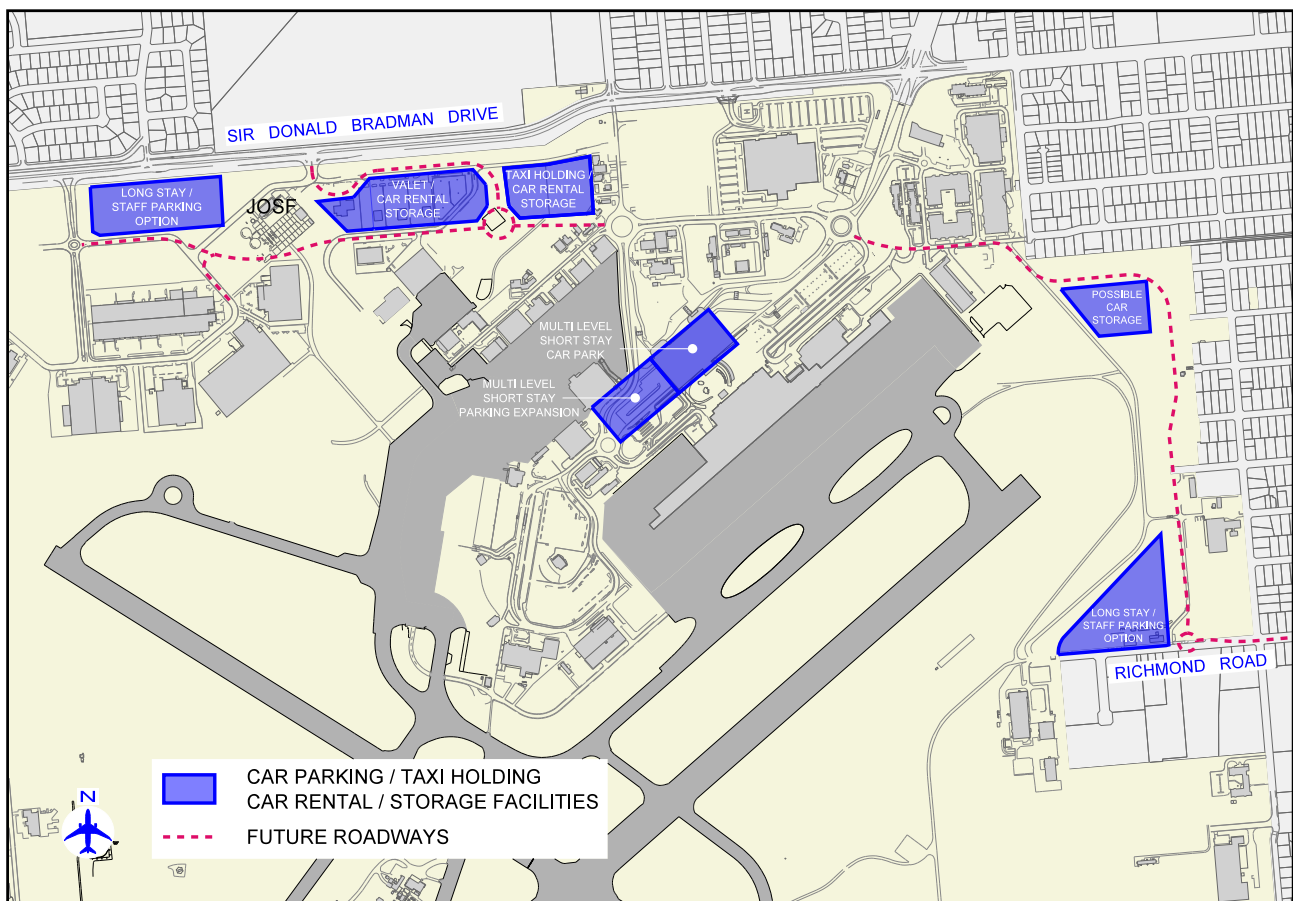
Adelaide Airport's long-stay car parking facility currently operates near capacity. On occasion, both the short-stay and staff car parks are utilised to accommodate overflow demand for passenger long-stay parking. Accordingly, there is a short-term need to provide additional long-stay parking capacity. Additionally, the current long-term facility is located within the area nominated for future terminal expansion. It is proposed to construct a new long-stay parking facility (with shuttle bus service) in the north-western corner of the Terminals & Business Precinct. Approximately 2,500 parking spaces will be required to accommodate long-stay parking demand growth over the next 5 years with up to 4,700 possibly required by 2034 (if existing traffic demand patterns remain).

The short-stay car park has sufficient capacity to accommodate increased passenger short-term parking demands for the next five years (particularly once overflow long-stay parking is accommodated elsewhere).

In the medium-term (6+ years), passenger demands for short-stay parking will exceed the current capacity and an expansion will be required. Consideration has been given to the extension of the existing multi-level car park to the south-west to double the existing supply of short-stay parking by 2020. Such an increase would accommodate demands for the 20-year horizon (if existing traffic demand patterns remain).

The existing staff parking areas are located within the area nominated for future terminal expansion and ancillary facilities. It is proposed that an additional staff parking facility be located either to the eastern side of the airport adjacent the proposed taxi link road or within the Burbridge Business Park Policy Area.

Figure 9.12 identifies the possible location of the expanded and relocated parking facilities.



178 Figure 9.12 Possible Locations for Relocated and Expanded Parking Facilities

### 9.5.4 Public Transport

For the short-to-medium-term, public transport services associated with Adelaide Airport will be limited to public bus services. There is currently sufficient capacity on existing services to accommodate increased passenger demands for public transport in the medium-term.

In the longer term, it is desirable to encourage greater use of public transport as an access mode to/from the airport (for both passengers and staff). The State Government's draft *Integrated Transport and Land Use Plan* identifies the future connection of light rail or tram services between the airport and Adelaide's CBD a key outcome for the public transport network. The Plan identifies the tram route along Airport Road and Henley Beach Road, which is illustrated at Figure 9.13 within the airport itself.

### 9.5.5 Taxis

Future growth in passenger numbers will result in increased numbers of taxis accessing Adelaide Airport. As noted above, it is proposed to construct a new taxi ingress route to address the impact of increased taxi movements. Future demand analysis indicates that (if existing transport demand patterns remain):

- up to 450 spaces could be for taxi holding facilities with up to 60 spaces required within the taxi pick-up area within the next 5-year period, with 100 spaces possibly necessary in an expanded taxi pick-up area by 2034; and
- Depending upon the level of public transport provision, ancillary taxi holding may be necessary, with a number of options available, including areas associated with the intended egress/ingress route from Richmond Road.

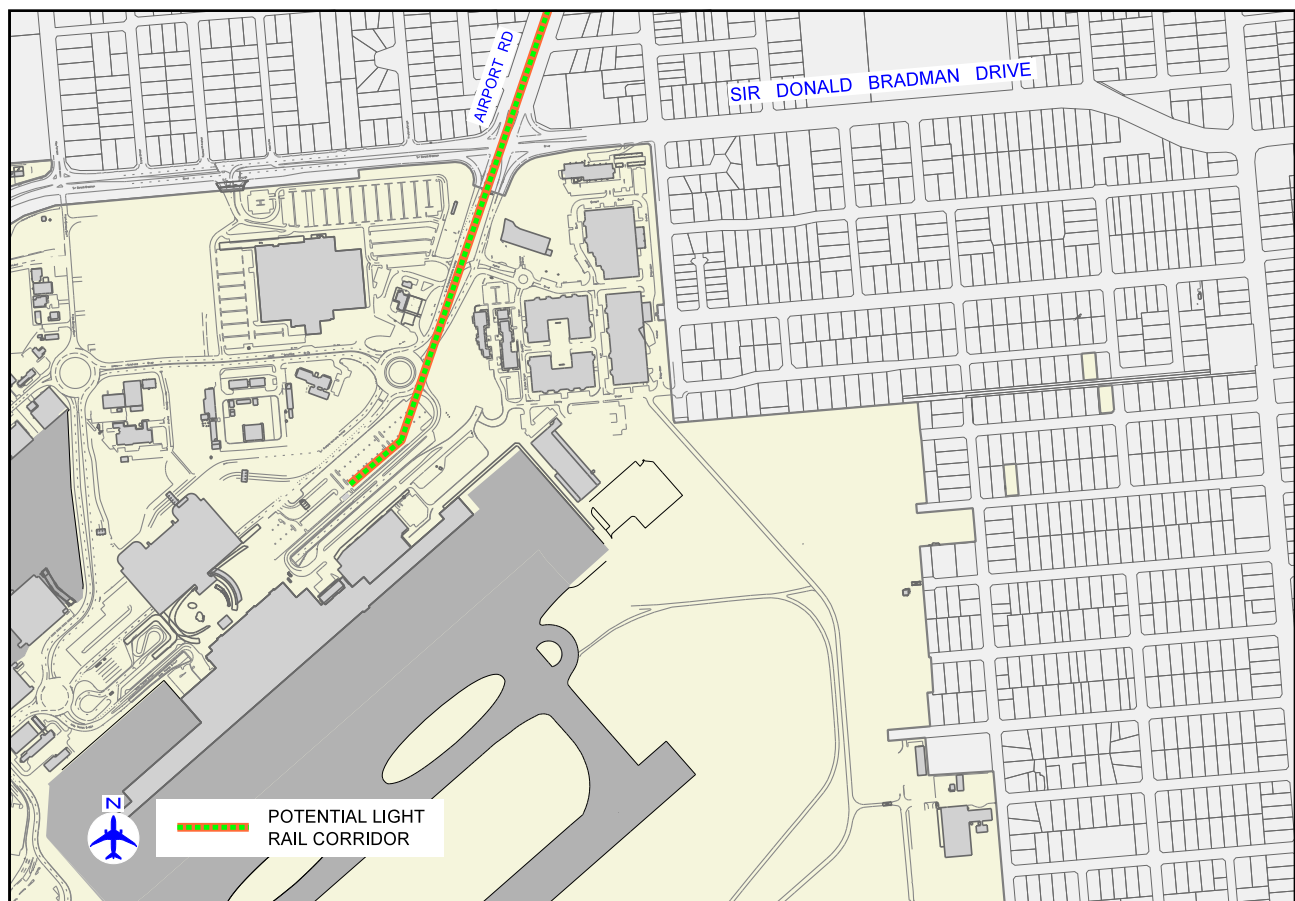


Figure 9.13 Potential Route for Future Tram Services to/from the Airport

### 9.5.6 Car Hire and Valet Services

Increased passengers will generate additional demand for car hire and valet services. Existing provisions are expected to be adequate within the short-term. However, future expansion of these facilities will be required in the medium-to-long-term. The future expansion of the multi-level car park will provide opportunity for provision of additional car hire and valet service facilities in close proximity to T1.

### 9.5.7 Walking and Cycling

The State Government's draft *Integrated Transport and Land Use Plan* identifies the extension of the Anna Meares Bike Path in conjunction with the City of West Torrens. The extension will connect from Frank Collopy Court around the airport boundary to Watson Avenue and Lew Street, Netley, and will link to the Captain McKenna Shared Use Pathway.

Future road upgrades undertaken within and adjacent the airport will include adequate provision for pedestrians and cyclists. This will result in improved accessibility for non-motorised forms of transport and increase the attractiveness of these modes for Airport access. AAL has identified that a secure storage facility for bicycles will be provided (in addition to the short-term bicycle storage) within the close proximity to T1 and the Plaza. The secure facility will provide long-stay storage for bicycles at a nominal fee. In addition, AAL will install Bicycle Service (Repair) Stations adjacent to Terminal 1, where cyclists will be able to assemble and disassemble their bicycles.

Developments undertaken within the airport should include adequate end-of-trip facilities including secure bicycle storage, changerooms and showers.

### 9.5.8 Freight and Logistics

The existing road network is generally adequate to physically accommodate commercial vehicle movements to, from and within Adelaide Airport. The upgrades to the internal and external road network identified above will improve capacity to accommodate such vehicles.

The surrounding network of roads currently gazetted for B-Double access is generally considered adequate to accommodate movements by such vehicles travelling to/from the airport. However, consideration should be given to the gazettal of Transport Avenue, Netley to supplement that currently in place along Richmond Road to the Airport.

## 9.6 Future Ground Transport Systems

As detailed previously, the existing ground transport system will require improved capacity to accommodate the potential increases in transport demands associated with Adelaide Airport. Significant investment into the ground transport network will be required to support future growth of the airport operations and the additional commercial development potential.

The following approach for the staged improvement of the ground transport network has been proposed to support the Master Plan's objectives. The recommendations focus on the first 5 years of the GTP with broader transport improvements considered for the next 20 years.

#### Short-Term Ground Transport Plan (0 to 5 Years)

- Consistent with the State draft *Integrated Transport and Land Use Plan*, construct a controlled taxi / bus route around the eastern side of the airport via Richmond Road to the Export Park Policy Area.
- Possible new road connection through the Netley Commercial Park between Marion Road and the Airport East Precinct. The connection would result in creation of a new four-way controlled intersection with Marion Road/Desmond Road.
- Upgrade Sir Hubert Wilkins Avenue/Sir Donald Bradman Drive intersection to provide a second major terminal access.
- Construct a new/realigned internal east-west connection between the Terminals & Aviation Policy Area and Burbridge Business Park Policy Area. The new link will connect to the upgraded Sir Hubert Wilkins Avenue/Sir Donald Bradman Drive intersection.
- The upgrade of Sir Donald Bradman Drive/Airport Road/Sir Richard Williams Avenue intersection to provide additional turn and through lanes on Airport Road and Sir Richard Williams Avenue as part of the National Land Transport Network.
- Relocate and/or expand the long-stay car park to accommodate 2,500 parking spaces.
- Relocate and expand the staff car park to accommodate 900 parking spaces.
- Extend the Anna Meares Bike Path between Watson Avenue, Netley and the Export Park Policy Area.

### Medium-Term Ground Transport Plan (6 to 20 Years)

- Provide a light rail (tram) connection to Terminal 1 via Airport Road (as identified in the State draft *Integrated Transport and Land Use Plan*).
- Expand the short-stay car park to double existing capacity (approximately 3,000 spaces required by 2020) and construct a new link road to meet the east-west link road.
- Upgrade of Sir Donald Bradman Drive/Airport Road/ Sir Richard Williams Avenue to include an additional westbound through lane on Sir Donald Bradman Drive and a possible dual lane overpass (flyover) for right-turn movements out of the airport as part of the National Land Transport Network.
- Expand the long-stay car park to approximately 4,700 spaces by 2034.
- Expand the staff car park to approximately 1,600 spaces by 2034.

### Arrangements for Working with State and Local Authorities/Stakeholders

Adelaide Airport liaises regularly with the authorities responsible for the public road network surrounding the Airport (DPTI and City of West Torrens). As noted above, there are a number of external road upgrades required to accommodate future growth in passenger demands at the airport and passing commuter traffic, with this notably identified in either the *30-Year Plan for Greater Adelaide* or the State draft *Integrated Transport and Land Use Plan (2013)*, with further information on the relevant strategies outlined in Chapter 7 – Land Use Planning.

AAL will continue to work closely with these authorities to achieve the objectives and outcomes of the Ground Transport Plan.









# ENVIRONMENT STRATEGY

# 10



# ENVIRONMENT STRATEGY

## 10.1 Introduction

Adelaide Airport Limited's (AAL) vision and ongoing success is founded on building and maintaining the three pillars of responsible business practice – financial, environmental and social sustainability. To ensure that its business thrives and is managed in a manner that promises to meet the needs of future generations, AAL must respond positively and innovatively to today's local and global challenges.

The central focus of this Airport Environment Strategy is minimisation of AAL's environmental footprint in balance with the other pillars of sustainable business. The Environment Strategy is underpinned by a commitment to legislative compliance and driven forward by the desire to maintain a leadership position in environmental sustainability.

The environmental compliance and sustainability goals outlined here can be achieved by effecting change of activities under the direct control of AAL, influencing change through collaboration and negotiation with key stakeholders, and guiding others to realise change through awareness and education.

### 10.1.1 Purpose

The purpose of this Chapter is to:

- fulfil AAL's vision for sustainable airport growth and development;
- ensure all identified environmental sustainability risks are appropriately managed;
- facilitate AAL's objective of remaining an airport industry leader;
- realise continuous improvement in environmental sustainability performance; and
- build upon the achievements of the 2009 Sustainability Plan (Environment Strategy).

AAL's Sustainability Policy forms the foundation for this Environment Strategy, which in turn is implemented through the Environment Management System (EMS). An EMS, conforming to the requirements of ISO 14001, provides the framework linking environmental impacts, legal obligations,

objectives and goals within this Chapter, and day-to-day management actions. Further detail on the EMS is provided in Section 10.3.

The AAL Sustainability Policy is provided in Figure 10.1.

### 10.1.2 Achievements

AAL achieved a number of significant environmental achievements in the period of 2009 to 2014. These achievements include:

- International recognition of AAL's Carbon Program when, in 2013, Adelaide Airport became the first airport in Australia to receive Airport Carbon Accreditation under the independently assessed global program run by Airports Council International (ACI) (refer to Figure 10.2).
- Completion of a three-year Clean Energy Partnership with the University of Adelaide's Centre for Energy Technology to fund local research and identify energy reduction opportunities. From this partnership, a lighting and air conditioning efficiency program netted over 4% reduction in electricity within the terminal building in a period when passenger growth was 5%.
- Construction of the Australian Federal Police 4-star Green Star / NABERS building.
- Major refurbishment of the runway and taxiway network with zero environmental incidents and zero complaints.
- Facilitation of SA Water's 270 million litre Adelaide Airport Stormwater Scheme and facilitation of a major flood detention basin by the City of West Torrens to minimise the risk of flooding to West Beach residents.
- Incorporation of a number of leading green design elements into AAL's new multi-level car park and plaza, such as way-finding technology and fast circulation ramps to improve efficiency and reduce vehicle idling time, the capture of roof stormwater to supply the T1 cooling towers, and the use of recycled water in the plaza water feature.
- Working with the West Torrens Council and the local community and environment groups in the delivery of the environmental achievements during the period.

Further detail on these, and other achievements realised over the past five years are provided in Appendix D – Adelaide Airport Sustainability Past Achievements (2009-2014).

# SUSTAINABILITY POLICY

Our vision is to be a top tier Airport Business Centre in Asia Pacific, recognised for delivering exceptional outcomes to our customers, partners, shareholders and community.

We strive to deliver high quality facilities and services that are regarded as best in class, safe, secure and sustainable. As such Adelaide Airport Limited (AAL) is committed to managing and developing Adelaide and Parafield Airports in a sustainable manner. We are already a leader in Airports Carbon Accreditation in Australia and our goal is to be Australia's most sustainable airport operator.

Our philosophy is to act in accordance with sustainable business principles and practices. In doing so we recognise that conducting business in a way that is environmentally, socially and economically responsible can enhance the success of our organisation. We believe that in choosing this path we can improve outcomes for our business, our stakeholders and the wider community for generations to come.

Our objectives are to:

- Integrate the principles of sustainable development and sustainable business practices into our planning, design, construction and procurement
- Apply a stewardship approach throughout our supply chain by encouraging and facilitating the adoption of sustainability principles and practices by our customers, partners, tenants, contractors and suppliers
- Minimise the environmental impact of our operations through a program of continuous improvement, always striving for innovative solutions to meet our goals
- Measure, reduce and manage our carbon emissions on an ongoing basis with a strong focus on energy and fuel efficiency
- Optimise community outcomes by engaging with and supporting our local community in a positive and constructive manner and being a valued member of the community
- Ensure we provide a positive and safe work environment, where individuals are valued and equipped with the skills to effectively carry out their work
- Ensure compliance with all relevant regulatory and other requirements

We undertake to clearly communicate this policy to our stakeholders and to rigorously monitor our progress against meaningful indicators.

  
Mark Young  
Managing Director  
June 2014

Revision Date June 2016

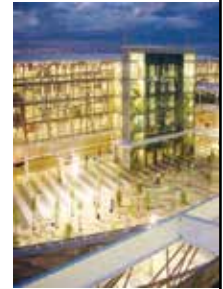
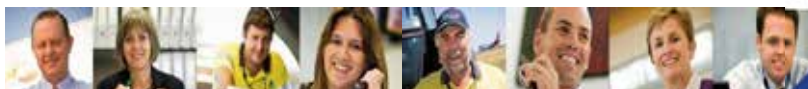


Figure 10.1 Adelaide Airport Limited Sustainability Policy





Figure 10.2 ACI Accreditation Certificate

## 10.2 Legislative and Policy Framework

Under the *Airports Act 1996*, and with further reference to the *Airports Regulations 1997*, AAL is to develop and implement an Airport Environment Strategy that comprehensively sets out how environmental impacts associated with both airport operations and other undertakings onsite are to be prevented, controlled or mitigated.

The Act establishes an environmental management regime that focuses on a cooperative approach, supporting and ensuring compliance with environmental standards at federally-leased airports. Section 71 of the *Airports Act 1996* specifically covers environmental management requirements, amplified under Regulation S.5.02A and 5.02B of the *Airports Regulations 1997*.

This Environment Strategy includes the following:

- environmental management objectives for the airport;
- identification of the current environmental status of the airport including areas of environmental significance;
- identification of sources of environmental impact associated with airport operations;
- an outline of the proposed environmental studies, reviews and monitoring of current and future activities, and a timeframe for these studies to be conducted and reported on;
- proposed measures to prevent, control or reduce environmental impacts associated with airport operations and the timeframe for their completion; and
- details and outcomes of consultation on the preparation of the strategy with stakeholders.

In compliance with the *Airports Regulations 1997*, the Environment Strategy is to cover:

- sites identified to be of indigenous significance after consultation with relevant indigenous communities and organisations and Commonwealth or State bodies;
- proposed environmental management for areas of the airport which are not used, or planned to be used, for airport operations; and
- necessary training for environment management by persons employed by AAL or other major airport employers, including detail on proposed training.

The *Airports (Environment Protection) Regulations 1997* outline the major obligations with respect to environmental matters on the airport site. The Regulations do not, however, apply to pollution or noise generated by aircraft (except ground running noise). The Commonwealth regulates these matters through the *Air Navigation (Aircraft Engine Emissions) Regulations 1995* and the *Air Navigation (Aircraft Noise) Regulations 1994* respectively.

In addition, various industry codes of practice, Australian Standards, relevant national and state environment protection measures, and other guidelines are applicable to operators at the airport. As outlined in Chapter 7, there are a number of strategic and statutory documents prepared by the Commonwealth, State and Local Governments that have been considered toward the Master Plan and which may have relevance to the Environment Strategy. Further documents include:

- National Strategy for Ecologically Sustainable Development 1992 (Commonwealth);
- The Clean Energy Future Plan 2011 (Commonwealth);
- The National Water Initiative 2004 (Commonwealth);
- Australia's Biodiversity Conservation Strategy 2010–2030 (Commonwealth);
- Water for Good 2009 (State);
- Tackling Climate Change – South Australia's Greenhouse Strategy 2007–2020 (State);
- Brownhill Keswick Creek Stormwater Project – Stormwater Management Plan 2012 (Local);
- Brownhill Keswick Creeks Flood Mitigation Study: Flood Management Master Plan 2006 (Local);
- City of West Torrens Towards 2025 Community Plan 2009–2014 (Local); and
- City of Adelaide Environmental Sustainability Strategy 2009–2012 (Local).

The environmental requirements of the *Airport Act 1996* and *Airports Regulations 1997* against the contents of this chapter are included at Appendix A.

## 10.3 Environmental Management System

The EMS maintained by AAL conforms to the requirements of ISO 14001 and provides a structure for managing environmental impacts at Adelaide Airport. By design, the EMS ensures a continuous improvement approach to environmental performance, as committed to by AAL in its Sustainability Policy and subsequently reflected in each revision of the Airport Environment Strategy.

The EMS will be audited regularly by a third party against the requirements of ISO 14001 and the results reported to DIRD provide assurance as to the quality and rigour of AAL's environment program.

Core elements of the EMS, and how they support the implementation of this Environment Strategy, are described in the following sections.

The continuous improvement cycle of AAL's EMS is represented in Figure 10.3.

### 10.3.1 Policy

AAL's Sustainability Policy (Figure 10.1) was recently endorsed by the Managing Director in June 2014.

All new airport employees, tenants and major contractors are introduced to the Sustainability Policy through inductions, newsletters and airport forums. The Sustainability Policy is also presented to AAL employees as part of inductions and periodic environmental awareness training programs. The current policy is prominently displayed at AAL offices and is also available on the AAL website ([www.adelaideairport.com.au](http://www.adelaideairport.com.au)).

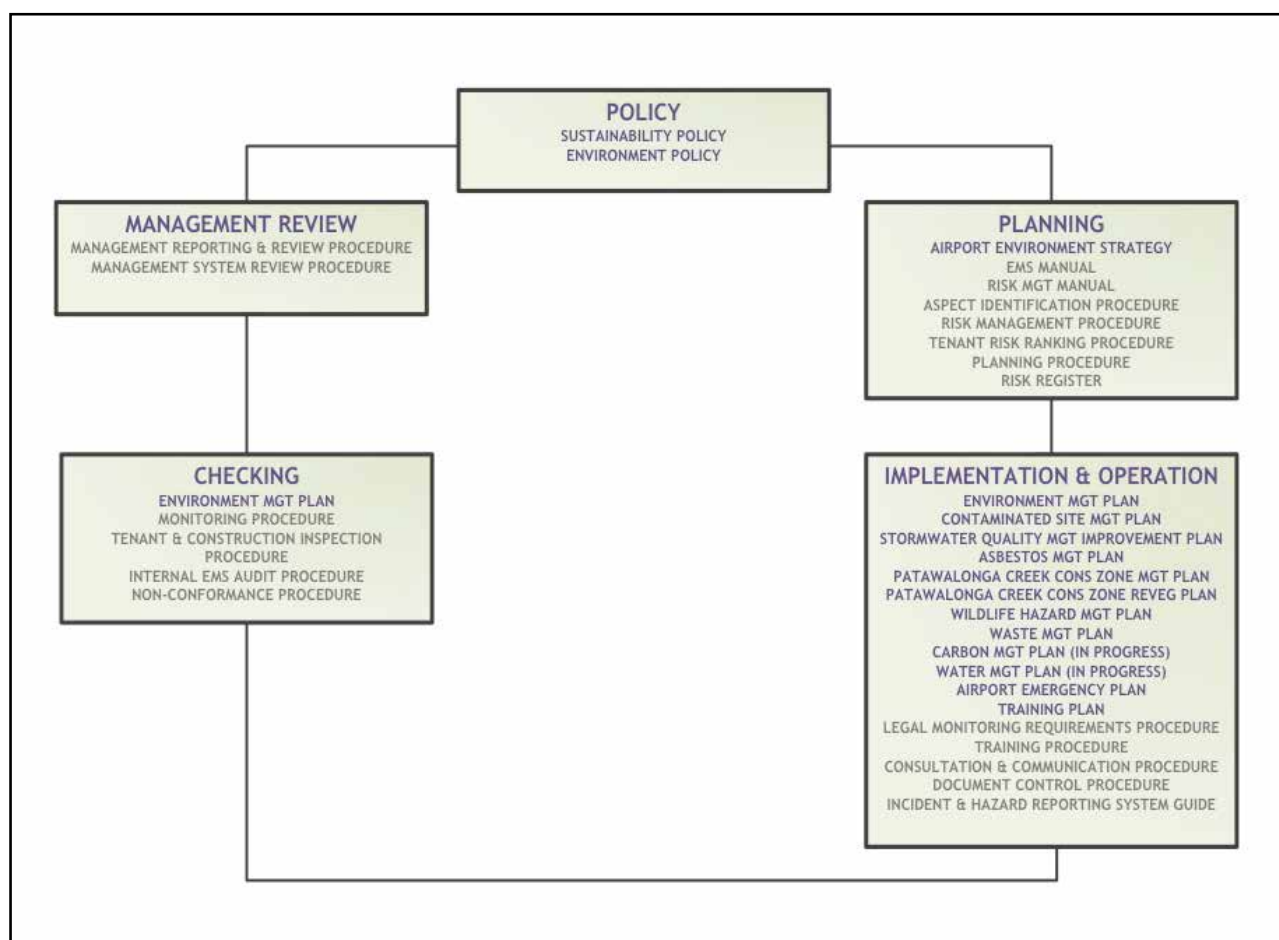
### 10.3.2 Planning

Objectives, goals and management actions are detailed in each section of the Airport Environment Strategy (and collated in Appendix E) that, once implemented, ensure AAL meets the commitments stated in the Sustainability Policy. Objectives and goals were developed in accordance with AAL's Planning Procedure, with consideration given to the following:

- Company Vision;
- Sustainability Policy;
- legal requirements;
- significant environmental risks;
- views of stakeholders and the community;
- prevention of pollution;
- broader business objectives; and
- availability of resources.

An Environmental Management Plan (EMP) provides further detail to the Airport Environment Strategy and is reviewed at least annually. It is the central planning tool for implementing the Strategy goals and objectives detailing management actions, studies, routine tasks and monitoring activities with timeframes for their completion. The EMP addresses management of sites used for both airport and non-airport operations.

Additional plans are developed and regularly revised to provide the necessary framework for more complex areas of environmental management. These are referenced in the relevant sections of the Environment Strategy and summarised in Appendix F.



### 10.3.3 Implementation

AAL staff and other airport operators and occupiers (including tenants) must take all reasonable steps to ensure that the Airport Environment Strategy is complied with. AAL's Environment Department maintains the system, drafts the plans and provides the necessary advice and guidance required for others at Adelaide Airport to implement measures for controlling or minimising significant environmental risks. Key outputs include standard operating procedures, safe work instructions, environmental guidelines, and training. AAL Environment staff possess tertiary qualifications in science, environmental management or engineering and have received training in environmental management system implementation and auditing.

### 10.3.4 Checking and Monitoring

#### Tenant Risk Ranking and Inspections

All tenants are assigned an environmental risk ranking (Category 1, 2, 3 or 4) based on the potential of their business activities to cause harm, as defined in the *Airports Act 1996*. Each Category is outlined below.

**Category 1** tenants have the greatest potential for environmental impact, or causing serious environmental harm, through the nature and size of their operations.

**Category 2** tenants have the potential to cause material environmental harm.

Tenants in both Categories 1 and 2 are therefore required to implement an EMP, and are inspected annually against regulatory requirements and their own EMP. This process requires them to review their environmental risks regularly and set improvement actions as appropriate.

**Category 3** tenants are those with less potential to impact upon the environment, and are encouraged to carry out their operations in accordance with industry best practice and regulatory requirements.

Category 3 tenants are considered to only have the potential to cause environmental nuisance and are inspected every three years, or when their work activities change requiring a re-categorisation.

**Category 4** tenants perform activities that are considered to pose a negligible risk to the environment, and are inspected only as required. These categories are summarised in Table 10.1 below.

#### Airport Operator Inspections

In recognition that not every airport operator is a tenant, an assessment is undertaken of those individual operators' activities consistent with the categorisation of airport tenants, wherever practical. In addition, large construction projects are subject to environmental inspections by AAL. Contractors directly engaged by AAL for maintenance and capital works are included in the inspection schedule to be assessed for compliance with environmental standards.

#### Environmental Monitoring

AAL operates a broad monitoring program that collects data across those numerous areas, as listed in Table 10.2. Monitoring activities are detailed and scheduled within the EMP and other specific area plans (e.g. Stormwater Quality Management and Improvement Plan). Those who carry out environmental monitoring must hold the appropriate professional qualifications relevant for the area of monitoring activity and demonstrate the processes and systems used conform to relevant Commonwealth criteria and industry standards.

#### EMS Auditing

A robust EMS requires regular checking. AAL achieves this through regular internal auditing of select system components by trained Lead Auditors in accordance with the Internal EMS Audit Procedure. A detailed external audit by an accredited ISO 14001 auditor of the full EMS is scheduled every three years.

**Table 10.1 Tenant Environmental Risk Ranking Categories for Adelaide Airport**

Tenant Risk Ranking	Definition	EMP Mandatory	Inspection Frequency
Category 1	Potential to cause serious environmental harm	Yes	Annual
Category 2	Potential to cause material environmental harm	Yes	Annual
Category 3	Potential to cause environmental nuisance	No	Three-yearly
Category 4	Operations pose negligible environmental risk	No	As required



### 10.3.5 Reporting and Review

Detailed written reporting against all goals and management actions in the Airport Environment Strategy is provided regularly to AAL's Executive Committee. Management review of the EMS is a requirement of ISO14001 and is undertaken in accordance with AAL's Management System Review Procedure.

A comprehensive report demonstrating AAL's progress against all Strategy goals, management actions and

monitoring activities is provided annually to DIRD, as detailed in AAL's Management Reporting and Review Procedure. Further, AAL reports pollution incidents, environment-related complaints, the exceeding of regulatory criteria, and management of contaminated sites to the Airport Environment Officer (AEO) through monthly meetings and as required under legislation. AAL is cognisant of the regulatory requirement to report incidents and the exceeding of pollution criteria within 14 days.

**Table 10.2 Summary of Key Monitoring Activities**

Stream	Area	Monitoring Activity	Frequency
<b>Compliance</b>	Ground Noise	Boundary noise	Annually and as required
		Construction noise	As required
	Local Air Quality	Air quality	Annually and as required
		National Pollutant Inventory	Annually
		Ozone depletion substances	Annually
		Stack monitoring	As required
	Stormwater	Stormwater quality (Tier 1)	Monthly (Apr-Oct) and as required
		Stormwater quality (Tier 2)	As required
	Soil and Groundwater	Soil and groundwater contamination (existing sites)	Annually and as required
		Soil and groundwater contamination (new sites)	As required
		Background groundwater quality	Annually
	Hazardous Substances	Asbestos volumes	Annually
		Hazardous substances storage	Annually and as required
		Safety data sheets	Annually and as required
		Polychlorinated biphenyls	Annually
<b>Sustainability</b>	Sustainable Buildings	Sustainability Performance Indicators (AAL buildings)	Quarterly
	Climate Change	Carbon Footprint (Scope 1 & 2)	Annually
	Energy	Energy consumption (AAL buildings)	Annually
	Water Resources	Water consumption (AAL buildings)	Annually
	Waste	Waste volumes (AAL buildings)	Quarterly
	Land and Heritage	Conservation zone flora/fauna survey	Annually
		Other flora/fauna surveys	As required
		Indigenous artefact surveys	As required
		Built heritage surveys	As required

## 10.4 Responsibilities

### 10.4.1 Adelaide Airport Limited

As the airport-lessee company, AAL has a range of duties under the *Airports Act 1996* and its Regulations and is required to identify sources of impact on the environment from airport operations and then manage programs to control, limit or prevent these impacts. Annual reporting to DIRD, in this respect, along with progress on specific goals is required to ensure compliance. AAL has established a robust internal management structure as outlined in Table 10.3 below.

### 10.4.2 Airport Environment Officer

The Airport Environment Officer is appointed by the Secretary of DIRD, and is authorised under the Act to exercise powers regarding environmental issues conveyed through the legislation. Focusing on strategic environmental goals, the AEO liaises with AAL, to ensure management of the airport environment is in accordance with the Act and Regulations. This occurs through regular monthly meetings, site inspections, monitoring and reporting. In addition to this, the AEO may comment on Building Applications and suggest that the Airport Building Controller (ABC) apply conditions to ensure that the environment is appropriately protected.

**Table 10.3 Structure and Responsibilities for Implementation of the Sustainability Plan**

Party	Responsibilities
<b>Board of Directors (including Managing Director)</b>	<ul style="list-style-type: none"> <li>The environmental performance of AAL</li> <li>Periodic review of the AAL Sustainability Policy</li> <li>Allocation of resources to manage environmental sustainability issues</li> </ul>
<b>Executive General Manager Corporate Affairs</b>	<ul style="list-style-type: none"> <li>Ensuring that the roles/responsibilities for environmental sustainability management are defined and communicated</li> <li>Implementing communication plans</li> </ul>
<b>Executive General Manager Property</b>	<ul style="list-style-type: none"> <li>Incorporating and managing regulatory and other environmental conditions within leases and other property contracts</li> <li>Consideration of development against the Master Plan Principles of Development Control</li> </ul>
<b>Executive General Manager Operations and Infrastructure</b>	<ul style="list-style-type: none"> <li>Incorporating sustainability principles in project planning, design and construction</li> <li>Incorporating and managing regulatory and other environmental conditions within construction contracts</li> </ul>
<b>Environment Manager</b>	<ul style="list-style-type: none"> <li>Preparing the Environment Strategy</li> <li>Monitoring implementation of the Environment Strategy and Sustainability Program</li> <li>Ensuring compliance with regulatory requirements</li> <li>Preparation of the Annual Environment Report</li> <li>Providing advice and specific training to staff, contractors and airport users</li> </ul>
<b>Managers</b>	<ul style="list-style-type: none"> <li>Daily management of environmental sustainability issues</li> <li>Ensuring that operations comply with applicable legislation</li> <li>Identification of staff training needs</li> <li>Integration of environmental requirements into daily operations</li> <li>Staff environmental awareness</li> </ul>
<b>Staff</b>	<ul style="list-style-type: none"> <li>Reporting environmental hazards, incidents and stakeholder feedback</li> <li>Adhering to relevant EMS procedures</li> <li>Undertaking work in compliance with applicable environmental legislation</li> <li>Participation in training sessions</li> </ul>
<b>Airport Contractors / Other Airport Users</b>	<ul style="list-style-type: none"> <li>Reporting environmental hazards, incidents and stakeholder feedback</li> <li>Adhering to relevant EMS procedures</li> <li>Undertaking work in compliance with applicable environmental legislation</li> <li>Participation in induction sessions</li> <li>Reporting environmental data and information to AAL</li> </ul>

### 10.4.3 Airport Tenants and Operators

Adelaide Airport hosts a wide variety of tenants and operators including airlines, aircraft maintenance and avionics facilities, private charters, retail, freight warehousing, catering and aircraft refuelling. Airport operators, such as taxi drivers, aircraft operators and contractors, use the airport regularly as part of their business operations. A range of contractors operate on-airport participating in large-scale construction projects as well as conducting routine maintenance.

These stakeholders are the key to environmental compliance and sustainability performance at the airport. AAL oversees their regulatory obligations and influences and guides their adoption of sustainable business practices through negotiation, co-operation and education. For example, tenants and contractors undertaking high risk activities are required to develop and implement EMPs.

## 10.5 Sources of Environmental Impact

**Adelaide Airport is a dynamic environment supporting a range of aviation and non-aviation activities that can pose risk to the environment of varying degree, as outlined above. These activities impact, or have the potential to impact, the environment and are the primary basis for the objectives and goals described in this Environment Strategy.**

Airport activities that act as sources of environmental impact are listed in Table 10.4.

In addition to these activities, if a change of land use is proposed, consideration must be given to any potential environmental impacts from the past use and associated plans prepared for dealing with such environmental impacts. This may also need to be listed on the Airport Environment Site Information Register.

Table 10.4 Sources of Environmental Impact at Adelaide Airport

Area	Activities
Aviation activities	<ul style="list-style-type: none"> <li>Fuel storage and supply</li> <li>Aircraft operation</li> <li>Aircraft maintenance</li> <li>Aircraft painting</li> <li>Aircraft washing</li> <li>Aircraft decommissioning</li> <li>Baggage handling</li> <li>Engine ground running</li> <li>Air traffic control services</li> <li>Customs and border control services</li> <li>Airline catering</li> <li>Medical retrieval services</li> <li>Construction and fit out</li> </ul>
Non-aviation commercial activities	<ul style="list-style-type: none"> <li>Fuel storage and supply</li> <li>Commercial retailing</li> <li>Warehousing and logistics operations</li> <li>Steel fabrication</li> <li>Paver manufacture</li> <li>Recreational facilities</li> <li>Medical services</li> <li>Office facilities</li> <li>Rental car facilities</li> <li>Vehicle wash facilities</li> <li>Petrol filling stations</li> <li>Construction and fit out</li> </ul>
Airport management activities	<ul style="list-style-type: none"> <li>Passenger facilitation</li> <li>Terminal operation and maintenance</li> <li>Car park operation and maintenance</li> <li>Office operation and maintenance</li> <li>Road maintenance</li> <li>Runway, taxiway and apron maintenance</li> <li>Vehicle operation, maintenance and refuelling</li> <li>Vehicle washing</li> <li>Landscaping</li> <li>Sewer network maintenance</li> <li>Electricity network maintenance</li> <li>Water supply network maintenance</li> <li>Wildlife control</li> <li>Construction and fit-out</li> </ul>
Historic activities	<ul style="list-style-type: none"> <li>Landfills</li> <li>Fuel storage and supply</li> <li>Aircraft maintenance</li> <li>Herbicide / pesticide application</li> <li>Fill importation</li> </ul>

## 10.6 Environmental Site Register

In accordance with the *Airport Regulations 1997*, an Environment Site Register is maintained for Adelaide Airport. The register identifies (by assigning a unique Site Number) the location of every site around the airport that has been a source of environmental impact and/or subject to environmental monitoring, assessment, inspection, incident investigation and/or has been given Environmental Significance status. The features of each site, including its contamination status, are detailed in the register and the site location drawn onto an aerial map using GIS software.

A comprehensive data management tool has been developed using SharePoint as the platform to display Adelaide Airport's Environment Site Register. This allows integration with other software as well as storing historical data. The tool is intranet-based and therefore available to all AAL staff to be used for strategic and operational purposes. Data stored includes tenant risk ranking, nature of operational activity, contamination status (past and current land uses) and environmental documentation.

## 10.7 Communication and Consultation

Adelaide Airport is primarily located within the City of West Torrens and surrounded by residential, recreational and industrial zones. AAL has continued to communicate and share environmental information with the community and key stakeholders through various forums including the Adelaide Airport Consultative Committee, tenant forums, publications and Adelaide Airport Limited's website.

Quarterly Adelaide Airport Consultative Committee meetings are held involving Commonwealth and State Government, local Councils, airlines, resident groups and other stakeholders to discuss a range of topics including noise management, community issues and environmental compliance. Regulatory issues are discussed between AAL and the AEO at regular monthly meetings.

Incident reporting forms part of the EMS and is incorporated into the regular duties of AAL staff. Tenant and community feedback on environmental issues such as ground-based noise, odour and dust, as well as general comments and compliments, are recorded in the company's dedicated intranet database and addressed as appropriate.

Known and potential occurrences of pollution, such as a hazardous substance spills, are reported in accordance with the Airport Emergency Plan, recorded in the AAL Incident Register and, if required, reflected in the Environment Site Register. An incident investigation process is used to identify the causes and guide future management practices to prevent their recurrence and reduce the risk of environmental pollution.

AAL staff are provided with a general environmental management induction, supplemented by targeted in-house training in areas such as spill response, incident reporting and hazardous substances management. Other methods used to communicate environment-related information to staff include intranet announcements, workshops, presentations, toolbox talks, and notice boards.

Other airport users are required to undertake general induction training prior to gaining their Australian Security Identification Cards that includes environmental content.

Consultation with State Government, local Councils, tenants and neighbours occurred through the principal airport consultative forums – namely the Airport Planning Coordination Forum and Adelaide Airport Consultative Committee – in preparation of this Environment Strategy.

Regular meetings with other stakeholder groups such as community groups, peak industry associations, Adelaide Airport Wildlife Management Committee, Terminal 1 Retailers Group and Terminal 1 Ramp Meetings also provided a platform for exchanging ideas on environmental issues that have informed the development of this Strategy. AAL's community feedback system provides critical information on the public's perception of environmental performance and assists in validating AAL's goals and actions.



## 10.8 Strategy Objectives

The Environment Strategy, as part of the Adelaide Airport Master Plan, adopts a 20-year planning horizon that in turn offers greater transparency as well as improved continuity between each 5-year Master Plan.

Long-term objectives for each area of environmental compliance and sustainability are set out in Table 10.6 below. They provide the focus of the Environment Program over the next 20-years and are aligned with AAL's vision and Sustainability Policy. AAL has identified specific and, where possible, measurable 5-year goals and supporting management actions, to meet these objectives, which are tabulated under each of the areas addressed in the following sections.



Table 10.5 Summary of Strategy Objectives

Stream	Area	Objectives (to 2034)
<b>Compliance</b>	Ground Noise	Operate and develop Adelaide Airport in a manner that complies with relevant regulatory and other standards whilst striving for continuous improvement
	Local Air Quality	
	Stormwater	
	Soil and Groundwater	
	Hazardous Substances	
<b>Sustainability</b>	Sustainable Buildings	Develop Adelaide Airport through quality buildings of contemporary, sustainable design
	Energy and Climate Change	Minimise future electricity load growth through energy conservation measures and renewable energy Minimise AAL's carbon footprint Influence and guide other airport users to reduce their carbon footprint Adapt to future climate change impacts
	Water Resources	Minimise the proportion of potable water consumption at Adelaide Airport
	Waste	Increase the proportion of Adelaide Airport waste diverted from landfill
	Land and Heritage	Enhance biodiversity Conserve places of significant natural, indigenous and heritage value Minimise the risks presented by wildlife to aviation safety

## 10.9 Compliance Program

Compliance activities provide the foundation to AAL's Environment Program. The following risk areas including ground noise, local air quality, stormwater, soil and groundwater, and hazardous substances, are core areas of compliance management and apply to all activities on airport land.

Compliance is not, however, a static goal and is viewed through the lens of continuous improvement. Goals and management actions are provided in Table 10.7 and build upon the achievements of previous Environment Strategies.

### 10.9.1 Ground Noise

AAL has a critical role to play in managing noise impacts on the local community and on-airport users from ground-based activities, whilst also being an active and influential stakeholder in addressing noise impacts from aircraft in flight. Issues relating to aircraft noise are detailed in Chapter 5 – Aircraft Noise.

The major contributors of noise and vibration arising from airport ground-based activities include aircraft ground-running (engine testing), operating parked aircraft, ground vehicles, plant and equipment, and construction activities.

Ongoing acoustic surveys focussing on the residential zone adjacent the eastern airport boundary have shown noise levels from ground-based operations meet all relevant regulatory criteria. Nonetheless, AAL continues to implement controls to minimise potential off-airport impacts.

Ground running (engine testing) activities undertaken by aircraft operators are strictly controlled through monitoring and enforcement of AAL's Engine Ground Running of Aircraft Engines and Engine Ground Running Policy. This Policy has been ratified by the Adelaide Airport Environment Officer and is subject to periodic review.

The Policy directs aircraft owners and maintenance operators as to when and where they may test-run engines, and the periods of time at what power settings in which they can be tested. AAL staff monitor these events against the *Airports (Environment Protection) Regulations 1997* in the event of any breaches. Similarly, operations and construction activities are controlled through Tenant or Construction Environmental Management Plans (CEMP) and leases, where applicable, and monitored through a program of regular site inspections.

AAL is committed to engaging with the community on potential noise issues. A proactive engagement and consultation program is undertaken in conjunction with development programmes to specifically address ground-based noise concerns.

Further development is intended in the Airport East Precinct, which lies adjacent to the eastern airport boundary. To limit residential impacts generated from proposed aviation, freight, warehousing and industrial activities that may contribute to the airport noise profile, acoustic modelling has previously been undertaken and further validation modelling may be conducted as part of an environmental assessment process when planning for future development. If required, attenuation measures can then be incorporated at the design phase of each project to ensure that operations comply with regulatory noise criteria. Once a development is operational, regular checks of precincts can occur in the form of tenant inspections and if required, noise monitoring.

### 10.9.2 Local Air Quality

Under the Regulations, AAL is responsible for managing air emissions generated by ground-based activities within the airport boundary. Air quality outside the boundary is subject to the provisions of the South Australian *Environment Protection Act 1993*. Air emissions generated by aircraft are regulated under separate legislation and are the responsibility of Airservices Australia.

Adelaide Airport is situated within a highly urbanised area surrounded by residential, recreational and industrial zones. Air quality in the western Adelaide airshed has been monitored by the South Australian Environment Protection Authority (EPA) for more than a decade at a site in Netley for ambient levels of key pollutants; namely carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), sulphur dioxide (SO<sub>2</sub>) and particles less than 10 micrometres in diameter (PM<sub>10</sub>). Data published to-date by the SA EPA shows air quality in the airshed that encompasses Adelaide Airport meets the relevant Environment Protection Act 1993 and *National Environment Protection (Ambient Air Quality) Measure 2003* criteria.

In 2013, AAL engaged air quality specialists to conduct a local air quality modelling assessment of emissions from airport operations including aircraft emissions and ground-based activities. Findings of this assessment will be used to assess ongoing monitoring requirements and develop appropriate strategies to suitably manage airport air emissions. AAL will nevertheless continue to analyse

relevant EPA air quality data for possible trends relating to airport activity. Where relevant and appropriate AAL will also consult with the EPA in updating the airport air pollutant dispersion model to reassess the potential future impact of aviation and induced traffic on local air quality.

The management of air emissions from ground-based activities covers items such as refuelling, painting, cleaning, machining, mechanical maintenance, generator use, commercial cooking and construction. The most significant emissions evident at Adelaide Airport from time-to-time are dust from earthworks; which AAL controls through the dust mitigation activities as detailed in CEMPs and monitors compliance during construction inspections. Emissions from minor point sources, such as paint shops, machine shops and commercial kitchens, are extracted and filtered prior to discharge.

Aviation and industrial developments proposed for the Airport East, Terminals & Business, and Morphett Precincts may incorporate paint and/or machine shops in their design. Extraction systems will be reviewed against EPA requirements and relevant criteria during the Building Application process and, if necessary, modelled for pollutant contribution to local ambient air quality.

### 10.9.3 Stormwater

Adelaide Airport is bounded to the north by the Cowandilla-Mile End Drain, to the west by the Airport Drain and to the east and south by Brownhill-Keswick Creek. The Cowandilla-Mile End and Brownhill-Keswick catchments are highly urbanised and all drain into the Patawalonga Lake before entering Gulf St Vincent. An internal drainage network is present and directs the majority of stormwater into the Airport Drain, which similarly discharges to the Patawalonga Lake. A map depicting the major stormwater catchments is provided at Figure 8.5 (Chapter 8).

Sources of stormwater pollution at Adelaide Airport are similar to those in urban catchments, namely vehicles, roads, debris from vegetation, sediment, general commercial activities and hazardous substances storages. To mitigate these impacts, interceptors are specified for installation at the discharge point for all new developments. High risk tenants are also regularly inspected to check the suitability of hazardous substance stores and other potentially polluting activities. New aprons may pose an increased risk of impacting quality of stormwater runoff from refuelling and aircraft washing. Spill response and clean-up in accordance with the Airport Emergency Plan is intended to minimise environmental impacts from fuel incidents, and aviation operations are inspected for conformance to the Airport Aircraft Washing Guidelines.

AAL is committed to improving stormwater quality and consequently the ecological health of the airport's waterways by supporting aquatic ecosystems, as detailed in the Stormwater Quality Management and Improvement Plan (SQMIP). Implementation of this plan, which includes: monitoring and assessment of the ecological health of the open drain network, installation of gross pollutant traps, drain revegetation and adoption of water sensitive urban design principles; will mitigate any possible pollutant loads from on-airport activities.

A two-tier structure is applied to stormwater monitoring as detailed in the SQMIP. Tier 1 sampling involves the collection of monthly composite samples from April through October at the airport's primary stormwater discharge points, and results compared against Commonwealth and State water quality criteria. An annual summer event between November and March is also captured, subject to rainfall. Tier 2 sampling is only triggered when the criteria are exceeded, with the aim of identifying the pollution source(s). Stormwater within the airport boundary and exiting the airport site generally meets all quality criteria, with the exception of slightly elevated concentrations of nutrients and heavy metals, which are commensurate with levels reported for the wider urban catchment.

The land surrounding Adelaide Airport is low-lying and has potential for flooding, with the possible frequency and intensity projected to increase through climate change. In response to this issue, a flood modelling assessment was undertaken at Adelaide Airport in 2013 to assess flood risk to airport operations and identify key mitigation measures to manage flood events. AAL has positively aimed to improve flood mitigation for the local community through collaboration with government agencies; an example of which is through the licencing of land for the City of West Torrens Stormwater Detention Basin Project at West Beach in 2013.

### 10.9.4 Soil and Groundwater

Adelaide Airport is situated in a sub-coastal environment on low-lying land with sandy to clayey soils – overlain at various depths by imported fill – and shallow groundwater of non-potable quality.

The majority of operations that take place at the airport are on impervious surfaces and in vessels that greatly reduce the likelihood of contamination. Above ground hazardous substance stores are required to comply with relevant standards and are regularly inspected. There is a requirement for integrity testing to be undertaken for underground fuel storage, including the installation of monitoring wells.

Managing contamination is an ongoing priority, and all practicable measures are undertaken to minimise the environmental and health risks posed by soil and groundwater contamination. High risk sources include hazardous substance leaks and spills – principally those associated with aviation fuel storage and transport – and imported fill material. A comprehensive Airport Emergency Plan is in place that is routinely practiced and reviewed.

New aviation-support facilities, aprons and taxiway extensions will expand the range and/or intensity of aircraft movements, which brings an increased risk of fuel spills. Spill response and clean-up forms an integral part of the Airport Emergency Plan, which is in place to minimise environmental impacts from such events. New hazardous substances tank stores will be assessed during the Building Application process and then regularly inspected to ensure compliance with regulatory requirements. Furthermore, new developments often require excavation works that may reveal existing unknown contamination; whether from hazardous substances or asbestos-containing materials. In this situation, contamination will be managed through implementation of CEMPs. Imported fill must also be certified clean in accordance with the Adelaide Airport Waste Fill Importation Guidelines.

AAL's Building Application process captures the requirement for an Environmental Site Assessment (ESA) to be undertaken prior to construction, or a possible change in leasing arrangements or a change in land use. Guidelines on the requirements for undertaking an ESA, importing clean fill onto airport land and fuel management are available to all airport operators and contractors.

AAL oversees a mature Contaminated Site Management Plan involving regular monitoring in accordance with the *National Environment Protection (Assessment of Site Contamination) Measure 1999* and liaison occurs with airport operators on the progress of soil and groundwater monitoring programs and remediation action plans. Groundwater wells have been placed at identified high-risk locations for the purpose of monitoring contamination levels. Additional wells have been placed at sites suited to providing baseline groundwater quality data for comparison against known contaminated sites.

The coastal/estuarine location of the airport presents the risk of encountering acid sulphate soils, particularly in the western precincts. The risks and management strategies for these are detailed in the Contaminated Site Management Plan of any project where ASS are deemed likely to be encountered.

From any instances of newly identified contamination, AAL undertakes liaison with airport operators to provide education on the various components of contaminated site management, such as monitoring, environmental and/or health risk assessments and remediation action plans, and tracking progress and implementation. The status of relevant sites is maintained in the airport's Contaminated Site Register.

### Former JOSF – Terminals & Aviation Policy Area

The former JOSF is located at the current site of the long-term car park, with groundwater monitoring revealing the presence of a small free-phase hydrocarbon plume and a more extensive dissolved-phase plume, resulting from an historic spill event. The plume is stable beneath the hardstand, but with the prospect of future remediation involving soil and/or groundwater removal and treatment depending upon the results of ongoing groundwater monitoring or future site development toward an alternate use. Surrounding soil and groundwater in the vicinity of an unused in situ underground fuel hydrant is also to be assessed for potential historic contamination.

### ARFF Fire Fighting Training Grounds – Morphett Precinct

The ARFF current and former Fire-Fighting Training Grounds are known to be impacted with PFOS/PFOA (Perfluorooctane Sulfonate/Perfluorooctanoic Acid), being active constituents of past fire-fighting foam products. Airservices Australia is responsible for remediating these and, as part of a national program, is initially seeking to collaborate with State and Commonwealth environmental agencies to determine the risk criteria of these unique contaminants and gain consensus on suitable remediation methodologies.

Groundwater monitoring is now occurring on the existing Fire-Fighting Training Ground, with Airservices Australia now approached by AAL to do similarly for the former Fire-Fighting Training ground as a priority, noting that the site is available for redevelopment toward aviation-related support industry.



### 10.9.5 Hazardous Substances

Hazardous substances, primarily aviation fuels and oils, are used across the airport on a daily basis and have the potential to cause significant environmental and health impacts if they are not appropriately stored and managed.

Any hazardous substances stores and tanks, and associated spill response equipment, are regularly inspected for compliance with relevant standards and integrity testing. Records are maintained in the airport's Hazardous Substances Register.

Spills are routinely reported with every clean-up and are the responsibility of the polluter. AAL staff and airport operators receive spill response training, and spill response equipment is kept in designated airside and landside locations. The Airport Emergency Plan includes action for large spill incidents.

Asbestos-containing materials are recorded, inspected and managed in accordance with State regulations and AAL's Asbestos Management Plan. An Asbestos Register is held for all AAL-owned buildings and selected materials are removed on a risk basis. Any demolition works proposed are checked against the Asbestos Register, and removal is required by qualified contractors in compliance with State regulatory standards.

Records of all Ozone Depleting Substances (ODS) on-airport are maintained by AAL, and staff hold the relevant licences for handling refrigerants.

Electrical equipment containing Polychlorinated Biphenyls (PCB) have been tested or identified by AAL and further assessments will be undertaken in preparation for plant decommissioning and disposal, or as required.

**Table 10.6 Compliance and Continuous Improvement Goals and Management Actions**

Objective (by 2034)		
Operate and develop Adelaide Airport in a manner that complies with relevant regulatory and other standards whilst striving for continuous improvement.		
Goal (2014-2019)	Management Actions (2014-2019)	Timeframe
<b>Strive for 100% compliance for developments and airport activities with relevant noise regulations</b>	Assess ground power units usage by airlines and develop strategy to improve usage rates	<b>2015</b>
	Install ground power units on all future aerobridges and pre-conditioned air on all future international bay aerobridges	<b>2019</b>
	Assess feasibility of installing pre-conditioned air on domestic aerobridges	<b>2019</b>
	Continue to conduct regular boundary noise monitoring	<b>Ongoing</b>
	Continue to model noise impacts for proposed new developments and implement mitigation strategies where necessary	<b>Ongoing</b>
	Continue to include relevant noise mitigation in Construction Environmental Management Plans and conduct inspections	<b>Ongoing</b>
	Continue to enforce the AAL Ground Running Policy	<b>Ongoing</b>
	Continue to engage with the local community on noise issues	<b>Ongoing</b>
	Continue to provide guidance to stakeholders on noise mitigation strategies	<b>Ongoing</b>
<b>Strive for 100% compliance for developments and airport activities with relevant air quality regulations</b>	Continue to investigate noise abatement measures and where feasible, integrate into airport operations	<b>Ongoing</b>
	Develop and implement a Local Air Quality Management Plan based on the results of the air quality modelling study	<b>2019</b>
	Continue to conduct air quality monitoring as required	<b>Ongoing</b>
	Continue to collect air emissions data from point sources as required	<b>Ongoing</b>
	Continue to maintain a register of ozone depleting substances and phase out where feasible	<b>Ongoing</b>
	Continue to provide guidance to stakeholders on air quality improvement strategies	<b>Ongoing</b>

Goal (2014-2019)	Management Actions (2014-2019)	Timeframe
<b>Maintain and, where feasible, improve stormwater quality and aquatic ecosystems</b>	Review drainage infrastructure, maintenance and vegetation of the airport's internal drainage network	2015
	Incorporate outcomes of drainage review into the SQMIP	2016
	Assess drain ecology and develop an Aquatic Ecology Management Plan for the airport	2019
	Continue to regularly monitor stormwater quality	Ongoing
	Continue to identify sources of pollution as per the SQMIP and mitigate/ remediate sources of pollution where identified	
	Continue to undertake siltation surveys in the Patawalonga Creek Conservation Zone (PCCZ)	Ongoing
	Continue to monitor success of revegetation using the Index of Stream Condition	Ongoing
	Continue to provide guidance to stakeholders on stormwater quality improvement strategies	Ongoing
<b>Maintain and, where feasible, improve soil and groundwater quality</b>	Integrate contaminant trigger criteria into the Contaminated Site Management Plan	2015
	Conduct a thorough review of all Underground Storage Tank integrity testing programs against national standards	2016
	Continue to conduct regular groundwater monitoring	Ongoing
	Continue to implement priority actions from the Contaminated Site Management Plan	Ongoing
	Continue to guide tenants to close out contaminated sites on a risk basis where practicable	Ongoing
	Continue to conduct relevant environmental site assessments for new developments and lease terminations in accordance with the AAL Environmental Site Assessment Guidelines	Ongoing
	Continue to provide guidance to stakeholders on contamination prevention and remediation strategies	Ongoing
<b>Strive for 100% compliance for hazardous substance storages, handling and disposal</b> <b>Remove asbestos from AAL owned and / or operated infrastructure where feasible.</b>	Conduct a feasibility study on phase out of ODS	2017
	Continue to store and manage hazardous substances and dangerous goods in accordance with regulatory requirements	Ongoing
	Continue the environmental inspection program of tenants and construction sites	Ongoing
	Continue to implement emergency response plans for hazardous substances spills	Ongoing
	Continue annual asbestos audit and removal program and maintenance of the Asbestos Register	Ongoing
	Continue to maintain the Hazardous Substances Register, ODS Register and PCB Register	Ongoing
	Continue to provide guidance to stakeholders on hazardous substances management	Ongoing

## 10.10 Sustainable Development

Environmentally sustainable development is at the core of the vision for Adelaide Airport and a central focus of this Environment Strategy. The impact that we have on the environment can have local, regional or even global consequences. Excess resource consumption, waste generation, degradation of biodiversity and heritage values, and pollution of land, air and waterways are all potential impacts that thoughtful, planned infrastructure design, construction and operation can minimise or eliminate.

Fortunately, many of these impacts are quantifiable. AAL's commitment to sustainable development and performance at Adelaide Airport is to be facilitated via the ongoing implementation of Sustainable Performance Indicators (SPIs) and future reporting against Sustainable Performance Targets (SPTs). These established metrics will help to assess future infrastructure developments and review and refine the efficiency of existing infrastructure, plant and operations, providing the foundation for quality asset design and investment decisions and more efficient operations.

For individual precincts, AAL will continue to refine the Development Design Guidelines to include environmental sustainability principles directed at energy efficiency, such as building orientation and configuration that is appropriate for the type of development and location.

Table 10.7 Sustainable Development Goals and Management Actions

Objective (by 2034)		
Develop Adelaide Airport through quality buildings of contemporary, sustainable design		
Manage AAL facilities in a manner that minimises cost and natural resource use.		
Goal (2014-2019)	Management Actions (2014-2019)	Timeframe
<b>Design, construct and manage AAL assets to meet targets aligned to key Sustainability Performance Indicators</b>	Participate in ISCA Infrastructure Sustainability Rating Scheme	2017
	Continue to measure AAL's asset operation in alignment with SPI	Ongoing
	Regularly review progress of operational performance against SPT	2015
	Conduct annual environmental awareness training for all AAL staff	2015
	Create a reporting tool to convey asset management results	2016
	Assess the feasibility of conforming to Global Reporting Initiative standards	2017
	Continue to improve building performance through cost-effective improvements to operation and maintenance practices	Ongoing
<b>Implementation of sustainable design principles</b>	Continue to incorporate sustainable design principles into Development Design Guidelines, encouraging adoption of energy efficiency measures consistent with the Building Code of Australia	Ongoing
	Continue to identify sustainable development opportunities	Ongoing
	Encourage the adoption of external performance metrics	Ongoing
<b>Embed principles of stewardship into corporate processes and through the supply chain</b>	Expand set of Airport environmental guidelines for use by tenants, contractors, and AAL staff	2016
	Continue to encourage customers, partners and suppliers to adopt sustainability principles and practices	Ongoing
	Promote stewardship initiatives throughout the AAL supply chain through preferred 'suppliers of choice'	Ongoing

AAL has demonstrated its keen interest in sustainable development through the construction of a multi-level car park in 2012 that incorporated energy efficiency features, including a rooftop stormwater harvesting scheme. The Australian Federal Police facility, which opened in 2013, boasts 4-star Green Star and 4.5-star NABERS ratings. In addition, sustainable development principles have been incorporated into the Principles of Development Control in Chapter 7 of this Master Plan, as well as individual precinct and policy area Development Design Guidelines to encourage sustainable development of the Adelaide Airport site.

As the airport expands, significant opportunities will occur to demonstrate environmental sustainability initiatives. Over the next five years, AAL will adopt, encourage and influence the use of sustainable standards where practical for new developments, such as NABERS or those generated by the Green Building Council of Australia (GBCA) and the Infrastructure Sustainability Council of Australia (ISCA).

## 10.11 Energy and Climate Change

The global trend is towards a carbon constrained future, which demands that businesses address the various risks associated with climate change. A prudent carbon management program addresses (a) carbon risk (the potential financial and business impact associated with a carbon constrained economy) and (b) climate risk (the potential impact on assets and operations associated with more variable climate).

### 10.11.1 Carbon Risk

AAL is committed to tackling carbon risk through measuring and reducing its carbon footprint associated with infrastructure and activities under its operational control. This is to be achieved through implementation of a comprehensive Carbon Management Plan.

The expansion of aviation and non-aviation development has the potential to influence the environment, as well as the operational cost of doing business. Adelaide Airport's challenge is to guide stakeholders on strategies that support the dual aims of reducing energy consumption and realising

commercial growth. AAL will continue to engage with airport businesses on cost-effective opportunities for improved carbon management.

A mature greenhouse gas accounting system underpins AAL's carbon management program and is essential in measuring progress against reduction targets. The system was verified by Airports Council International (ACI) in 2013, and Adelaide Airport was the first in Australia to be awarded certification to Level 1 of the ACI Airport Carbon Accreditation program. Airport operators are currently below the corporate greenhouse reporting threshold under the *National Greenhouse and Energy Reporting Act 2007*. However, AAL is conforming to, and reporting against, ACI's more rigorous accounting standards.

AAL's carbon footprint is being reduced through various initiatives, one example being the implementation of clean energy measures. Collaboration is occurring with tenants to employ green leases for 'green' infrastructure, such as the new Australian Federal Police facility which is rated to 4-star Green Star and 4.5-star NABERS. A further carbon reduction was achieved in 2010 when AAL entered into an electricity contract that included the purchase of 10% renewable green energy.

AAL's greenhouse gas emissions (Scope 1 and 2) have decreased between 2008/09 and 2012/13 financial years from around 2.0kg CO<sub>2</sub>e/pax to 1.7kg CO<sub>2</sub>e/pax, being a 17% reduction and meeting the desired Adelaide Airport benchmark.

On airport, electricity under AAL operational control includes street lighting, airfield lighting and sewer pump stations along with the majority of the energy consumed within Terminal 1; being the single largest energy requirement on-airport. AAL is adopting energy efficient measures, such as LED lighting usage to decrease electricity consumption as one example.

AAL electricity consumption within Terminal 1 between the 2008/09 and 2012/13 financial years has fallen by 10% from 1.74kWh/pax to 1.57kWh/pax, exceeding the AAL previous target of 5%.

In an ongoing effort to minimise energy consumption, AAL will continue to identify and implement cost-effective energy reduction projects, expand the preventative maintenance program in alignment with development; educate employees on energy efficiency practices; and identify opportunities to generate renewable energy onsite. As a significant quantity of energy consumption is under the direct control of various airport businesses, AAL will continue to guide and influence stakeholders on energy efficient practices and encourage the adoption of clean energy principles.



### 10.11.2 Climate Risk

According to the CSIRO, the climate in South Australia is predicted to be warmer and drier with changes to seasonal rainfall patterns and greater frequency of drought. The potential operational and economic impacts from climate changes range from decreased water supply, increased

utility prices, infrastructure deterioration, and habitat stress. A climate adaptation study is currently underway to assess the impacts of future climate risk scenarios on aviation, infrastructure and habitat with the outcomes to be considered in future airport planning.

**Table 10.8 Reduced Energy Consumption Goals and Management Actions**

Objectives (to 2034)		
<ul style="list-style-type: none"> <li>Minimise future electricity load growth through energy conservation measures and renewable energy</li> <li>Minimise AAL's carbon footprint</li> <li>Influence and guide other airport users to reduce their carbon footprint</li> <li>Adapt to future climate change impacts</li> </ul>		
Goal (2014-2019)	Management Actions (2014-2019)	Timeframe
<b>Reduce AAL's per passenger electricity consumption (10% of 2013 levels by 2019)</b>	Develop and implement a carbon reduction plan	<b>2015</b>
	Continue to investigate possible locations for renewable energy installations	<b>2016</b>
	Assess the economic feasibility of a renewable energy power station	<b>2019</b>
<b>Reduce AAL's per passenger greenhouse gas emissions (5% of 2013 levels by 2019)</b>	Continue annual measurement of the company carbon footprint	<b>Ongoing</b>
	Continue certification to Level 1 of ACI's Airport Carbon Accreditation scheme	<b>Ongoing</b>
	Seek certification to Level 2 of ACI's Airport Carbon Accreditation scheme	<b>2015</b>
	Assess feasibility of achieving Level 3 certification	<b>2015</b>
	Develop and implement a Green Vehicle Program	<b>2015</b>
	Detail and enforce minimum energy efficiency standards for plant and equipment, including motor vehicles, in the company purchasing policy	<b>2017</b>
	Assess voluntary carbon offset options	<b>2017</b>
<b>Strive to realise reductions in tenant energy consumption</b>	Develop and implement an Airport Stakeholder Engagement Plan for carbon management	<b>2015</b>
	Support and facilitate fuel reduction initiatives by aircraft operators where possible	<b>Ongoing</b>
	Assess the feasibility of introducing biofuels for Ground Service Equipment in partnership with airlines	<b>2017</b>
	Continue to provide guidance to tenants on techniques for measuring emissions and reducing energy consumption	<b>Ongoing</b>
<b>Strive to increase the proportion of airport visitors and tenants using alternative forms of transport or changing their transport habits</b>	Install electric vehicle recharge points in the short-stay car park	<b>2016</b>
	Encourage an increase in the scope of service provided by public buses to the airport	<b>2019</b>
	Assess the feasibility of an electric taxi trial	<b>2019</b>
<b>Improve AAL's preparedness against the likely impacts of climate change on infrastructure and operations</b>	Complete a climate vulnerability and adaptation study	<b>2015</b>
	Conduct detailed infrastructure review against climate adaptation study outcomes	<b>2016</b>
	Incorporate, where required, new pavement and building standards into development and construction guidelines	<b>2019</b>
	Accommodate, where required, extreme weather events into the Airport Emergency Plan	<b>2016</b>
	Continue to participate in State and Local adaptive planning processes	<b>Ongoing</b>

As part of AAL's commitment to managing climate risk, a flood modelling study was undertaken in 2012 to assess the potential impacts of future flooding scenarios on airport operations and infrastructure. The outcomes of this study are to be used in the holistic assessment of climate adaptation and readiness. In addition, it has been noted the City of West Torrens has introduced a "Western Adelaide Region Climate Change Adaption Plan" and AAL will work closely with Council to expand this project to airport land.

## 10.12 Water Resources

Climatic trends, uncertainty with respect to South Australia's long-term water availability, increasing demand linked to airport growth, and rising supply costs have led to water emerging as an Airport priority. Security of water supply and best practice water conservation are critical goals, building on the solid track record of leadership in water sensitive urban design and water conservation.

Recycled water from the nearby Glenelg Wastewater Treatment Plant (GWTP) has been used to irrigate areas of Adelaide Airport for more than 15-years. As the airport has expanded, so too has the recycled water network. In 2012/13, construction of Terminal 1 was completed with the toilet and irrigation systems connected to the GWTP network. In 2012/13 recycled water comprised 42% of all water consumed within the Terminals & Business Precinct, being an increase in usage of around 36% (compared with potable water at 14%) over that consumed in 2008/09, allowing for expanded development and significant increased passengers during that time.

AAL realised further water savings in 2012 by constructing a facility that harvests and stores up to 570 kilolitres of stormwater from the short-term car park roof and pipes it to Terminal 1 for use in the air conditioning system. The Australian Federal Police building, AAL's plant nursery and the terminal plaza water feature were all connected to the recycled water network which is also used to manually irrigate runway verges. Large areas around the car park and the wider Terminals & Business Precinct have been planted with local, drought-tolerant species in accordance with the airport's Landscape Guidelines.

Table 10.9 Reduced Water Consumption Goals and Management Actions

Objectives (to 2034)		
Minimise the proportion of potable water consumption at Adelaide Airport		
Goal (2014-2019)	Management Actions (2014-2019)	Timeframe
<b>Reduce AAL's per passenger potable mains water consumption (10% of 2013 levels by 2019)</b>	Investigate opportunities to utilise stormwater harvested from the car park scheme and Adelaide Airport Stormwater Scheme	<b>2015</b>
	Assess opportunities for introducing more water efficient management of Terminal 1 cooling towers and other infrastructure, and assess end-of-life replacement options	<b>2016</b>
	Continue to seek opportunities for implementing water sensitive urban design principles	<b>Ongoing</b>
	Continue to update the water meter network to improve data accuracy, where required	<b>2015</b>
<b>Increase the number of connections made to non-potable water sources, where practicable</b>	Encourage new developments to connect to the recycled water network	<b>Ongoing</b>
	New developments to incorporate water sensitive urban design features such as rainwater tanks or other water harvesting systems	<b>Ongoing</b>
<b>Increase the number of tenants implementing water efficiency measures, where possible</b>	Provide tenants with water efficiency awareness raising tools and materials to use in their workplaces	<b>2019</b>

A major achievement was realised in 2013 with the construction of a managed aquifer recharge scheme by local utility provider, SA Water. Facilitated by AAL, the Adelaide Airport Stormwater Scheme (AASS) will have the capacity to capture, store and distribute up to 270-million litres of treated stormwater each year from Brownhill-Keswick Creek for use on, and around, Adelaide Airport. Once the scheme is fully operational it will offer an alternative non-potable water source to which AAL and other airport users will be able to connect.

AAL is committed, where feasible, to expanding the use of available non-potable water supplies for new and existing developments as per AAL's Water Management Plan. Of the various options being assessed, tapping into the AASS and expanding the existing GWTP recycled water network are the highest priorities. In line with development opportunities, supply points are available in all airport precincts as included in Figure 8.3 of Chapter 8. Developments with a large roof area, such as warehouses and hangars, provide opportunity for rainwater capture and reuse, supplementing recycled water supplies from existing networks. The integration of water sensitive urban design principles, new development design and adoption of the airport's Landscape Guidelines will also be promoted.

## 10.13 Waste

The waste streams generated on-airport include organics (e.g. food), paper and cardboard (e.g. newspapers), aluminium cans, plastics, electronic, construction, hazardous (e.g. waste oil, fluorescent tubes) and green waste.

AAL embraces the waste management hierarchy espoused by Zero Waste SA – in order of highest to lowest efficacy, and therefore prioritisation is afforded to reduction, reuse, recycle, recovery, treatment and disposal – which is reflected in its Waste Management Plan.

Waste reduction has been realised through numerous initiatives such as the phased elimination of paper-based forms and record keeping, distribution of reusable coffee cups, replacement of halogen light globes with LED technology, replacement of bulk liquid herbicides with a granular equivalent, and transition to an alternative asphalt patching mix.

Most significantly, recycling rates increased with the implementation in 2010 of a three-bin public space recycling system in Terminal 1. The scheme captures three waste streams – general, comingled recyclable and paper/cardboard

Table 10.10 Reduced Waste Consumption Goals and Management Actions

Objectives (to 2034)		
Increase the proportion of airport waste diverted from landfill		
Goal (2014-2019)	Management Actions (2014-2019)	Timeframe
<b>Increase the per passenger volume of waste recycling from AAL facilities (10% of 2013 levels by 2019)</b>	Revise and implement the Waste Management Strategy for T1	2014
	Establish a T1 food organics recycling scheme	2015
	Investigate upstream waste elimination opportunities in partnership with T1 tenants, including use of compostable products	2016
	Develop and implement an updated Waste Management Strategy for AAL operations	2016
<b>Implement a green purchasing program</b>	Develop and implement a Green Purchasing Policy focusing on waste reduction	2015
	Run a staff education campaign on the Green Purchasing Policy	2016
<b>Facilitate waste reuse and recycling by tenants, where feasible</b>	Develop and communicate guidelines on recyclable construction materials	2017
	Encourage airport food and beverage tenants to compost food waste	2019
	Continue to support airline programs aimed at recycling on-aircraft waste	Ongoing
	Continue to support airport tenants to expand their waste avoidance, reuse and recycling programs	Ongoing
	Continue to encourage recycling and rejuvenation of demolition and construction waste	Ongoing

which complements the existing recycling system available to retail and airline tenants. The volume of Terminal 1 waste recycled per passenger has decreased between 2007/08 and 2012/13 by around 22% broadly in line with set targets. Further, a food organics recycling trial was commenced by two food and beverage retailers within Terminal 1 in 2013 with a view to expanding the scheme to other relevant businesses from 2014.

Surplus plant and equipment is sold for reuse, demolition waste reused as road base and green waste composted for use on airport. Mature recycling programs exist in AAL offices and many tenancies for paper and cardboard, printer cartridges, waste oil, batteries, drink containers, construction waste and food waste. Further reduction of waste to landfill will be achieved through the development and implementation of a revised Waste Management Strategy for T1 and planned introduction of a green purchasing policy.

AAL works collaboratively with tenants to reduce waste and seeks to positively influence their environmental performance. Similarly, tenants posing a high risk of wildlife attraction are provided with guidance in developing Waste Management Plans, with the aim of reducing Foreign Object Debris and the likelihood of attracting wildlife to the airport environs.



## 10.14 Land and Heritage

### 10.14.1 Sites of Significance

#### Conservation

There are two sites of environmental interest on Adelaide Airport: the Patawalonga Creek Conservation Zone (PCCZ) and the Tapleys Conservation Zone (TCZ) – providing habitat that is host to vegetation communities, isolated flora, and uncommon fauna. Those sites of significance on airport are included at Figure 10.4.

#### Indigenous

Large areas of the airport have been surveyed in previous years and to-date no indigenous artefact sites have been recorded, with no sites of heritage significance listed on the Commonwealth, State or Local indigenous heritage registers.

#### Heritage

There are no sites of heritage significance within Adelaide Airport listed on the National Heritage List or on the Commonwealth Heritage List.

### 10.14.2 Biodiversity and Conservation

AAL is responsible for the management of all vegetation at Adelaide Airport through designation of conservation areas and the implementation of Vegetation Clearing and Landscaping Guidelines.

No threatened ecological community or species listed under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) are present on the airport grounds. However, AAL manages biodiversity at Adelaide Airport including the Patawalonga Creek Conservation Zone and the Tapleys Conservation Zone discussed previously.

Maintenance and operation activities, development and construction, and also inappropriate management of stormwater, waste and pest species have the potential to impact upon biodiversity at Adelaide Airport through the loss, degradation or injury to native flora and fauna.

AAL has dedicated many resources to the PCCZ, including development and implementation of the PCCZ Management Plan and Revegetation Plan, provenance guidelines, and monitoring surveys. A semi-commercial volunteer base oversees the ongoing site maintenance and rehabilitation program.

A second site, the Tapleys South Conservation Zone, has been set aside as a native plant nursery, where AAL actively transplants endangered and vulnerable species for future seed collection and propagation in the future.





Figure 10.4 Sites of Significant Conservation

AAL judiciously manages all vegetation across the airport, including any areas of remnant vegetation located outside of the specified Conservation Zones. The updated Landscape Guidelines set criteria for vegetation planting and modification by all airport users. Any vegetation removal, whether for regulatory, development, safety or security reasons, is conducted strictly in alignment with DIRD's Land Clearing Guidelines.

The broader airport environs provide a limited habitat for birds. There are no birds recorded at Adelaide Airport listed under the *Environment Protection and Biodiversity Conservation Act 1999*. Of those species listed in the *State National Parks and Wildlife Act 1972*, the Little Egret, Peregrine Falcon and Letter Winged Kite have been identified on airport lands.

### 10.14.3 Wildlife Risk Management

AAL runs a comprehensive wildlife management program, balancing the dual interests of aviation safety and wildlife conservation. In 2007 the program was augmented by a bird risk assessment, using more than 20-years of census data, which identified birds that pose the highest risk to aviation safety at Adelaide Airport. A wildlife mapping tool was then developed in 2008 utilising Geographic Information System (GIS) technology. Both these tools underpinned Adelaide Airport being awarded 'Capital City Airport of the Year' in 2009.

Further improvements were made in 2012 to the data management and mapping processes allowing simple, effective and streamlined reporting of wildlife risk to airport stakeholders. The formal establishment of the Adelaide Airport Wildlife Hazard Management Committee has further strengthened these relationships and information channels on this important area of safety management.

The wildlife strike rate at Adelaide Airport has reduced by 20% from 0.50/1000 aircraft movements to 0.40/1000 aircraft movement between 2008 and 2013, consistent with AAL's objectives.

AAL is in the process of collaborating with government, the Commonwealth Department of Defence and aviation stakeholders to identify high risk activities across metropolitan Adelaide within three Wildlife Hazard Management Zones (at 3-kilometre, 8-kilometre and 13-kilometre radius of the airport) in accordance with the National Airports Safeguarding Framework Guideline on Managing the Risk of Wildlife Strikes in the Vicinity of Airport (NASF Guideline C).

The location of a commercial waste transfer station adjacent to the southern airport boundary presents a high risk to aviation safety from wildlife attraction. AAL actively engages with the site operator and the West Torrens Council as owner on management strategies to minimise the risk.

### 10.14.4 Archaeology

Previous recordings of Aboriginal artefacts have been focused on the sand dunes, which were once prolific across this area prior to European occupation and used in the original construction of the airport. In collaboration with Kaurna representatives, AAL has surveyed areas of the airport and identified archaeological sites in the Environmental Site Register. Archaeological sites are not recognised as culturally significant and thereby not listed on the National or Commonwealth Heritage Lists.

While the landscape has been dramatically altered, there is the potential for further Aboriginal cultural material to be unearthed during future developments, which will be updated in the Environmental Site Register if discovered. There are procedures in place to ensure that known archaeological sites are appropriately and sensitively managed.

### 10.14.5 Built Heritage

Adelaide Airport has had a short yet vibrant history as South Australia's domestic and international gateway for nearly 60-years. In that time, the airport has substantially expanded and the infrastructure evolved to service the rapidly expanding aviation industry. The current airport buildings and infrastructure are not recognised as having significant heritage value and thereby are not listed on the National Heritage List or the Commonwealth Heritage List.

The Vickers Vimy aircraft, flown by brothers Sir Keith and Ross Smith in the famous London to Australia air race of 1919-20, is housed in a purpose-built, climate-controlled facility on airport. AAL will continue to ensure it is routinely monitored, maintained and restored in accordance with Commonwealth requirements to protect its heritage values, with its relocation elsewhere on the airport site under consideration.

### 10.14.6 Heritage Management

To meet its obligations under the Regulations, AAL will continue the rigorous process of managing all aspects of natural, indigenous and built heritage, aligned to the broad requirements of the *Environment Protection and Biodiversity Conservation Act 1999*.

Thorough assessments of heritage values at Adelaide Airport have been undertaken, the outcome of which will inform the airport's Heritage Management Strategy in balance with future

aviation related development growth. The Strategy will align with the objectives of this Master Plan and its implementation driven through AAL's environmental management system. The Airport Building Approval process, regulated under the *Airports Act 1996*, will provide the mechanism for development control and trigger any approval management actions relating to heritage.

Table 10.11 Land and Heritage Goals and Management Actions

Objectives (to 2034)		
<ul style="list-style-type: none"> <li>Enhance biodiversity</li> <li>Conserve places of significant natural, indigenous and heritage value</li> <li>Minimise the risks presented by wildlife to aviation safety</li> </ul>		
Goal (2014-2019)	Management Actions (2014-2019)	Timeframe
<b>Improve native biodiversity of target zones within the airport</b>	Develop an Aquatic Ecology Management Plan for the PCCZ	2015
	Review detailed flora and fauna surveys of the PCCZ	2016
	Continue to implement the Conservation Zone Management Plans	Ongoing
	Research and develop a long term strategy to assess and mitigate impact on native habitats	2018
	Partner with external stakeholders to support a biodiversity program in State-controlled easements or drains	2015
	Implement the SQMIP, in particular, upgrade the stormwater network with sustainable vegetated filtration systems	2016
	Continue to monitor the open stormwater network using the Index of Stream Condition	Ongoing
	Continue to implement the AAL Landscape Guidelines	Ongoing
	Continue to apply biodiversity no net loss policy	Ongoing
<b>Protect significant heritage values</b>	Finalise a Heritage Management Strategy	2015
	Develop Heritage Management Plans, where required	2019
	Continue to implement procedures for identifying and protecting archaeological artefacts	Ongoing
	Continue to promote communication between AAL and traditional custodians	Ongoing
<b>Strive to reduce wildlife strike rates involving higher risk species</b>	Implement Wildlife Hazard Management Plan, in particular, complete airside vegetation mapping and conduct a grass trial for runway strips	2015
	Undertake comprehensive on-airport wildlife hazard mapping linked to vegetation	2016
	Develop and integrate Wildlife Hazard Management Zone mapping into the Building Application process	2016
	Use Wildlife Hazard Management Zone mapping as a tool to educate off-airport stakeholders on minimising strike risk	Ongoing
	Continue to collaborate with airport neighbours on fox control	Ongoing
	Continue to review and implement the Wildlife Hazard Management Plan	Ongoing

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# DEVELOPMENT PROGRAM

# 11



# DEVELOPMENT PROGRAM

## 11.1 Introduction

As one of the largest private commercial land holders within the Adelaide metropolitan area, AAL needs to identify and take advantage of the opportunity to add value to the traditional business activity by maximising the property development opportunities of airport land that is not required for aeronautical purposes in the short-to-medium term.

Such development will complement and enhance future airport operations, support the delivery of the wide range of services and facilities demanded by airport users, improve accessibility to the airport, create employment opportunities, and contribute to the Gross State Product (GSP).

This section is consistent with sub-sections 71 (2) (gb) and 71 (2) (gc) of the *Airports Act 1996* outlining the proposed airport developments within the first 5 years of the Master Plan, including detail on the scale, the effect on employment levels at the airport, the impact on the local and regional economy, and possible community impacts. Commentary is not limited to non-aviation developments, but is also given for those with aviation connotations, given the possible interrelationship of these with one another in several precincts at the airport and particularly toward supporting interrelated activities such as emergency services.

For the purpose of this document, 'aviation use' is defined as those aviation-related support industries that cater for airport and airline services such as facilities for crew, ground staff, catering, administration offices, freight and engineering services and hangars with a direct connectivity to aprons and taxiways. Car parking and vehicle storage is also included (see Glossary for further detail).

In addition, this section identifies the environmental aspects of the possible developments consistent with the Adelaide Airport Principles of Development Control (included in Chapter 7) and the Environment Strategy (Chapter 10), as specified at sub-section 71(2) (f) and (g) of the *Airports Act 1996*. Further, while traffic management issues are also mentioned, more specific detail is included in the Ground Transport Plan (Chapter 9) consistent with Section 71 (ga) of the Act.

In keeping with the 20-year planning horizon of the Master Plan, an indication is given of possible development projections after the fifth-year, which allows for progressive updating in each succeeding 5-yearly Master Plan period.

It is emphasised that development prospects over a 5-year horizon, or the extended period of 20 years, do not constitute any firm commitment toward development on airport land. Economic fluctuations and uncertainties in the aviation and property market prevent a regimented approach to airport development on a set schedule. However, when the Structure Plans and the inherent development themes in Chapter 7 – Land Use Planning for each precinct are considered, a planning direction is evident for community and stakeholder clarity.

## 11.2 Potential Future Key Developments – Planning Horizon

Within the planning horizon of 5 years (to 2019), the total direct and indirect increases to GSP associated with future airport developments have been forecast to be in the region of \$775 million, or a 40% increase over 2014. Over 20 years, the total direct and indirect increases to GSP associated with future airport developments are likely to increase by \$2.12 billion over that expected by 2014 of \$1.94 billion. Given the projected range of possible developments, the direct employment increases have been estimated to be 3,480 persons in 5 years and 9,512 persons by 2034 over the current level in 2014 of 8,726. For comparison purposes, Tables 11.1 and 11.2 provide a base case breakdown of these figures by 2014 to 2019 and 2034 for each of the Adelaide Airport precincts.

Table 11.1 Future Key Developments and Forecast Employment

EMPLOYMENT (JOBS)		By 2014	By 2019	Increase over 2014	By 2034	Increase over 2014
<b>Direct on Precinct</b>						
Runways	(A)	184	209	25	310	126
	(NA)	-	-	-	-	-
Terminals & Business	(A)	4,744	5,431	687	8,186	3,442
	(NA)	2,601	4,165	1,564	6,393	3,792
Torrens / West Beach	(A)	-	-	-	-	-
	(NA)	17	22	5	31	14
Tapleys	(A)	208	267	59	381	173
	(NA)	208	244	36	359	151
Morphett	(A)	-	10	10	160	160
	(NA)	122	479	357	596	474
Airport East	(A)	-	260	260	260	260
	(NA)	642	1,120	478	1,562	920
<b>PRECINCT TOTALS</b>	<b>(A)</b>	<b>5,136</b>	<b>6,177</b>	<b>1,041</b>	<b>9,297</b>	<b>4,161</b>
	<b>(NA)</b>	<b>3,590</b>	<b>6,030</b>	<b>2,440</b>	<b>8,941</b>	<b>5,351</b>
<b>Sub-Total:</b>		<b>8,726</b>	<b>12,207</b>	<b>3,481</b>	<b>18,238</b>	<b>9,512</b>
<b>Induced (Off Precinct)</b>		<b>9,033</b>	<b>12,636</b>	<b>3,603</b>	<b>18,880</b>	<b>9,847</b>
<b>TOTAL</b>		<b>17,759</b>	<b>24,843</b>	<b>7,084</b>	<b>37,118</b>	<b>19,359</b>

Key: A – Aviation NA – Non Aviation

Table 11.2 Potential Future Key Development and Forecast Impact on Gross State Product

GROSS STATE PRODUCT (\$ MILLION)					
	By 2014	By 2019	Increase over 2014	By 2034	Increase over 2014
Runways Precinct	\$41	\$47	\$6	\$69	\$28
Terminals & Business Precinct	\$1,636	\$2,137	\$501	\$3,248	\$1,612
Torrens/West Beach Precincts	\$4	\$5	\$1	\$7	\$3
Tapleys Precinct	\$93	\$114	\$21	\$165	\$72
Morphett Precinct	\$27	\$109	\$82	\$168	\$141
Airport East Precinct	\$143	\$307	\$164	\$406	\$263
<b>PRECINCT TOTALS</b>	<b>\$1,944</b>	<b>\$2,719</b>	<b>\$775</b>	<b>\$4,063</b>	<b>\$2,119</b>
Proportion of GSP % (excluding Public)	2.75%				
Proportion of GSP % (including Public)	2.1%				



### 11.3 Potential Future Key Developments – Planning Horizon – 0 to 5 Years

The various foreseen future developments in the next five years are outlined in Table 11.3, in addition to the possible scale of development, possible range of increased employment levels, and where relevant, potential customer

extent for this period. The likely trigger for development is also included in recognition of the need for any development to be based upon both airport requirements, business viability and economic constraints. New development in each precinct will also need to be consistent with the Structure Plans and Envisaged Uses prescribed in Chapter 7 – Land Use Planning.

**Table 11.3 Potential Future Key Developments at Adelaide Airport (0-5 years)**

Services	Type of Development	Scale	Additional Employees/	By 2019
<b>RUNWAYS PRECINCT</b>				
Airport Services:	Aviation Rescue and Fire-Fighting		31	Aviation needs to accommodate A380 Aircraft
	Demolition of former AsA Control Tower	N/A	N/A	Obsolescence
Non-Airport Services:	None expected	–	–	–
<b>TERMINALS &amp; BUSINESS PRECINCT</b>				
Airport Services:	Terminal 1 Expansion	5000m <sup>2</sup>	500	Aviation growth
	Apron Expansion	3 Aircraft		Aviation growth
	General Aviation Terminal	1,000m <sup>2</sup>		Replacement facility
	Offices to supplement Terminal Activity	5,000m <sup>2</sup>	240	Terminal expansion need
	Relocation of Hangar and Freight Facilities to Airport East	(15,000m <sup>2</sup> )	Included at Airport East Precinct	Aviation need and terminal expansion
	Joint Oil Storage Facility (JOSF)	Additional 3 megalitres of Fuel Storage Additional 3 kilometres of Tank/Fuel Pipeline	20	Aviation demand
	In-Flight Catering Facility	2,400m <sup>2</sup>	40	Aviation need
	Long-Stay Car Parking	500 spaces	20	Aviation need
Non-Airport Services:	Office Park	25,000m <sup>2</sup>	860	Commercial demand including Ancillary to Aviation Services
	Hotel	260 rooms	200	Demand from Aviation Expansion
	Bulky Goods Store	13,000m <sup>2</sup>	180	Ancillary to IKEA activity
	Office & Technology Facility, Burbridge Policy Area	2500m <sup>2</sup>	40	Central Adelaide Location with International linkage
	Office/Warehouse Burbridge Policy Areas	20,000m <sup>2</sup>	400	Commercial demand related to central location

Services	Type of Development	Scale	Additional Employees/	By 2019
<b>TORRENS PRECINCT</b>				
Airport Services:	NIL			
Non-Airport Services:	Recreation Sports Field Improvements/ Dog Park	10ha	N/A	Community need
<b>WEST BEACH PRECINCT</b>				
Airport Services:	NIL			
Non-Airport Services:	Sports Fields associated with Adelaide Shores (Softball)	3ha	N/A	Community need
	Events	3ha	100 short-term employees	Community events in a central location
	Service Trade Activity/ Upgraded Petrol Station	500m <sup>2</sup> / 3ha	5	Central location
	Aviation Fuel Pipeline	2km	N/A	Aviation infrastructure
<b>TAPLEYS PRECINCT</b>				
Airport Services:	Joint Emergency Services, Offices, Hangar and Apron/ Helicopters	4,500m <sup>2</sup>	66	Centralisation of emergency services to the Tapleys Precinct
	Animal Hotel	1500m <sup>2</sup>	14	Aviation relativity for travel
Non-Airport Services:	Retail Expansion/Service Trade/Car Parking	6ha	30	Subject to demand
<b>MORPHETT PRECINCT</b>				
Airport Services:	NIL			
Non-Airport Services:	Office/Warehousing	5,000m <sup>2</sup>	10	Demand from aviation and commercial developers
	Office/Warehouse & Parcel Delivery	20,000m <sup>2</sup>	360	Aviation Association
<b>AIRPORT EAST PRECINCT</b>				
Airport Services:	Freight Cargo	10,000m <sup>2</sup>	100	Aviation need (relocate from Terminals Precinct)
	Hangar Development	6,000m <sup>2</sup>	160	Aviation need (relocate from Terminals Precinct)
Non-Airport Services:	Office/Warehousing/ Logistics	28,000m <sup>2</sup>	500	Commercial demand
	Car Parking/Storage	4ha	N/A	Link to Terminal needs

## 11.4 Possible Future Airport Development – Planning Horizon – Up to 2034

Table 11.4 is a schedule of potential Adelaide Airport developments that could occur within the period of up to 20 years. It is noted that some of these could be

advanced to occur within 5 years or extended out beyond this planning horizon, taking into account demand and economic circumstances.

**Table 11.4 Potential Future Key Developments at Adelaide Airport (6-20 years)**

Services	Development	Trigger/Comment
<b>RUNWAYS PRECINCT</b>		
Airport Services:	Ongoing Development of Aprons/Hard Stands and Aircraft Parking activity associated with Terminal Expansion and Freight Services at Airport East	Aviation need
Non-Airport Services:	None Expected	
<b>TERMINALS &amp; BUSINESS PRECINCT</b>		
Airport Services:	Terminal Expansion	Aviation need
	Office Park Development	Increase demand for aviation services and central location
	Car Parking Short Stay (3,000 spaces) Expansion	Expansion of multi-level car parking
	Car Parking Long Stay (2,200 spaces) Expansion	Aviation Services expansion
	Flight Catering/Ground Services Equipment (GSE)	Based upon Aviation Services need
	Car Storage 2,000 spaces	Expansion need for Car Rental/Valet
	JOSF Fuel Storage Tank (3 megalitres)	Based upon Aviation Demand
Non-Airport Services:	Office/Warehousing Burbridge Policy Area 10,000m <sup>2</sup>	Based upon Expansion and Logistics and Industrial Demand
<b>TORRENS PRECINCT</b>		
Airport Services:	NIL	
Non-Airport Services:	Recreational Sports Improvements	Community need
	Aged Care Expansion (Sensitive Development)	Community need
<b>WEST BEACH PRECINCT</b>		
Airport Services:	NIL	
Non-Airport Services:	Sporting & Recreation Improvements	Community need
	Service Trade Premises	Commercial opportunity
	Community Garden	Community need
	Events/Car Parking/Storage	Commercial facility
<b>TAPLEYS PRECINCT</b>		
Airport Services:	Expanded Emergency Services Activity	Aviation growth/community service
Non-Airport Services:	Retail Shopping Centre Expansion/Retrofit	Commercial activity

Services	Development	Trigger/Comment
<b>MORPHETT PRECINCT</b>		
Airport Services:	Office/Warehousing/Freight Facilities (25,000m <sup>2</sup> )	Aviation/Freight/Industrial need
	Aviation Hangarage	Dependent upon Aviation expansion
Non-Airport Services:	NIL	
<b>AIRPORT EAST PRECINCT</b>		
Airport Services:	Office/Warehousing/Freight	Aviation/Industrial need
	Hangarage	Aviation need
Non-Airport Services:	NIL	

## 11.5 Scope of the Development Assessment

As noted previously, Chapter 7 outlines the parameters of the envisaged development for each of the Adelaide Airport Precincts, encompassing the overall Objectives, Desired Character and Principles of Development Control for the Airport Zone, and also individually for each precinct consistent with the respective Structure Plans. In brief, new development proposed on airport land should be consistent with the Envisaged Uses for the relevant precinct, and will be assessed by AAL against the Objectives and Principles of Development Control for both the Adelaide Airport Zone and the relevant precinct policies.

In addition, all applicable security measures will be considered for every development based on Adelaide Airport's local security risk assessment and analysis.

As previously discussed, the proposed or possible developments within the next 5-year and 20-year periods are outlined in Tables 11.3 and 11.4. The following sections describe the extent of existing developments within each precinct of Adelaide Airport and the surrounding development. Environmental considerations specific to the relevant precinct are also discussed covering noise, land and heritage management, soil and groundwater contamination, stormwater quality, and local air quality. A detailed description of the environment objectives and management actions applicable for new development within the airport site is included in the Environment Strategy (Chapter 10).

Where relevant, some reference is included on traffic accessibility, with further detail contained within the Ground Transport Plan (Chapter 9).

## 11.6 Runways Precinct

Information on the airfield infrastructure that occurs predominately in the Runways Precinct is detailed in Chapter 6 – Aviation Infrastructure, including both existing and future development.

## 11.7 Terminals & Business Precinct

### 11.7.1 Existing & Future Development

Within the Terminals & Business Precinct there are five Policy Areas covering Terminals & Aviation, Office Park, Export Park, Retail and Burbridge Business Park.

The existing and future development for the Terminals and Aviation Policy Area is covered more fully at Chapter 6 – Aviation Infrastructure.

The anticipated development at Export Park is primarily completed, with the prospect of the development of a further office complex of around 4,500m<sup>2</sup> to 6,000m<sup>2</sup> at the entrance to the airport site, fronting Sir Richard Williams Avenue and Sir Donald Bradman Drive.

Similarly, IKEA retail development fronting and accessed primarily from Sir Donald Bradman Drive is in place, with a Masters store to be completed in 2014.

Development of the Office Park Policy Area is to occur progressively over the life of the Master Plan, and beyond, commencing from the most easterly area facing Sir Richard Williams Avenue and projected to account for around 50,000m<sup>2</sup> of office space over time. Within the first 5 years of the Master Plan, a new office block of around 4,500m<sup>2</sup> in size is anticipated, and will focus upon ancillary activities associated with T1. Further development of new office complexes are forecast to extend to past 15,000m<sup>2</sup> within the next 5 years up until 2019.

Adjoining the Office Park Policy Area, an Airport Hotel of some 260 suites, function rooms and restaurants is anticipated to be developed, broadly consistent with a prior Major Development Plan approval, which allows for such a hotel to be substantially underway in October 2015.



Within the Terminals & Aviation Policy Area, it is considered that the historic Vickers Vimy aircraft may be relocated to the vicinity of the plaza area and future Airport Hotel. Existing hangars and freight facilities are also to be progressively replaced by terminal expansion and relocated to the Airport East Precinct. The development of a further in-flight catering complex of 2,400m<sup>2</sup> is also anticipated within this policy area, along with expansion of long-stay car parking – dependent upon demand. Also bordering the Burbridge Business Park Policy Area, an expansion of the capacity of the existing JOSF is expected, with one new tank to occur within 5 years. An associated fuel pipeline connecting the JOSF to an existing multi-user fuel line in Military Road, West Beach may also occur within this locality.

Within the Burbridge Policy Area, around 2,500m<sup>2</sup> of further development is expected within the next 5 years, including an office/technology facility and office/warehousing, with around 20,000m<sup>2</sup> estimated in total. The provision of long-stay or staff car parking within the airport site is also likely along the northern perimeter of the policy area.

**Figure 11.1 Boart Longyear building within the Burbridge Business Park Policy Area**



### 11.7.2 Employment / Economic Aspects

Within the next five years, taking into account the scale of anticipated development within all Policy Areas, the degree of terminal expansion, the forecast increase in aviation travel, and the extent of airline bases occurring at Adelaide Airport, Hudson Howells estimates that the increased employment will be in the vicinity of 2,250 persons. This incorporates around 680 persons in the aviation industry, and 1,564 persons associated with non-aviation employment. This derives an increase in GSP of some \$501 million, and significantly, a 30% increase over the current GSP of \$1,636 million.

### 11.7.3 Environmental Considerations 0-5 Years – All Policy Areas within entire Terminal & Business Precinct

Allowing for the specialist nature of much of the development associated with the terminals and aviation infrastructure, the possible environment impacts of such development is being considered by airport operators and tenants, and is consistent with the provisions of the *Airports (Environment Protection) Regulations 1997*. The identified environmental impacts include the following:

#### Waste

With the potential of varied waste streams generated from expanded development, Waste Management Plans for operations with a risk of increasing pollution levels and attracting birds will be a prerequisite in development approvals.

## Energy and Water Resources

New facilities will increase demand for energy and water. Additional energy consumption will in turn elevate greenhouse gas emissions. In order to combat this, numerous energy and water efficiency features were built into T1, including a state-of-the-art building management system to control lighting and HVAC loads, 'go slow' elevators, solar hot water, high use of natural light, automatic blinds on west-facing windows, dual reticulation systems for recycled and potable water and, later, the installation of a solar panel array. New airport and non-airport development will also need to consider these resource-saving features, and be consistent with the Principles of Development Control specified at Chapter 7 – Land Use Planning. Additionally, water conservation harvesting and reuse practices, including use of the existing recycled water or treated stormwater, will also feature (see Section 10.12 of Chapter 10).

Airside operators will also be encouraged to reduce their reliance on diesel-powered ground vehicles in favour of electric and LPG-driven plant in an effort to reduce fuel consumption.

## Noise

Aircraft has the potential to generate noise through the idling of engines and auxiliary power units. Noise may also emanate from mobile diesel generators, engine ground running, plant operations, roads and car parks including truck delivery and loading operations. The use of preconditioned air, 400 Hz fixed electrical ground power to aircraft at terminal parking bays, and the introduction of quieter aircraft have assisted to reduce noise emissions.

As a result, activity at T1 has not exceeded the relevant regulatory noise criteria since the building was commissioned. Future terminal and apron expansion to the west of the airport site will have negligible impact on adjoining uses at the airport boundary. New developments are subject to noise modelling when appropriate, with attenuation controls to be implemented if required.

Similar modelling will be undertaken for the design and construction of developments associated with the general aviation terminal, and also commercial and retail developments. Due consideration of individual operational hours will be given, also noting that the airport is operational 24 hours every day of the year.

Past acoustic modelling has been undertaken for the Burbridge Business Park Policy Area, which considered its ultimate development, together with the associated transport using the several access points.

From the above, such activities are expected to readily meet the relevant environmental acoustic criteria on a 24 hour per day, 7 days per week operational basis. As new structures are developed, these activities will also be monitored to ensure operational compliance (refer to Section 10.9.1 of Chapter 10).

## Soil, Groundwater and Stormwater

New development has the potential to contaminate surface waters as a result of additional aircraft and vehicle operations. For example, expansion of T1 will accommodate predicted increases in aircraft activity and the accompanying increase in ground vehicle use. This has the potential to contaminate surface waters, as vehicle parking can result in leakages of hydrocarbons, while maintenance and refuelling operations can result in accidental spillages. The storage of fuels, oils and chemicals has the potential for spills to lead to stormwater contamination if proper storage facilities and management practices are not in place.

It is expected that stormwater runoff will increase proportionately with paved surface area; but with this not likely to be significant (based on the current area developed within the precinct). Excess water not harvested from roofs will be directed into existing or new interceptor units.

The anticipated extension of the JUHI (underground refuelling pipeline), associated with terminal and apron expansion presents a risk of fuel leakage contaminating soil and groundwater. Mobile refuelling tankers will continue to be used for both ground vehicles and aircraft that are not serviced by the refuelling pipeline, and will be required to comply with airport refuelling and spill response procedures. Stormwater collected from apron areas will be directed into large underground interception units, which is a standard design feature that will be extended to newly constructed aprons.

Currently, the storage of fuels, oils and chemicals at the JOSF (fuel depot) has the potential for contamination to soil, groundwater and stormwater through spills and leakages. Potential impacts as a result of the facility's operations will continue to be controlled through regular monitoring and auditing of its environmental management plan. The management of groundwater and possible soil contamination is detailed in Section 10.9.4 (Chapter 10).

### Land and Heritage Management

The relocation of the Vickers Vimy aircraft will require a suitable environmentally-controlled facility to control light, humidity and temperature, as a pre-requisite. This will be arranged according to specialist engineering advice.

It is also noted that construction sites involving earthworks in the Burbridge Business Park Policy Area could uncover the presence of archaeological artefacts and, where required, will be managed responsibly in accordance with AAL procedures, as outlined at Section 10.14.4 (Chapter 10).

### Local Air Quality

Terminal expansion will be accompanied by growth in aircraft numbers, and also numbers of passengers travelling by private vehicles to and from the airport, will result in both increased ground operation of aircraft engines and induced traffic emissions respectively. Similarly, the increased use of motor vehicles around the apron areas will result in further vehicle emissions. The Environment Strategy includes the requirements for ongoing monitoring of overall airport air quality (refer to Section 10.9.2 of Chapter 10).

#### 11.7.4 Community – Relationships to State/Local Planning

As identified in Chapter 7, Adelaide Airport is classified under the State Government's *30-Year Plan for Greater Adelaide* as a 'Specialist Activity Centre' that provides essential aviation transport to the community and in doing so is a primary employment base for the city. Vacant industrial land within the Burbridge Business Park is development-ready and is identified as Employment lands in the *Housing and Employment Land Supply Program 2010*. Given this recognition of Adelaide Airport within State Government strategic documents, the airport's ongoing importance to the surrounding community is apparent.

#### 11.7.5 Road Transport Integration

The Ground Transport Plan (Chapter 9) provides specific focus toward the relationship of airport activity with the surrounding road network, and also identifies progressive traffic segregation in an easterly and westerly direction. The State draft Integrated Transport and Land Use Plan has also recognised the improvement of all primary intersections leading to the airport from the Adelaide Central Business District, which are part of the National Land Transport Network.

## 11.8 Torrens Precinct

### 11.8.1 Development Extent – Existing

Existing development within the Torrens Precinct consists of an aged-care facility, specialist hockey pitch with associated club rooms, and over 10 hectares of open space reserved for sporting activities and events.

### 11.8.2 Development Extent – Projected

Future developments within the Torrens Precinct may include expansion of the aged-care facility and associated retirement housing in line with future demand. The regeneration of the former sports fields is also likely, in addition to the development of a dog park in conjunction with the City of West Torrens on land to the south side of Ingerson Street.

### 11.8.3 Scale of Development 0-5 Years

It is envisaged that development within the next 5 years will be primarily directed toward the regeneration of the sports field involving cricket, soccer and football, and the establishment of a dog park.

### 11.8.4 Employment / Economic Aspects 0-5 Years

Consistent with the potential development within the Precinct, it is forecast that there will be an increase in non-aviation employment numbers of approximately 5 people. The increase in GSP for the Torrens Precinct is likely to be marginal at around \$1 million up to 2019.

### 11.8.5 Environmental Considerations 0-5 Years

There is the potential for varied waste streams that could be generated from expanded developments during this period. Any new activity with a risk of attracting birds will be required to prepare a waste management plan and establish mitigation actions consistent with the Environment Strategy (Section 10.13 of Chapter 10).

If necessary, stormwater will be directed from vehicle pavements into interceptor units before being directed into off-airport drainage systems.

To reduce reliance on potable water, AAL will promote the use of recycled water, noting that such use of non-potable water on sporting fields would deliver significant savings. The layout of the Recycled Water Supply Points within and surrounding the Airport is included in Chapter 8 (Figure 8.3) with more detail on water conservation outlined in Section 10.12 of Chapter 10.

Detailed acoustic modelling of sporting and club room activities, including associated traffic movements, has been previously undertaken, particularly for activity in Ingerson Street, West Beach. A suitable outcome was determined through the placement of higher noise emitting activity further away from residences, the use of suitable landscaped mounding, fencing or walls, and the strategic orientation of building openings away from the noise source. The selection of sporting groups or activities will take into account this previous acoustic modelling against the potential for noise emissions, and further modelling conducted as necessary to ensure ongoing compliance, and as outlined in Section 10.9.1 (Chapter 10).

### 11.8.6 Community – Relationships to State/Local Planning

The Torrens Precinct is suited to sports activities and parks closer to Tapleys Hill Road, given the aircraft height restrictions under a runway approach.

### 11.8.7 Road Transport Integration

Current access points into the precinct are suitable with no additional ones warranted. A possible exception would be to allow car parking on land to the south of Ingerson Street associated with a new dog park.

## 11.9 Tapleys Precinct

### 11.9.1 Development Extent – Existing

Existing development within the Tapleys Precinct consists of a brand outlet centre (known as Harbour Town), a supermarket, fast food outlets, aviation-related support activities and helicopter facilities.

### 11.9.2 Development Extent – Projected

During the period of the Master Plan, the enhancement of the Tapleys Precinct is forecast through the development of emergency services activities, helicopter services and expanded animal kennels.

### 11.9.3 Scale of Development 0-5 Years

The extent of built form space to be developed in this precinct over the next 5 years could be approximately 6,000m<sup>2</sup>; covering kennels, aviation hangars/offices, emergency services facilities and helicopter hangars.

### 11.9.4 Employment / Economic Aspects 0-5 Years

Direct employment prospects are forecast to increase by an estimated 109 FTE employees associated with the new developments, and a contribution to GSP by approximately \$24 million.

### 11.9.5 Environmental Considerations 0-5 Years

#### Waste

Varied waste streams are expected from retail and fast food developments. Waste management plans and mitigation actions are sought where there is any risks of attracting birds, with waste recycling also encouraged consistent with Section 10.13 (Chapter 10).

#### Water Resources

To reduce the reliance on potable water, allowance exists for the use of recycled water into the Tapleys Precinct for new developments; as identified in the reticulation layout against at Figure 8.3 (Chapter 8) and detailed in Section 10.12 (Chapter 10).



### Noise

Helicopters have the potential to generate noise through the idling of engines. Noise may also emanate from engine ground running, plant operations, roads and car parks including truck delivery and loading operations. Potential ground-based noise is remote from residential areas, aided by the existing buffer zone and shielded by noise generated by passing arterial road traffic.

Activity at the helicopter facilities has not exceeded relevant regulatory noise criteria at the western airport boundary (west of Tapleys Hill Road) since the helipad was commissioned. Further expansion of these facilities is therefore likely to have negligible impact, however, close monitoring will be maintained consistent with the Environment Strategy (Section 10.9.1 of Chapter 10).

### Soil, Groundwater and Stormwater

The existing storage of fuels, oils and chemicals at the helicopter facilities are monitored for spills and leakage to soil, groundwater and stormwater contamination, and this will continue to be similarly applied for new developments in accordance with the Environment Strategy (Section 10.9.4).

### 11.9.6 Community – Relationships to State/Local Planning

Land at the existing Harbour Town brand outlet centre is categorised as a 'Bulky Goods Centre' in the *30-Year Plan for Greater Adelaide* and its ongoing activities are intended consistent with its status as part of Adelaide's Retail Centre hierarchy. Further expansion and remodelling of the brand outlet centre is expected within the next five years, including showrooms and various other retail outlets.

### 11.9.7 Road Transport Integration

Currently, access into the Tapleys Precinct is via Tapleys Hill Road, and this level of service is felt to be adequate for future development over the next five years.

## 11.10 West Beach Precinct

### 11.10.1 Development Extent – Existing

Existing development in the West Beach Precinct consists of a golf course, soccer field, stormwater detention facility and a petrol filling station.

### 11.10.2 Development Extent – Projected

Future development prospects include service trade premises, motor vehicle or similar sales, and an enhanced petrol filling station with an associated car wash/convenience store. It is also noted that the staging of suitable events on land facing West Beach Road is practical on an as-needed basis.

### 11.10.3 Scale of Development 0-5 Years

The principal development activity over the next five years is expected to be sporting facilities associated with the Adelaide Shores Complex, along with several commercial improvements on land in the vicinity of Tapleys Hill Road. The staging of events similar to that of the 2013 'Cavalia' is also likely.

### 11.10.4 Employment / Economic Aspects 0-5 Years

In consideration of the likely scale and nature of potential developments, it is expected that only a marginal increase in the number of employees will occur by around 5 FTE employees. An increase in GSP of \$1 million is likely. The economic impact of events has not been included in recognition of the generally short-term occupancy status.

### 11.10.5 Environmental Considerations 0-5 Years

The West Beach Precinct is remote from sensitive receptors and proven to be suitable for the staging of public events. Acoustic modelling will be undertaken for prospective high-noise activity.

Minimal waste and litter impacts are expected from the identified future developments, however waste bins will be provided at fast food and sporting facilities to limit litter migration. Waste management plans and mitigation actions will be sought for any high risk activities.

New car parking and herbicide over-spraying associated with the identified developments have the potential to contaminate stormwater. Surface runoff from any permanent paved vehicle parking areas will be directed into interceptor units in an effort to reduce any contaminant entering the off-airport drainage system. Ongoing evaluation of all environmental considerations will be undertaken consistent with the Environment Strategy, particularly in terms of Section 10.9.3 (Stormwater) and Section 10.9.4 (Soil and Groundwater) of Chapter 10.

### 11.10.6 Community – Relationships to State/Local Planning

The forecast development activity for the West Beach Precinct is consistent with surrounding land uses, or commensurate with the arterial nature of Tapleys Hill Road.

### 11.10.7 Road Transport Integration

Alterations to access points surrounding the petrol filling station are anticipated with any future expansion, including a new left-out access onto Tapleys Hill Road. Additional access points are possible on land fronting Military Road and will be considered on an as-needs basis.

## 11.11 Morphett Precinct

### 11.11.1 Development Extent – Existing

As outlined in Chapter 7 – Land Use Planning, the Morphett Precinct has been expanded to include the former Holdfast Precinct and part of the Runways Precinct to the north of the Brownhill-Keswick Creek easements. Within this amalgamated precinct, there is currently a show jumping club, an aquifer storage and recovery facility, and a steel fabrication and engineering business. To the north of the Morphett Precinct are AsA Radar and fire-fighting facilities.

### 11.11.2 Development Extent – Projected

Within the period of the Master Plan, envisaged development includes freight and distribution activities, office/warehousing, and the associated infrastructure including roads, water, power and telecommunication services. Temporary radar facilities are also provided on a site dedicated for this purpose to the western end of the precinct.

### 11.11.3 Scale of Development 0-5 Years

It is envisaged that approximately 5,000m<sup>2</sup> of office/warehousing space could be developed over the next 5 years on land fronting onto James Melrose Road adjoining the Manuele Engineering complex. A further 20,000m<sup>2</sup> of office/warehousing and distribution facilities are possible to the north of the Brownhill-Keswick Creek easement dependent upon demand.

### 11.11.4 Employment Aspects 0-5 Years

In consideration of the scale and nature of the earmarked Morphett Precinct developments, there is forecast an increase of approximately 367 FTE employees during this period. The direct contribution to GSP is forecast to increase by \$82 million.

### 11.11.5 Environmental Considerations 0-5 Years

The environmental considerations for the future developments in the Morphett Precinct include the following.

#### Energy and Water Resources

To reduce reliance on potable water, AAL has negotiated a recycled water point with SA Water that can service both new development and existing activities in terms of irrigation. This has also the potential to water the Runways Precinct related to grassed runway verges.

### Noise

Comprehensive noise modelling has been undertaken of general industrial activities to occur in the Morphett Precinct, with resultant outcomes showing operational suitability on a 24-hour per day, 7-days per week basis, assisted by the construction of acoustic walls and gates facing James Melrose Road. Monitoring of ongoing operations will continue to ensure noise levels are suitably contained consistent with Section 10.9.1 of the Environment Strategy.

### Soil, Groundwater and Stormwater

The storage and handling of fuels, oils and chemicals associated with projected developments have the potential to contaminate soil and groundwater if proper storage facilities and management practices are not adopted.

As stormwater runoff can increase proportionately with paved surface area, car parks and other vehicle traffic areas associated with new development has the potential to contaminate stormwater. Stormwater collected from these developments will be directed into interceptor units to assist in reducing contaminant loads into the off-airport drainage system consistent with management actions outlined in Section 10.9.4 (Chapter 10).

### Local Air Quality

Industrial and aviation-support facilities may house machining, painting or other processes that generate air emissions. Controls for point-source emissions will be designed to meet regulatory air quality criteria and reviewed consistent with criteria included at Section 10.9.2 of Chapter 10.

### Contamination

The sites of an existing and former AsA fire training ground have evidence of PFOS/PFOA contamination, and soil and groundwater is currently under assessment in conjunction with the AEO at the existing operation. AsA has been approached to conduct similar monitoring over the former site, leading to its earliest possible remediation.

### 11.11.6 Community – Relationships to State/Local Planning

The Morphett Precinct industrial land is specified as development ready employment land in the State Government's *30-Year Plan for Greater Adelaide* and the *Housing and Employment Land Supply Program 2010*.

### 11.11.7 Road Transport Integration

The existing access to land south of the Brownhill-Keswick Creek easement is accessible from James Melrose Road, with future development land to the north accessed through an airport roadway, alongside the Manuele Engineering complex. Future linkages between Morphett / Deeds Road and Richmond Road at the Airport East Precinct are possible, consistent with policies included in the *State 30-Year Plan for Greater Adelaide*, and a reservation of a land corridor for such purposes sought by the State Government in 2009.

## 11.12 Airport East Precinct

### 11.12.1 Development Extent – Existing

The Airport East Precinct has been substantially cleared over time and includes both paved and unpaved road infrastructure for vehicular access to the precinct. Existing development in the Airport East Precinct consists of primarily industrial premises and warehousing facilities.

### 11.12.2 Development Extent – Projected

Future developments are expected to include freight and distribution facilities, warehousing, air freight facilities, hangars, car storage facilities and aviation-related support industries.

### 11.12.3 Scale of Development 0-5 Years

It is envisaged that approximately 44,000m<sup>2</sup> of new built form could be developed over the next 5 years. This estimate is principally based on future airport aviation growth, aviation-related support industries, such as freight cargo and hangars, and market-driven industrial demand. Furthermore, this is in part related to the relocation of similar activities from the Terminals & Aviation Policy Area to make way for the future expansion directed at passenger growth.

### 11.12.4 Employment / Economy Aspects 0-5 Years

There is a forecast increase of 260 aviation-related employees and 478 non-aviation-related employees within the precinct based on the identified future development. An overall increased direct contribution to GSP of \$164 million is estimated as a result.

### 11.12.5 Environmental Considerations 0-5 Years

#### Energy and Water Resources

As noted previously, to reduce reliance on potable water, AAL has negotiated a recycled water take-off point with SA Water which can service both new development and for irrigating nearby community parks. In addition, use of treated stormwater is anticipated from the Adelaide Airport Stormwater Scheme developed by SA Water.

#### Noise

Possible sources of noise relative to aircraft activities associated with the proposed hangar development include aircraft taxiing and parking, ground running of aircraft engines and auxiliary power units. Other potential noise sources could result from the operation of motor vehicles associated with the use of the hangars, aviation-support industry and office/warehousing uses.

However, the protective earth buffer adjacent Watson Avenue reduces noise emissions within the accepted standards and criteria on a 24-hour per day, 7 days per week operational basis, as shown through past specialist acoustic modelling. Design and construction associated with new developments will be subject to further noise modelling and assessment, with additional attenuation controls to be put in place if required (see Section 10.9.1 of Chapter 10).

#### Soil, Groundwater and Stormwater

Proposed developments have the potential to contaminate soil, groundwater and stormwater resulting from aircraft and vehicle operations. Parking can result in fuel spills and leaks, while maintenance and refuelling operations can result in accidental spillages. The storage of fuels, oils and chemicals has the potential to lead to stormwater contamination if proper storage facilities and management practices are not in place and implemented.

Stormwater from aprons and other vehicle pavement areas will be directed into underground interceptor units to assist in containing spills and reducing contaminant loads into the off-airport drainage system (refer to Section 10.9.3 of Chapter 10).

#### Local Air Quality

Air emissions may be generated from aircraft auxiliary power units, mobile diesel generators and motor vehicles moving around the apron areas or associated with aviation-support and warehousing activities. Air emission monitoring will occur consistent with current airport environmental practices, as outlined in Section 10.9.2 of Chapter 10.

### 11.12.6 Community – Relationships to State/Local Planning

The industrial land within the Airport East Precinct is specified as 'development ready employment lands' as noted in the *30-Year Plan for Greater Adelaide* and the *Housing and Employment Land Supply Program Report 2010*; again highlighting the importance of the airport in contributing to employment opportunities.

### 11.12.7 Road Transport Integration

The current roadway access is from Richmond Road, with roadway enhancements expected for new roadways throughout the precinct coinciding with new development. Linkage through the adjoining Netley Commercial Park to Marion Road may be provided to allow for the future inter-connection to Morphett and Deeds Roads at North Plympton, complementing a strategy outlined in the *State 30-Year Plan for Greater Adelaide*. A new roadway link along the eastern side of the airport, from Richmond Road to the Export Park Policy Area, to enable taxi and controlled commercial vehicle access is also proposed as included in the *State Integrated Transport and Land Use Plan (2013)*.





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# APPENDIX

## MASTER PLAN REQUIREMENTS UNDER THE LEGISLATION



## Master Plan Requirements under the Legislation

<i>Airports Act 1996</i>	
<b>Requirements under Part 5, Division 3, Section 71(2): Contents of or final master plan</b>	<b>Chapter/Section Response</b>
<i>71(2) In the case of an airport other than a joint-user airport, a draft or final master plan must specify:</i>	Section 3.6 Planning Context (Chapter 3)
<i>(a) the airport-lessee company's development objectives for the airport;</i>	
<i>(b) the airport-lessee company'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; and</i>	Section 8.5 Aviation Support Operations (Chapter 8)
<i>(c) the airport-lessee company'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; and</i>	Section 7.6 Airport (Adelaide) Zone, Section 7.7 Runways Precinct, Section 7.8 Terminals & Business Precinct, 7.9 Torrens Precinct, Section 7.10 Tapleys Precinct, Section 7.11 West Beach Precinct, Section 7.12 Morphett Precinct, Section 7.13 Airport East Precinct (Chapter 7)
<i>(d) an Australian Noise Exposure Forecast (in accordance with regulations, if any, made for the purpose of this paragraph) for the areas surrounding the airport; and</i>	Appendix B – 2034 ANEF (To Be Endorsed)
<i>(da) flight paths (in accordance with regulations, if any, made for the purpose of this paragraph) at the airport; and</i>	Section 5.10 Flight Paths (Chapter 5)
<i>(e) the airport-lessee company'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; and</i>	Section 5.14 Aircraft Noise Mitigation (Chapter 5)
<i>(f) the airport-lessee company's assessment of environmental issues that might reasonably be expected to be associated with the implementation of the plan; and</i>	Section 10.5 Sources of Environmental Impact (Chapter 10) and Sections 11.7 to 11.12 (Chapter 11)
<i>(g) the airport-lessee company's plans for dealing with the environmental issues mentioned in paragraph (f) (including plans for ameliorating or preventing environmental impacts); and</i>	Section 10.11 Compliance Program (Chapter 10) and Sections 11.7 to 11.12 (Chapter 11)
<i>(ga) in relation to the first 5 years of the master plan – a plan for a ground transport system on the landside of the airport that details:</i>	Section 9.5 Future Ground Transport Infrastructure and Section 9.6 Future Ground Transport Systems (Chapter 9)
<i>(i) a road network plan; and</i>	
<i>(ii) the facilities for moving people (employees, passengers and other airport users) and freight at the airport; and</i>	
<i>(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</i>	
<i>(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</i>	
<i>(v) the capacity of the ground transport system at the airport to support operations and other activities at the airport; and</i>	
<i>(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; and</i>	
<i>(gb) in relation to the first 5 years of the master plan—detailed information on the proposed developments in the master plan that are to be used for:</i>	Section 6.3 Airfield Infrastructure Development and Section 6.4 Terminals Development (Chapter 6) and Section 11.3 Potential Future Key Developments – Planning Horizon – 0 to 5 Years and Section 11.4 Potential Future Key Developments – Planning Horizon – Up to 2034 (Ch 11)
<i>(i) commercial, community, office or retail purposes; or</i>	
<i>(ii) for any other purpose that is not related to airport services; and</i>	

<b>Airports Act 1996</b>	
<b>Requirements under Part 5, Division 3, Section 71(2): Contents of draft or final master plan</b>	<b>Chapter/Section Response</b>
(gc) <i>in relation to the first 5 years of the master plan—the likely effect of the proposed developments in the master plan on:</i> (i) <i>employment levels at the airport; and</i> (ii) <i>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;</i>	Section 11.2 Potential Future Key Developments – Planning Horizon (Chapter 11)
(h) <i>an environment strategy that details:</i> (i) <i>the airport-lessee company's objectives for the environmental management of the airport; and</i> (ii) <i>the areas (if any) within the airport site which the airport-lessee company, in consultation with State and Federal conservation bodies, identifies as environmentally significant; and</i> (iii) <i>the sources of environmental impact associated with airport operations; and</i>  (iv) <i>the studies, reviews and monitoring to be carried out by the airport-lessee company in connection with the environmental impact associated with airport operations; and</i>  (v) <i>the time frames for completion of those studies and reviews and for reporting on that monitoring; and</i>  (vi) <i>the specific measures to be carried out by the airport-lessee company for the purposes of preventing, controlling or reducing the environmental impact associated with airport operations; and</i>     (vii) <i>the time frames for completion of those specific measures; and</i>     (viii) <i>details of the consultations undertaken in preparing the strategy (including the outcome of the consultations); and</i>  (ix) <i>any other matters that are prescribed in the regulations;</i> (j) <i>such other matters (if any) as are specified in the regulations.</i>	Chapter 10  Section 10.10 Strategy Objectives (Chapter 10)  Section 10.16.1 Sites of Significance (Chapter 10)  Section 10.5 Sources of Environmental Impact (Chapter 10)  Section 10.9 Monitoring, Compliance, Sustainability (Chapter 10)  Section 10.9 Compliance, Sustainability (Chapter 10)  Section 10.11 Compliance Program, Section 10.12 Sustainable Development, Section 10.13 Energy and Climate Change, Section 10.14 Water Resources, and Section 10.15 Waste (Chapter 10)  Section 10.11 Compliance Program, Section 10.12 Sustainable Development, Section 10.13 Energy and Climate Change, Section 10.14 Water Resources, and Section 10.15 Waste (Chapter 10)  Section 10.8 Communication, Training and Reporting (Ch 10)  (See following table) (See following table)
<b>Requirements under Part 5, Division 3, Section 71A: Draft or final master plan must identify proposed sensitive developments</b>	<b>Chapter/Section Response</b>
(1) <i>A draft or final master plan must identify any proposed sensitive development in the plan.</i> (2) <i>A sensitive development is the development of, or a redevelopment that increases the capacity of, any of the following:</i> (a) <i>a residential dwelling;</i> (b) <i>a community care facility;</i> (c) <i>a pre-school;</i> (d) <i>a primary, secondary, tertiary or other educational institution;</i> (e) <i>a hospital.</i>  (2A) <i>A sensitive development does not include the following:</i> (a) <i>an aviation educational facility;</i> (b) <i>accommodation for students studying at an aviation educational facility at the airport;</i> (c) <i>a facility with the primary purpose of providing emergency medical treatment and which does not have in-patient facilities;</i> (d) <i>a facility with the primary purpose of providing in-house training to staff of an organisation conducting operations at the airport.</i>	Section 7.9 Torrens Precinct (Chapter 7), Section 7.11 West Beach Precinct (Chapter 7), Section 11.8 Torrens Precinct (Chapter 11)



## Master Plan Requirements under the Legislation

<i>Airports Act 1996</i>	
Requirements under Part 5, Division 3, Section 71A: Draft or final master plan must identify proposed sensitive developments	Chapter/Section Response
<p>(3) In this section:</p> <p><b>aviation educational facility</b> means any of the following:</p> <ul style="list-style-type: none"> <li>(a) a flying training school;</li> <li>(b) an aircraft maintenance training school;</li> <li>(c) a facility that provides training in relation to air traffic control;</li> <li>(d) a facility that provides training for cabin crew;</li> <li>(e) any other facility with the primary purpose of providing training in relation to aviation related activities.</li> </ul> <p><b>Community care facility</b> includes the following:</p> <ul style="list-style-type: none"> <li>(a) a facility that provides aged care with the meaning given by the Aged Care Act 1997;</li> <li>(b) a retirement village within the meaning given by the Social Security Act 1991;</li> <li>(c) a facility that provides respite care with the meaning given by the Aged Care Act 1997;</li> </ul>	
Requirements under Regulation 5.02: Contents of draft or final master plan – general	Chapter/Section Response
(1) For paragraphs 71(2)(i) and (3)(i) of the Act, the following matters are specified:	
(a) any change to the OLS or PANS-OPS surfaces for the airport concerned that is likely to result if development proceeds in accordance with the master plan;	Section 7.14.4 Building Heights and Other Obstacles (Chapter 7)
(b) for an area of an airport where a change of use of a kind described in subregulation 6.07 (2) of the Airports (Environment Protection) Regulations 1997 is proposed:	Chapter 10 – Environment Strategy Section 10.5 (Sources of Environmental Impact) and Section 10.11.4 (Soil and Groundwater), Chapter 8 – Services & Infrastructure Section 8.5.7 and Chapter 11 – Development Program Section 11.11.5
(i) the contents of the report of any examination of the area carried out under regulation 6.09 of those Regulations; and	Chapter 6 – Aviation Infrastructure, Chapter 7 – Land Use Planning and Chapter 11 – Development Program
(ii) the airport-lessee company's plans for dealing with any soil pollution referred to in the report.	Section 10.5 Sources of Environmental Impact (Chapter 10)
(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.	Section 7.6 Airport (Adelaide) Zone, Section 7.7 Runways Precinct, Section 7.8 Terminals & Business Precinct, 7.9 Torrens Precinct, Section 7.10 Tapleys Precinct, Section 7.11 West Beach Precinct, Section 7.12 Morphett Precinct, Section 7.13 Airport East Precinct (Chapter 7) and Section 11.3 Potential Future Key Developments – Planning Horizon – 0 to 5 Years and Section 11.4 Potential Future Key Developments – Planning Horizon – Up to 2034 (Chapter 11)

<i>Airports Regulations 1997</i>		
<b>Requirements under Regulation 5.02: Contents of draft or final master plan – general</b>	<b>Chapter/Section</b>	<b>Response</b>
(3) For subsection 71 (5) of the Act, a draft or final master plan must:	Section 8.2 Existing	
(a) 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; and	Interests and Easements	
(b) address any interest to which the relevant airport lease is subject under subsection 22 (3) of the Act, or subsection 26 (3) of the Transitional Act.	(Chapter 8)	
<b>Requirements under Regulation 5.02A: Contents of draft or final master plan – matters to be specified in environment strategy</b>	<b>Chapter Response</b>	
(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.	(Chapter 10)	
(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:	Section 10.16.1 Sites of Significance	(Chapter 10)
(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.	Section 10.4 Responsibilities and	
	Section 10.11 Compliance	
	Program (Chapter 10)	
(4) The environment strategy must specify:	Section 10.8	
(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	Communication, Training	
(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).	and Reporting (Chapter 10)	
<b>Requirements under Regulation 5.02B: Contents of draft or final master plan – things to be addressed in environment strategy</b>	<b>Chapter Response</b>	
(1) For subsection 71 (5) of the Act, a draft or final master plan must address the things in this regulation.	(Chapter 10)	
(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:	Section 10.1 Sustainability	
(a) continuous improvement in the environmental consequences of activities at the airport; and	Policy (Chapter 10)	
(b) progressive reduction in extant pollution at the airport; and	Section 10.11 Compliance,	
	Sustainability (Chapter 10)	
(c) development and adoption of a comprehensive environmental management system for the airport that maintains consistency with relevant Australian and international standards; and	Section 10.6 Environmental	
	Management System	
	(Chapter 10)	
(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	Section 10.16 Land and	
	Heritage (Chapter 10)	
(e) involvement of the local community and airport users in development of any future strategy; and	Section 10.8	
	Communication, Training	
	and Reporting (Chapter 10)	
(f) dissemination of the strategy to sub-lessees, licensees, other airport users and the local community.	Section 10.8	
	Communication, Training	
	and Reporting (Chapter 10)	

## Master Plan Requirements under the Legislation

<i>Airports Regulations 1997</i>	
<b>Requirements under Regulation 5.02B: Contents of draft or final master plan—things to be addressed in environment strategy</b>	<b>Chapter Response</b>
<i>(3) In specifying under subparagraph 71 (2) (h) (ii) or (3) (h) (ii) of the Act, the areas within the airport site it identifies as environmentally significant, an airport-lessee company must address:</i>	Section 10.16 Land and Heritage (Chapter 10)
<i>(a) any relevant recommendation of the Australian Heritage Council; and</i>	
<i>(b) any relevant recommendation of the Department of Environment regarding biota, habitat, heritage or similar matters; and</i>	Section 10.16 Land and Heritage (Chapter 10)
<i>(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.</i>	Section 10.16 Land and Heritage (Chapter 10)
<i>(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:</i>	
<i>(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</i>	Section 10.11.2 Compliance – Local Air Quality (Chapter 10)
<i>(b) water quality, including potentially affected groundwater, estuarine waters and marine waters; and</i>	Section 10.11.3 Compliance – Stormwater, Soil and Groundwater (Chapter 10)
<i>(c) soil quality, including that of land known to be already contaminated; and</i>	Section 10.11.4 Compliance – Soil and Groundwater (Chapter 10)
<i>(d) release, into the air, of substances that deplete stratospheric ozone; and</i>	Section 10.11.5 Compliance – Hazardous Substances (Chapter 10)
<i>(e) generation and handling of hazardous waste and any other kind of waste; and</i>	Section 10.11.5 Compliance – Hazardous Substances (Chapter 10)
<i>(f) usage of natural resources (whether renewable or non-renewable); and</i>	Section 10.13 Compliance – Energy and Climate Change, Water Resources (Chapter 10)
<i>(g) usage of energy the production of which generates emissions of gases known as 'greenhouse gases'; and</i>	Section 10.13 Compliance – Energy and Climate Change (Chapter 10)
<i>(h) generation of noise.</i>	Section 10.11.1 Compliance – Ground Noise (Chapter 10)

<i>Airports Regulations 1997</i>	
<b>Requirements under Regulation 5.02B: Contents of draft or final master plan—things to be addressed in environment strategy</b>	<b>Chapter Response</b>
<i>(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:</i>	Section 10.9 Environmental Monitoring, Section 10.11 Compliance Program (Chapter 10)
<i>(a) the matters mentioned in subregulation 5.02A (2) and subregulations 5.02B (3) and (4); and</i>	
<i>(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</i>	Section 10.9 Environmental Monitoring and Section 10.16 Land and Heritage (Chapter 10)
<i>(c) the approaches and measures identified by the airport-lessee company as its preferred conservation approaches and measures; and</i>	Section 10.0 Strategy Objectives and Section 10.16 Land & Heritage (Chapter 10)
<i>(d) the professional qualifications that must be held by a person carrying out the monitoring; and</i>	Section 10.9 Monitoring (Chapter 10)
<i>(e) the proposed systems of testing, measuring and sampling to be carried out for possible, or suspected, pollution or excessive noise; and</i>	Section 10.9 Monitoring and Section 10.11 Compliance Program (Chapter 10)
<i>(f) the proposed frequency of routine reporting of monitoring results to the airport environment officer (if any) for the airport, or to the Secretary.</i>	Section 10.9 Monitoring and Section 10.11 Compliance Program (Chapter 10)
<i>(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:</i>	Section 10.11.5 Compliance – Hazardous Substances (Chapter 10)
<i>(a) the matters mentioned in subregulations (2) to (4); and</i>	Section 10.4 Responsibilities, Section 10.9 Environmental Monitoring, Section 10.11 Compliance Program (chapter 10)
<i>(b) the means by which it proposes to achieve the cooperation of other operators of undertakings at the airport in carrying out those plans.</i>	Section 10.4 Responsibilities and Section 10.8 Communication, Training and Reporting (Chapter 10)
<i>(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).</i>	(see above references)





**APPENDIX**

**AIRCRAFT  
NOISE  
METRICS**

**B**

**Figure B1. Aircraft noise metrics**  
**2013 ANEI (Endorsed)**

Table B1: Total Numbers of Aircraft Movements used for INM Modelling for Adelaide ANEI 2013

[illegible]

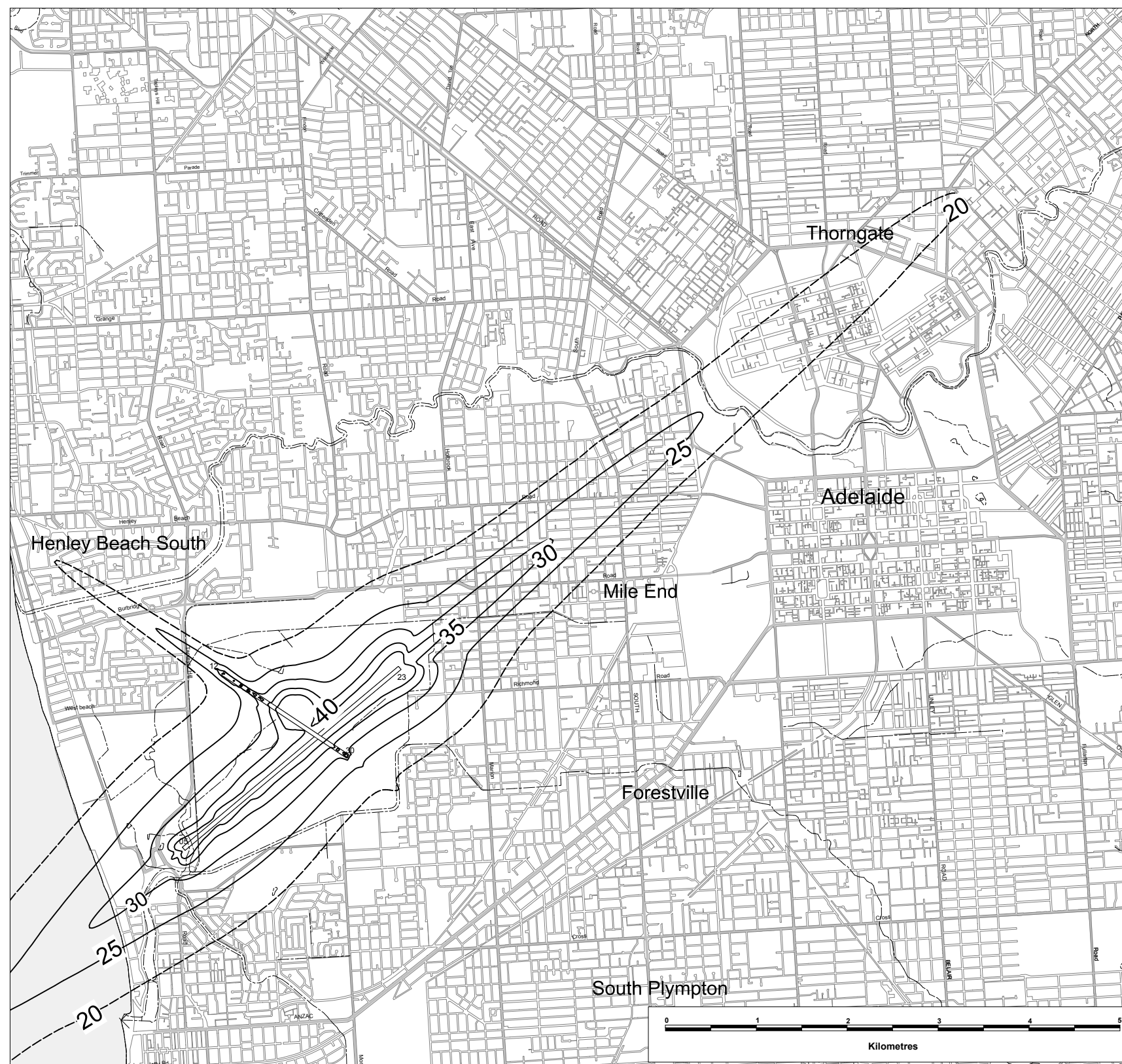
<sup>2</sup> Except for Helicopters, much of direct operations represent a single operation in the billing data. Such operations for Helicopters are modeled as 1 arrival and 1 departure in *NT* files. When sources have been rounded discrepancies may occur between totals and the sums of component items.

**BUILDING SITE ACCEPTABILITY BASED ON ANEF ZONES**  
(To be used in conjunction with Table 3.3 of AS2003-2009)

Building type	ANEF zone of site		
	Acceptable	Conditionally acceptable	Unacceptable
House, barn or oil, flat, garage	Less than 20 ANEF (Note 1)	20 to 25 ANEF (Note 2)	Greater than 25 ANEF
Hotel, motel, hotel	Less than 20 ANEF	25 to 30 ANEF	Greater than 30 ANEF
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 20 ANEF	20 to 30 ANEF	Greater than 30 ANEF
Light industrial	Less than 10 ANEF	10 to 40 ANEF	Greater than 40 ANEF
Other industrial	Accountable for all ANEF zones		


POETRY.

- The actual function of the 20 ASST census is difficult to define accurately, mainly because of variation in actual flight paths. Because of this, the procedure of Clause 2.3.2 was not followed for within 200 miles but was used for the 20 ASST census.
- Within 200 miles to 25 ASST, some people may find that the test is not compatible with residential areas. Local authorities may find that the incorporation of all areas comes at a price to the construction of buildings or schools is appropriate (see also Appendix A of Appendix A).
- 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), but these cases (Table 2) should be used to determine the acceptability, but internal design must be used to determine the optimum use of the space.
- Two Standard does not recommend development in unsuitable areas. However, where the relevant planning authority determines that any development may be necessary whilst existing buildings are designated as unsuitable, it is recommended that such development should reflect the required ASST development to Clause 2.3. The residential, schools, etc., the effect of aircraft noise on the environment.



Contours produced using INM 7.0d, settings of refinement = 10.0, and tolerance = 0.1 dB, and using terrain in calculations. Results exported from INM as lat/long using WGS84 datum.

<b>Issue Date</b>	<b>Drawn By</b>	<b>Checked By</b>
12th Jun. 2014	AP	RC



**airservices**

**ENDORSEMENT FOR  
TECHNICAL ACCURACY**

**ANEI**

*[Signature]*

Date: 13.6.2014

**Executive General Manager  
Safety, Environment & Assurance  
Airservices Australia. Canberra**

The aircraft noise contours on this chart have been calculated using an appropriate modelling process. The data input and assumptions made in that process are derived in part from external sources. Airservices Australia makes no warranty in respect of that information and excludes all liability for any loss arising from reliance on that information.

# ADELAIDE AIRPORT

## Australian Noise Exposure Index

2013 ANEI





**Figure B2. Aircraft noise metrics**

2034 ANEF (Endorsed)

Table B2 : Total Numbers of Aircraft Movements used for INM Modelling for 2034 ANEF

Runway	IATA Code	Day	Arrivals		Day	Departures		Touch Go (Circular) Movements				Overflights (Z) Movements				Total Movements	
			Total	Annual		Total	Annual	Day	Night	Total	Annual	Day	Night	Total	Annual	Total	Annual
16	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total For Runway: 16		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total For Runway: 20		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
23	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	75000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total For Runway: 23		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

\* Except for Helicopter, touch go circuit operations represent a single operation in the billing data. Such operations for Helicopters are modelled as 1 arrival and 1 departure in INM  
\* Where figures have been rounded discrepancies may occur between totals and the sums of component items.


BUILDING SITE ACCEPTABILITY BASED ON ANEF ZONES

(To be used in conjunction with Table 5.3 of AS2021-2000)

Building type	ANEF zone of site		
	Acceptable	Conditionally acceptable	Unacceptable
House, house with flat, terrace, park	Less than 20 ANEF (Note 1)	20 to 25 ANEF (Note 2)	Greater than 25 ANEF
Hotel, motel, hotel	Less than 25 ANEF (Note 1)	25 to 30 ANEF (Note 2)	Greater than 30 ANEF
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 10 ANEF	10 to 40 ANEF	Greater than 40 ANEF
Other industrial	Acceptable to all ANEF zones		

NOTES:

- 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 proximity of Class 3, 4 and 5 to be followed by buildings when outside the 20 ANEF contour.
- Within 20 ANEF to 25 ANEF, some people may find that the land is not compatible with residential or industrial use. Local authorities may consider that the proportion of land to be used for the construction of residential or schools is appropriate (see also Figure A1 of Appendix 5).
- 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 should be used to determine the acceptability, but internal design noise levels within the space should be determined by Table 2.2.
- This document 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 ANEF level according to Clause 2.2. For residential, schools, etc., the effect of aircraft noise on outdoor areas associated with the buildings should be considered.

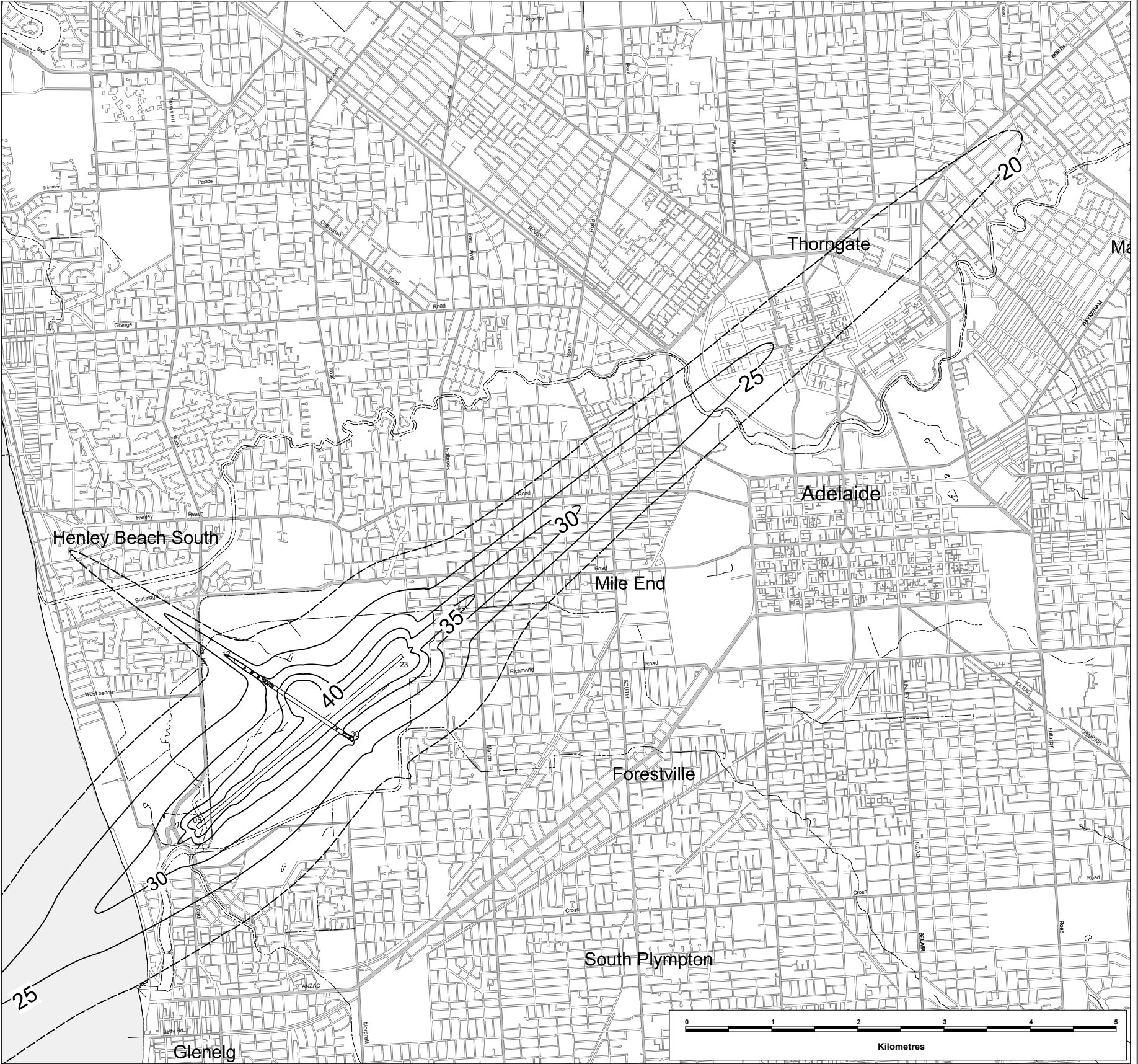


**ENDORSEMENT FOR TECHNICAL ACCURACY**  
**STANDARD ANEF**

Date: 13.6.2014

**Executive General Manager Safety, Environment & Assurance**  
**Airservices Australia. Canberra**

The aircraft noise contours on this chart have been calculated using an appropriate modelling process. Airservices Australia has, in accordance with the approved manner of endorsement, considered the physical ultimate capacity of the existing or proposed runways in its endorsement process. The data input and assumptions made in that process are derived in part from external sources. Airservices Australia makes no warranty in respect of that information and excludes all liability for any loss arising from reliance on that information.



Contours produced using INM 7.0d, settings of refinement = 10.0, and tolerance = 0.1 dB, and using terrain in calculations. Results exported from INM as lat/long using WGS84 datum.

Issue Date	Drawn By	Checked By
5th Jun, 2014	AP	RC

# ADELAIDE AIRPORT

## Australian Noise Exposure Forecast

# 2034 ANEF



**Figure B3. Aircraft noise metrics**

Ultimate Practical Capacity ANEC



Table B3: : Total Numbers of Aircraft Movements used for INM Modelling for Ultimate Capacity ANEC

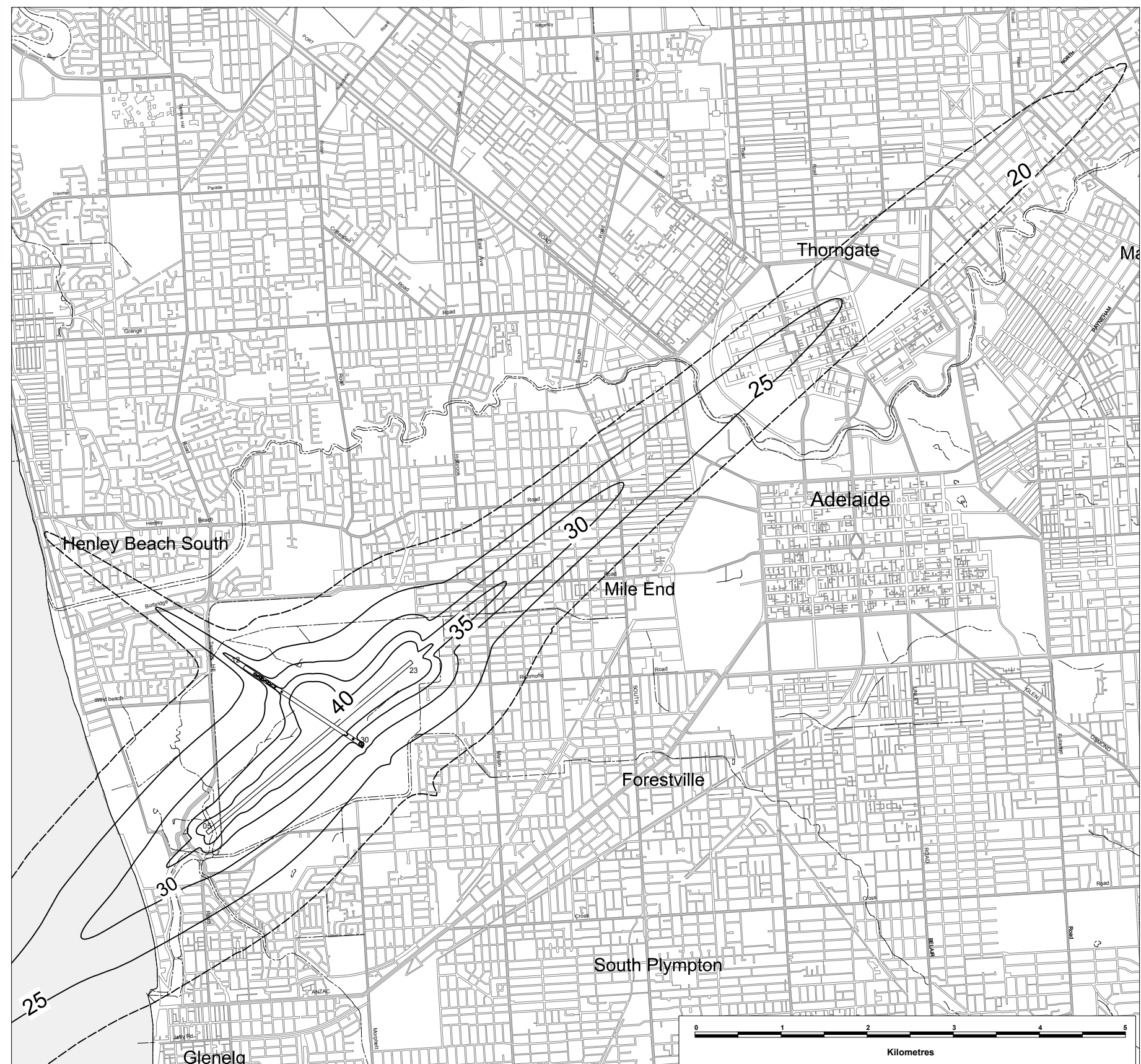
[illegible]

\* Where figures have been rounded, discrepancies may occur between totals and the sums of component items.

## BUILDING SITE ACCEPTABILITY BASED ON ANEF ZONES

Building type	ANZSIS area of site		
	Acceptable	Conditionally acceptable	Unacceptable
House, town or city, flat, terrace or row	Less than 25 ANZSIS (Note 1)	26 to 25 ANZSIS (Note 2)	Greater than 25 ANZSIS
Hotel, motel, hotel	Less than 22 ANZSIS	23 to 30 ANZSIS	Greater than 30 ANZSIS
School, university	Less than 28 ANZSIS (Note 1)	29 to 25 ANZSIS (Note 2)	Greater than 25 ANZSIS
Hospital, nursing home	Less than 25 ANZSIS (Note 1)	26 to 25 ANZSIS	Greater than 25 ANZSIS
Public building	Less than 25 ANZSIS (Note 1)	26 to 30 ANZSIS	Greater than 30 ANZSIS
Commercial building	Less than 22 ANZSIS	23 to 35 ANZSIS	Greater than 35 ANZSIS
Light industrial	Less than 18 ANZSIS	19 to 40 ANZSIS	Greater than 40 ANZSIS
Other industrial	Assessments by all ANZSIS zones		

- The actual benefits of the 20 ASMET centers will be difficult to derive accurately, mostly because of variations in overall flight paths. Because of this, the procedure of Change 2.3.2 may be followed for these flight paths instead of having to use the 20 ASMET centers.
- With all 20 ASMETs in 25 airports, some people have said that the flow is not compatible with existing traffic flows. Land use planning is not the responsibility of the FAA, but the FAA does have a strong interest in the constraints of buildings on aircraft (i.e. appropriate (see Table A-1) of Appendix A).
- There will be cases where a building of a particular type will contain spaces used for activities which would normally be found in a different type of building (e.g. an office in an industrial building). In these cases, Table 2.1 should be used to determine if compatibility, but internal design issues involving space use are questions for building designers.
- This Standard does not recommend development in unsuitable areas. However, where the relevant planning authority determines that any development may be necessary within existing built-up areas adjacent to unsuitability, it is recommended the land development should observe the required ASMETs. The second part of the Standard, which sets out the ASMETs, also sets out the effect of aircraft noise on development and the measures that should be considered.



Contours produced using INM 7.0d, settings of refinement = 10.0, and tolerance = 0.1 dB, and using terrain in calculations. Results exported from INM as lat/ long using WGS84 datum.

## ADELAIDE AIRPORT

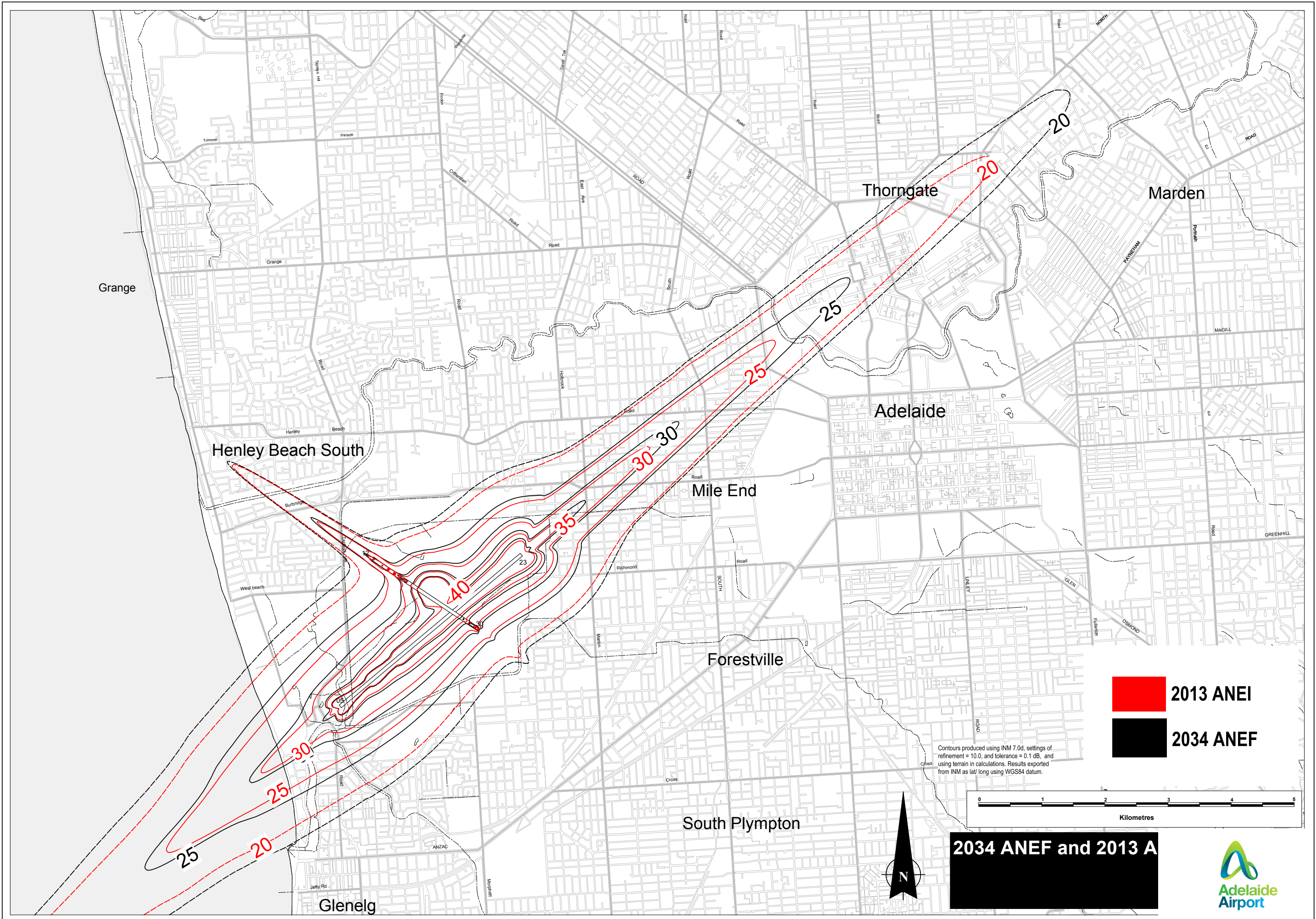
### ULTIMATE PRACTICAL CAPACITY

**ANEC**



**Figure B4. Aircraft noise metrics**

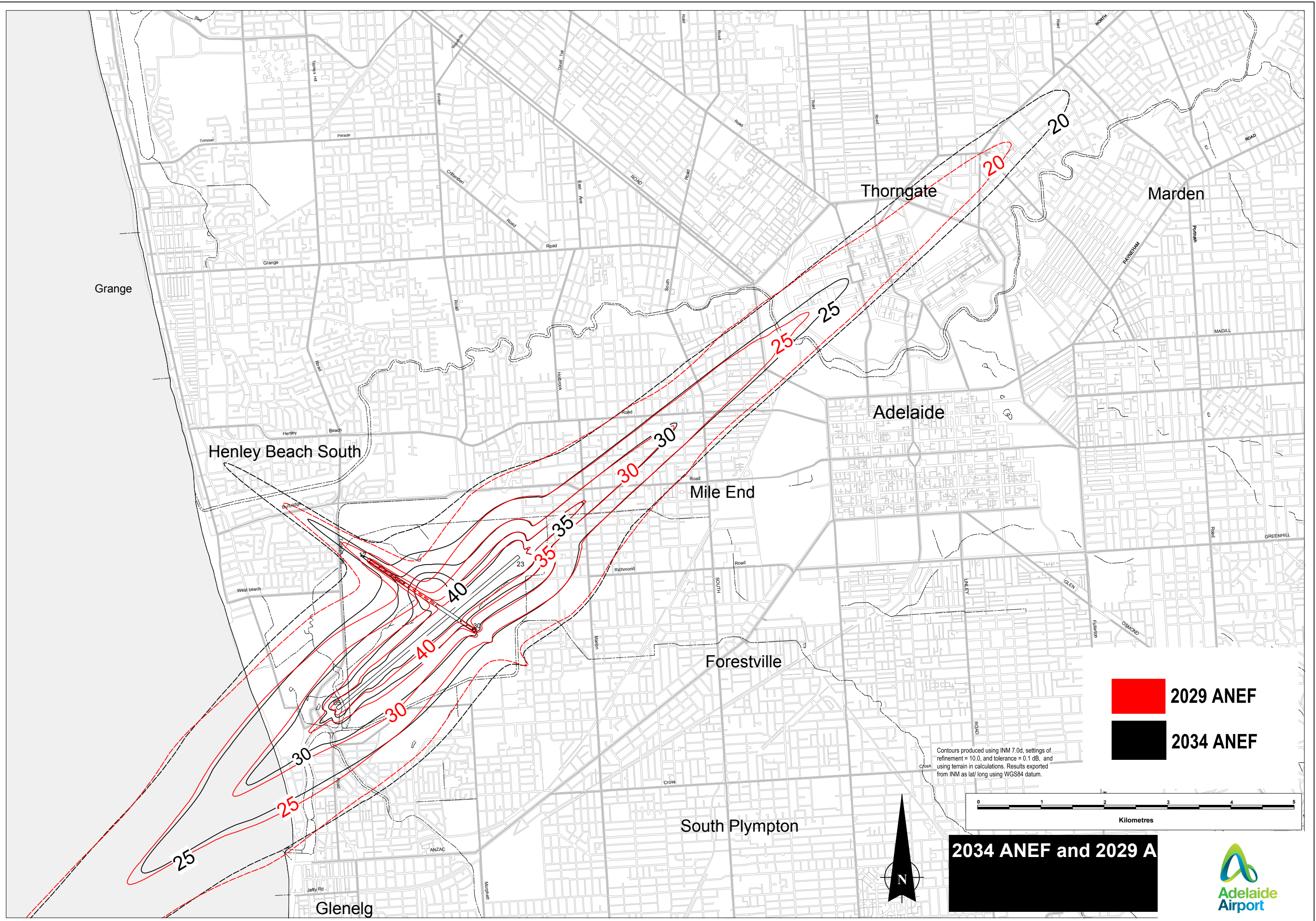
2034 ANEF compared to the 2013 ANEI



**Figure B5. Aircraft noise metrics**

Comparison of the 2034 ANEF with the ANEF in the previous Master Plan (2029)





2029 ANEF  
2034 ANEF

2034 ANEF and 2029 A





**Figure B6. Aircraft noise metrics**

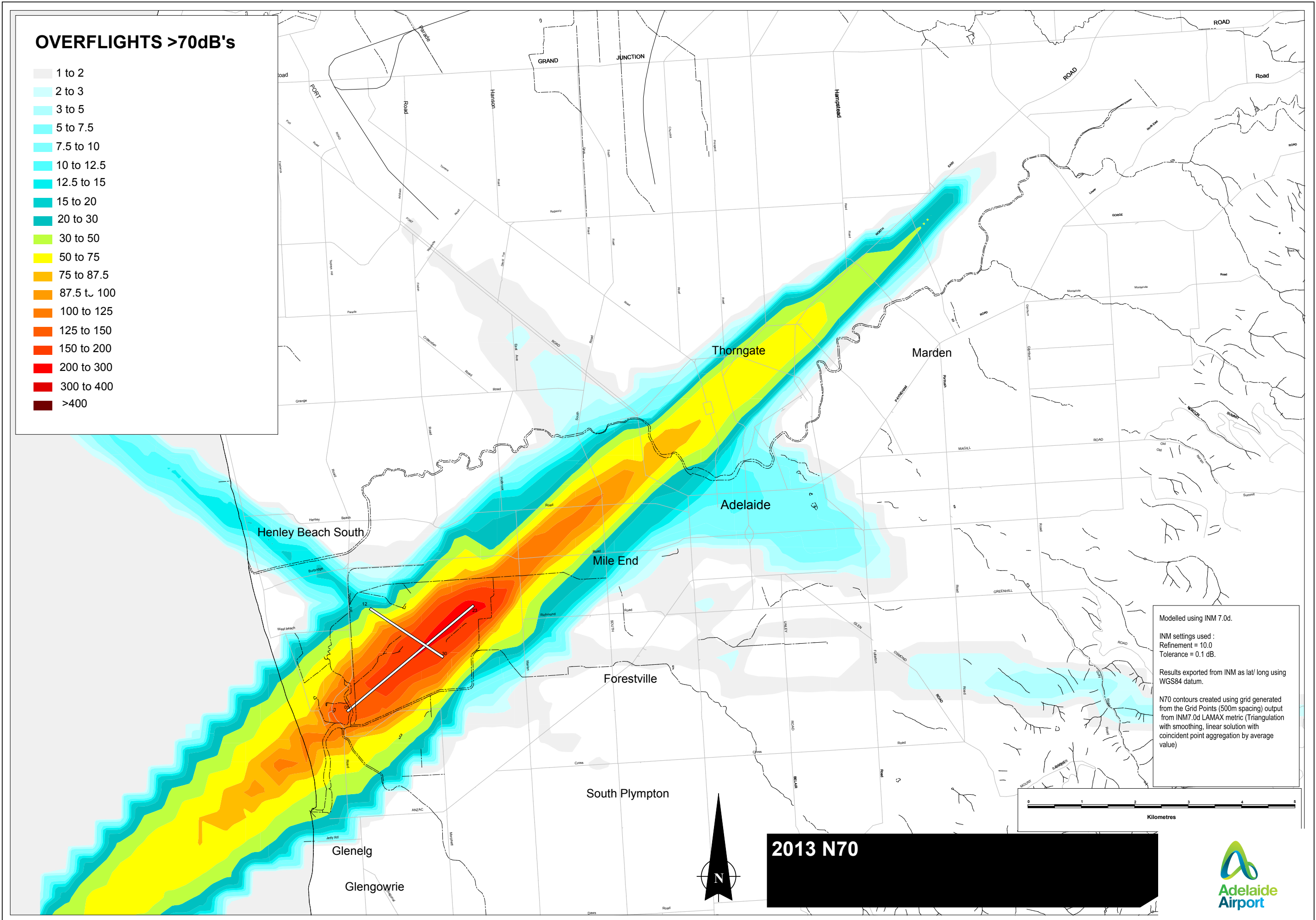
Comparison of the Ultimate Capacity ANEC  
with the Ultimate Capacity ANEC from the  
Previous Master Plan (2009)



**Figure B7. Aircraft noise metrics**

**N70 Map for Adelaide Airport in 2013**

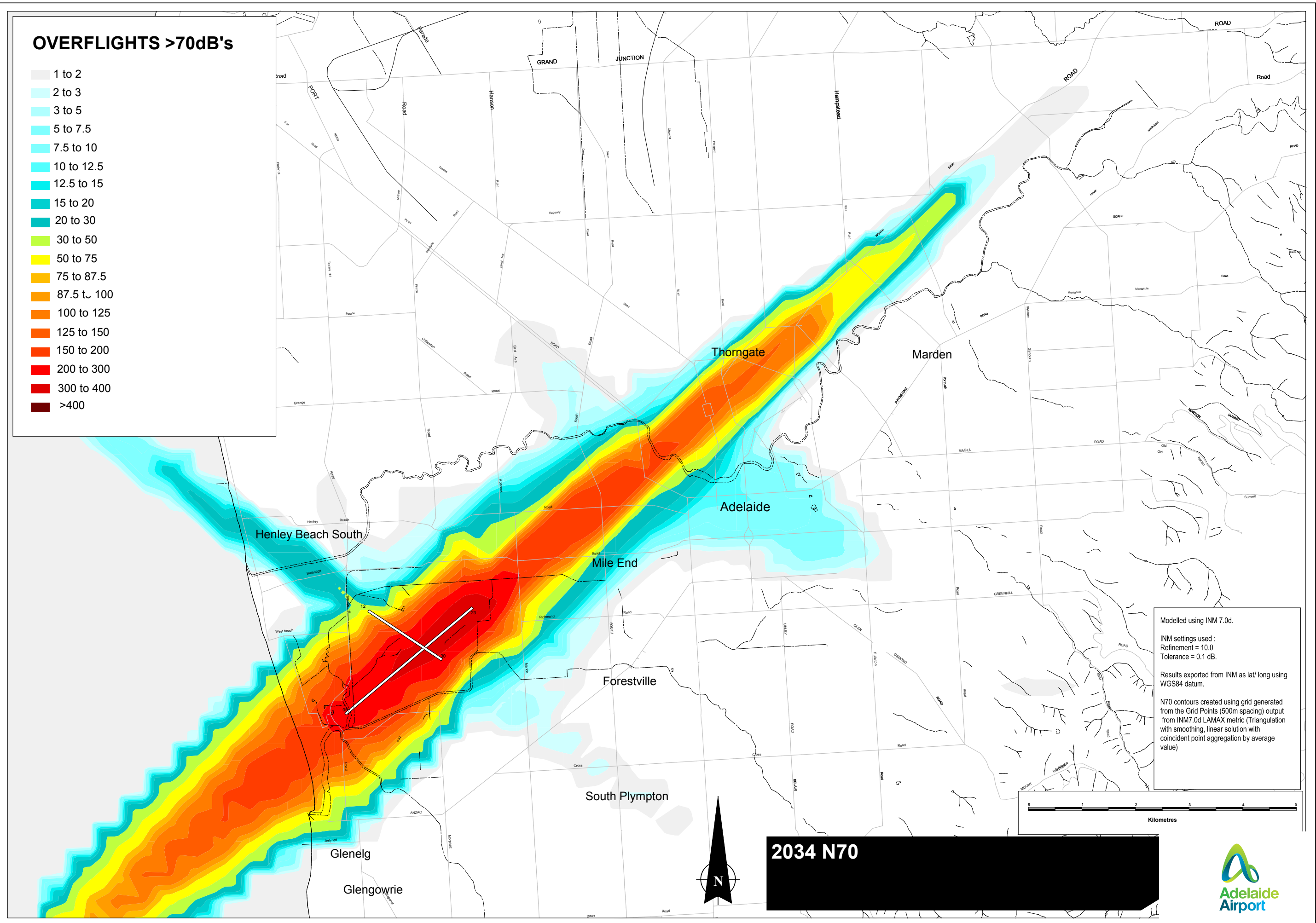






**Figure B8. Aircraft noise metrics**

**N70 Map for Adelaide Airport in 2034**





**APPENDIX**

**NASF  
GUIDELINES  
OVERVIEW**





## NASF Guidelines Overview

### Guideline A: Measures for Managing Impacts of Aircraft Noise

Although the Australian Noise Exposure Forecast (ANEF) System and *Australian Standard AS 2021-2000 Acoustics – Aircraft noise intrusion – Building siting and construction* (AS2021) have both been in place for some time and recognised by a number of jurisdictions in planning decisions, it has been identified that the ANEF 20 and 25 zones do not incorporate all areas that are affected by high levels of noise.

This Guideline is intended to complement the current ANEF system, and should be incorporated into strategic planning documents to give guidance for rezoning land and assessing new applications within noise sensitive areas. Specific measurements of noise in decibels are being provided in order to assess whether rezoning or new development is appropriate in a particular location.

### Guideline B: Managing the Risk of Building Generated Windshear and Turbulence at Airports

The purpose of Guideline B is largely to assist decision-makers when assessing proposals for new buildings within the vicinity of airports with respect to whether the building will be located in the path of a cross-wind to an operational runway of an airport. The building could effectively become an obstacle and divert the flow of wind over or around the building; which will result in variances of speed along the runway. This may pose a significant safety issue to airport operations and result in windshear or turbulence.

The Guideline provides technical criteria with which to assess proposed buildings against the potential to generate windshear or turbulence, and offers design techniques in order to mitigate these effects. The document also includes mitigation options for existing buildings within the vicinity of airports.

### Guideline C: Managing the Risk of Wildlife Strikes in the Vicinity of Airports

Pursuant to Part 139 of the *Civil Aviation Safety Regulations 1998*, airports are obliged to reduce the risk of wildlife strikes to airport operations. This Guideline highlights the importance of reducing the risk of wildlife strikes by appropriately managing the surrounding land uses; particularly as there are often areas surrounding airports that are attractive to wildlife, as is the situation at Adelaide Airport. The main risks are that wildlife could cross the flight path of planes or migrate onto the airport.

Guideline C reiterates the need for airports to prepare a wildlife hazard management plan and that land use zoning within 13-kilometres of airports should be appropriately monitored. Airport managers and operators are to work with local authorities to ensure that land is appropriately used and developed within the vicinity of the airport. An inclusion with this Guideline identifies the level of risk for a number of land uses with respect to both new and existing airports, and the suitable distance of any high risk proposed development from the airport site.

### Guideline D: Managing the Risk of Wind Turbine Farms as Physical Obstacles to Air Navigation

Guideline D focuses on the effects of wind turbine farms and physical obstacles to air navigation as these structures can be hazardous to low-flying aircraft and can also affect the performance of Communications, Navigation and Surveillance equipment. These guidelines provide the framework to guide the location of new wind turbine farms to prevent interference with airport operations, and note that CASA and Airservices Australia should be informed when a wind turbine is proposed within 30-kilometres of an aerodrome.

A risk assessment is warranted for proposed development that has the potential to be hazardous to airport operations, including both the height of the proposed structure and associated lighting required for the structure. The Guideline also provides further detail for those assessing proposals for wind turbine farms or similar obstacles, and recommends that airport operators, developers and Council Planners work together to determine the best course of action.

## **Guideline E:**

### **Managing the Risk of Distractions to Pilots from Lighting in the Vicinity of Airports**

The purpose of this Guideline is to manage the risk of distractions to pilots by minimising the opportunity for pilots to mistake lighting within six-kilometres of airports as being ground lighting associated with the airport. This is particularly relevant for development proposals that seek to incorporate significant lighting onsite within the vicinity of airports, such as new freeway lighting or stadium flood lighting.

Guideline E includes a diagram of maximum light intensity surrounding airports. New development that proposes significant lighting should be reviewed in association with airport operators and CASA.

## **Guideline F:**

### **Managing the Risk of Intrusions into the Protected Airspace of Airports**

The final Guideline focuses on maintaining the safety and operational efficiency of airports by appropriately managing the height of new development within the vicinity of the airport. If risk is not appropriately mitigated prior to tall structures being developed near the airport, CASA could impose restrictions on airport operations such as reducing the runway distance that can be used.

Placing restrictions on airport operations in order to mitigate risk caused by inappropriate heights of structures can greatly reduce the efficiency of airport operations and result in operational penalties. Guideline F refers to the OLS and PANS-OPS criteria when determining the volumes and dimensions of airspace required to protect the safety of airport operations. Furthermore, in the majority of cases where a proposed structure would penetrate the 'prescribed airspace', the proponent must receive approval from the Department of Infrastructure and Regional Development to undertake the proposed development.



**APPENDIX**

**ADELAIDE  
AIRPORT  
SUSTAINABILITY  
PAST  
ACHIEVEMENTS  
(2009-2014)**





## Adelaide Airport Sustainability Past Achievements (2009-2014)

Area	Achievement
<b>Sustainable Performance</b>	Key sustainability principles incorporated into the design and construction of the multi-deck short term car park including use of recycled water for toilet flushing and irrigation, LED lighting systems, smart way-finding system to minimise vehicle running time, and collection of roof stormwater for use in the Terminal 1 cooling towers.
	A 4.5 star NABERS-rated office complex was constructed in 2013 to house the Australian Federal Police.
	A state-of-the-art steel fabrication facility was constructed in 2011 to house Manuele Engineering.
	The largest single Australian runway and taxiway overlay project was successfully completed in 2011 with no noise or environmental complaints or incidents. AAL was awarded the Australian Airports Association Capital City Airport of the Year in 2011 on the strength of the project's successful technical, financial, safety and environmental performance.
	Sustainability Performance indicators were established in 2013 for greenhouse gas emissions, energy, water and waste. Monitoring data was collected to determine progress against goals set in the 2009 Sustainability Plan.
<b>Management Framework</b>	Ecologically Sustainable Design Principles incorporated into the Development Design Guidelines for various airport projects and development precincts of the airport site.
	AAL's Sustainability Policy was reviewed and updated in 2011 to reflect AAL's evolving strategic direction.
	AAL revised its vision and mission and generated a new strategic business plan in 2012 through a process involving extensive internal and external consultation. A commitment to sustainability was embedded at all levels of the strategic framework.
	The AAL risk management program was overhauled in 2012-13, involving the procurement and roll out of dedicated risk software. AAL's risk register was updated with an updated list of environmental aspects and impacts for which each was assigned a risk rating and risk controls.
	All environmental policies and procedures were updated for currency within an EMS that conforms to the requirements of ISO14001.
	A sophisticated database was maintained and updated to house the Site Environment Register for Adelaide Airport, offering immediate staff access to environmental information (e.g. hazardous substances storage, environment reports, and tenant details) for each area of the airport.
	A spatial data management and mapping (GIS) tool was maintained and updated for storing and displaying critical environmental data sets (e.g. underground storage tanks, groundwater wells, stormwater monitoring sites, and contaminated sites).
	The Airport Environmental Management Plan (EMP) Guidelines for Tenants was updated and distributed to all tenants supported by training sessions to help boost understanding of EMP development and integration into business practices.
	The Airport Spray Painting Guidelines were released to relevant tenants with the aim of setting a consistent standard for spray painting, particularly for airframe maintenance.
	An Airport Tenant Environment Group was run from 2009-2013 to provide an open forum for discussing and sharing approaches on environmental issues.
	AAL's newsletter, <i>Plane Talking</i> , was published and distributed quarterly and contained an environment section which was a frontline vehicle for communicating environmental sustainability issues to airport stakeholders, including tenants.
	An environmental inspection program of high risk tenants and construction sites was conducted annually.
	A comprehensive set of guidelines covering a number of significant environmental issues, including asbestos management, water conservation, energy conservation, and green procurement, was developed in 2012 and made available to tenants. A seminar series was subsequently held for tenants to provide an alternative method of communicating the content of each of the guidelines.

Area	Achievement
<b>Climate Change</b>	<p>In 2013, AAL was the first Australian airport to be awarded Airports Council International accreditation to Level 1 of the Airport Carbon Accreditation scheme. This scheme sets the benchmark internationally for airports and demonstrates the high degree of rigour and accuracy by AAL to measuring the organisation's carbon footprint.</p> <p>Scope 3 emissions were calculated by AAL for the first time in 2011 and provide a benchmark for future assessment of emissions trends relating to third party activity, including aircraft movements by airlines, commuting by airport visitors, and vehicle use by aviation-related tenants.</p> <p>A detailed flood modelling assessment of Adelaide Airport was completed in 2012. This assessment is to be used in the development of a climate change adaptation study scheduled for 2014.</p> <p>A new expanded public bus facility was constructed adjacent to multi-deck short term car park as part of Landside Infrastructure Project in 2013. An additional bus stop was also constructed on James Schofield Drive. Both projects improve staff and visitor access to public transport at the airport.</p>
<b>Energy</b>	<p>An Energy Action Plan was implemented for Terminal 1 based on the findings of the Level 2 Energy Audit. Actions included lighting upgrades, changes to lighting control settings, and the installation of variable speed drives on all gate lounge air handling units.</p> <p>A three-year partnership was established with the University of Adelaide's Centre for Energy Technology with a view to bring a research focus to AAL's energy reduction program and establish Adelaide Airport as a leader in the clean energy space. Projects undertaken include the development of a detailed thermodynamic model of Terminal 1, assessment of the heating, cooling and ventilation system with recommendations for energy savings, and analysis of the Building Management System.</p> <p>A multidisciplinary staff working group, supported by the University of Adelaide, was established in 2013 tasked with researching and developing business cases for energy saving projects across the AAL business. The group will continue to work into 2014 and beyond to implement these projects whilst developing a comprehensive Carbon Management Plan for Adelaide Airport.</p> <p>The AAL electricity retail contract for the past 3 years included a 10% renewable energy component.</p> <p>Electricity and natural gas data was collated for assessing trends and inclusion in the AAL carbon footprint calculations.</p> <p>Fuel consumption data for AAL vehicles was collated for assessing trends and inclusion in the AAL carbon footprint calculations.</p> <p>Comprehensive wind monitoring and modelling was undertaken to identify prospective sites where wind turbines may be practical at Adelaide Airport.</p>

## Adelaide Airport Sustainability Past Achievements (2009-2014)

Area	Achievement
Water Resources	A 400ML Airport Stormwater Harvesting Scheme was constructed by SA Water on the southern side of the airport in 2013. This scheme will supply the airport with treated stormwater within 5 years.
	A 2ML stormwater harvesting scheme was constructed in 2013 as part of the Landside Infrastructure Project to capture water from the short-term car park roof and supply the cooling towers in Terminal 1.
	A state-of-the-art steel fabrication facility was constructed in 2011 to house Manuele Engineering.
	The Glenelg to Adelaide Pipeline, carrying recycled water from the Glenelg Wastewater Treatment Plant to the CBD, was constructed through Adelaide Airport land in 2008/2009. AAL negotiated additional take-off points to supply recycled water to future developments in the southern and eastern airport Precincts. AAL re-negotiated the recycled water supply agreement with SA Water to include these new take-off points as well as three extra points along the existing pipeline to supply commercial and recreational development in the western and northern airport Precincts in the future.
	Connection to the recycled water network occurred in 2012 to supply the irrigation system supporting landscaping on the Netley mound on the eastern airport boundary.
	Connection to the recycled water network was made to supply the expanded landscaped areas constructed as part of the Landside Infrastructure Project in 2013.
	Recycled water connections to be made to a toilet block and water feature in the Terminal 1 pedestrian plaza in 2014.
	The Irrigation Management Plan – for those areas irrigated with recycled water sourced from the Glenelg Wastewater Treatment Plant – was revised and independently verified in accordance with SA EPA guidelines.
	Monthly potable water monitoring of the aerobridge reticulated supply system undertaken to demonstrate that water quality met accepted health criteria.
Noise	Less than 5 complaints per year (on average) received from the community by relating to ground-based noise.
	Regular noise monitoring events were conducted at the nearest residential properties demonstrating that noise generated from ground-based activities at Adelaide Airport were within State and Commonwealth regulatory limits.
	AAL conducted several acoustic surveys of Export Park commercial activity demonstrating that night-time levels were within Commonwealth and State regulatory limits.
	All ground-based noise events where complaints were received were followed up with no breaches of the AAL Ground Running Policy reported. Details of noise complaints and follow up by AAL were provided to the Airport Environment Officer for review.
	An aircraft noise fact sheet was developed and posted on the Adelaide Airport website.
	An Airport Tenant Environment Group was run from 2009-2013 to provide an open forum for discussing and sharing approaches on environmental issues.
	AAL's newsletter, <i>Plane Talking</i> , was published and distributed quarterly and contained an environment section which was a frontline vehicle for communicating environmental sustainability issues to airport stakeholders, including tenants.
	An environmental inspection program of high risk tenants and construction sites was conducted annually.
	A comprehensive set of guidelines covering a number of significant environmental issues, including asbestos management, water conservation, energy conservation, and green procurement, was developed in 2012 and made available to tenants. A seminar series was subsequently held for tenants to provide an alternative method of communicating the content of each of the guidelines.

Area	Achievement
<b>Waste</b>	<p>Construction rubble, scrap metal, plastics, computing equipment, paper/cardboard, waste oils and green waste generated by AAL activities were reused or recycled.</p> <p>A Waste Management Strategy for Terminal 1 was developed in 2009 in consultation with staff, tenants and cleaning contractors for implementation between 2009 and 2013. The Waste Management Strategy has since been revised in late-2013 to drive the next phase of waste management.</p> <p>A comprehensive audit of all waste from Terminal 1 was conducted in 2009 to inform the new Waste Management Strategy.</p> <p>A public space recycling system was installed across Terminal 1 in 2010. New 3-bin waste units were installed at each gate and through the main concourse. Paper, cardboard, comingled and general waste is being separated resulting in a reduction in waste to landfill.</p> <p>A trial for the collection of waste food for offsite organics composting commenced in T1 in 2014.</p> <p>In 2014, installation of a two-bin comingled and general waste unit intended within the multi-level car park and adjoining plaza area.</p> <p>A marketing program was run in 2013 involving the distribution of reusable coffee cups to staff, tenants and other stakeholders for use in Terminal 1.</p> <p>AAL sought waste management plans from high risk tenants (with respect to wildlife attraction), specifying waste streams and management actions aimed at reducing Foreign Object Debris and the likelihood of attracting wildlife to the airport environs.</p> <p>The AAL Asbestos Register was updated annually by a licensed contractor and a removal program of asbestos-containing materials undertaken. Buildings and a perimeter fence containing a high proportion of asbestos-containing materials were demolished in AAL's goal to become an asbestos-free airport.</p> <p>Paper towel waste was eliminated in Terminal 1 in 2011 with the installation of energy efficient Dyson hand dryers in all public toilets.</p>
<b>Stormwater</b>	<p>Permanent stormwater sampling and monitoring stations were installed at the exit of the two main internal airport catchments to allow representative composite sampling, flow monitoring and physical parameter testing.</p> <p>An annual stormwater monitoring program was conducted at Adelaide Airport. Key stormwater quality parameters were measured at concentrations within regulatory limits and overall samples were equivalent to that reported for the local Brownhill and Keswick Creek urban catchments.</p> <p>AAL maintained a Spills Register, containing a record of all hazardous substances spills.</p> <p>AAL maintained a Spill Kit Register, containing a map and updated record of all spill kit contents.</p> <p>Stormwater pollution control devices incorporated into the design of several new commercial developments including Manuele steel fabrication complex in the Morphett Precinct and Boart Longyear in Burbridge Business Park.</p> <p>A SQMIP was developed in 2012 and is being implemented. The Plan incorporates index of stream condition assessment and reporting for the airport internal vegetated drainage network.</p>



## Adelaide Airport Sustainability Past Achievements (2009-2014)

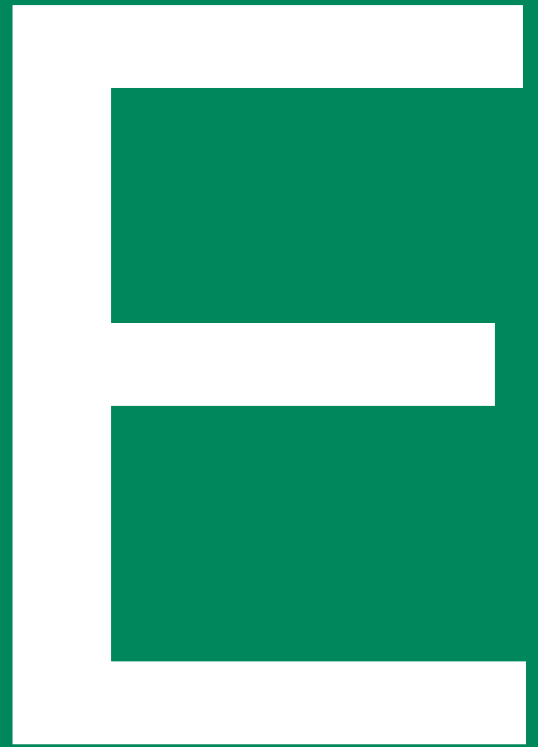
Area	Achievement
Soil and Groundwater	Environmental site assessments and groundwater monitoring events were undertaken at various sites across the airport triggered by changes to lease arrangements, risk of contamination, or the presence of recent/historic contamination.
	JOSF Operators continued implementation of a groundwater monitoring and management program in consultation with AAL and the Airport Environment Officer.
	An Environmental Management Plan for operation of the JUHI was regularly reviewed and updated.
	A Major Spill Response Station was maintained landside and a Spill Response Trailer was stationed airside for rapid deployment of spill clean-up equipment and materials.
	AAL hosted spill response training sessions for all ramp and airline staff.
	AAL developed a series of groundwater contaminant triggers in 2013, documented within a Groundwater Monitoring Strategy, for analytes requiring additional investigation if exceeded. These triggers are being adopted from 2013 to inform AAL's approach in future to contaminated sites across the airport.
	The airport's Contaminated Site Management Plan was reviewed and updated annually.
Land and Heritage Management	The PCCZ was silt fenced and replanted with native groundcovers and shrubs using local provenance.
	Interpretive signage installed at the entrance to the PCCZ providing an overview of natural, indigenous and European heritage of the area and following consultation with the local Kaurna community to provide accurate translation of local significant flora and fauna.
	An updated PCCZ Revegetation Plan was finalised in 2008. This plan provides a holistic map for all future revegetation and management activities and includes a planting calendar to 2018.
	Conservation Volunteers Australia members collected seed on Airport land, which was then propagated by volunteers in the AAL Nursery. The AAL Nursery produced approximately 1,000 seedlings annually which were planted during winter in the PCCZ.
	Conservation Volunteers Australia and Friends of Patawalonga Creek maintained a regular ongoing presence at the PCCZ carrying out maintenance activities, particularly of National and School Tree Day planting sites, including weeding, planting, tree guarding, seed collection and rubbish removal. Due to this concerted effort, artichoke thistle, ash trees and invasive sheoaks have been eliminated from the site.
	Planet Ark Schools Tree Day was hosted each year in winter by AAL at the PCCZ, attracting around 100 enthusiastic primary school students annually from local schools and colleges. The event was coordinated by Conservation Volunteers Australia, Friends of Patawalonga Creek and AAL. Over 2,000 seedlings were planted between 2009 and 2014.
	Planet Ark National Tree Day was hosted each year in winter by AAL at the PCCZ, attracting up to 150 volunteers annually. The event was coordinated by Conservation Volunteers Australia, Friends of Patawalonga Creek, Rotary and AAL. Over 10,000 seedlings were planted between 2009 and 2014.
	Vegetation surveys were carried in Airport East and Morphett Precincts to support appropriate management of any rare or vulnerable species consistent with a zero net loss outcome associated with future developments.
	Areas of remnant vegetation located at the southern side of the airfield were bunted and protected from vehicle and pedestrian access.
	An acoustic mound on the southern boundary of the Airport East Precinct adjacent Watson Avenue, Netley, was maintained, weeded and revegetated with replacement plants.
	The Adelaide Airport Landscaping Guidelines were revised and distributed in 2009, providing stakeholders with a more detailed and holistic view of AAL's requirements for species selection, drainage, irrigation, water features, and amenity value.

Area	Achievement
	<p>Consultation held with the City of West Torrens to ensure that the stormwater detention basin (to accept flood waters from West Beach) was constructed with minimal impact to the construction site and the PCCZ relative to flora and fauna.</p> <p>AAL was awarded the AAA Capital City Airport of the Year in 2009 on the strength of its wildlife hazard management program and contribution to the Australian airports industry generally in the area of best practice wildlife management.</p> <p>AAL's wildlife data management system was overhauled to provide staff and stakeholders with detailed wildlife species trend data and analysis on a quarterly and annual basis.</p> <p>Wildlife Management Committee meetings were held quarterly, with continued input from specialist ornithologist, Associate Professor David Paton.</p> <p>The Bird Risk Assessment updated to provide a priority risk ranking to all species encountered.</p> <p>A quick reference wildlife management booklet of priority bird species was developed for AAL staff and Adelaide Airport stakeholders.</p> <p>An invertebrate and flora monitoring program was completed for a cross-section of habitats within the airside environment at Adelaide Airport and analysed by the University of Adelaide to identify any correlations between vegetation assemblage, invertebrate populations and bird attraction.</p> <p>AAL commenced the process of identifying high risk off-airport land uses within the 3 kilometres, 8 kilometres and 13 kilometres Wildlife Risk Management Zones for Adelaide Airport, as well as Parafield Airport, and also in partnership with RAAF Edinburgh, thereby encompassing all of metropolitan Adelaide. This will allow collaboration with local Councils and other land owners/managers to minimise bird strike risk.</p> <p>Liaison held with the South Australian Homing Pigeon Association to increase stakeholder awareness and understanding of bird strike risk. A fact sheet was developed for Association members and other homing pigeon owners.</p> <p>Communication undertaken annually with local Councils and golf courses to encourage a coordinated spring fox culling program.</p> <p>An assessment and maintenance program for the Vickers Vimy aircraft was implemented from 2009.</p> <p>Consultation held with the City of West Torrens to ensure that the stormwater detention basin (to accept flood waters from West Beach) was constructed with minimal impact to the construction site and the PCCZ relative to flora and fauna.</p>
<b>Local Air Quality</b>	<p>A comprehensive local air quality model was developed in 2013 for Adelaide Airport – scoped to include ground-based and aircraft emissions – and analysed against relevant Commonwealth and State air quality standards.</p> <p>EPA air quality data was extracted annually from the adjacent Netley monitoring station, and then analysed and reported to meet the relevant State ambient air quality standards.</p> <p>Air monitoring was conducted on all asbestos removal projects. All air quality results were well below adopted exposure standards for atmospheric contaminants.</p>



# APPENDIX

## ENVIRONMENT STRATEGY OBJECTIVES, GOALS AND MANAGEMENT ACTIONS





## Environment Strategy Objectives, Goals and Management Actions

Compliance Objective (by 2034)		
Operate and develop Adelaide Airport in a manner that complies with relevant regulatory and other standards whilst striving for continuous improvement.		
Goal (2014-2019)	Management Actions (2014-2019)	Timeframe
<b>Strive for 100% compliance for developments and airport activities with relevant noise regulations</b>	Assess ground power units usage by airlines and develop strategy to improve usage rates	2015
	Install ground power units on all future aerobridges and pre-conditioned air on all future international bay aerobridges	2019
	Install ground power units on all future aerobridges and pre-conditioned air on all future international bay aerobridges	2019
	Continue to conduct regular boundary noise monitoring	Ongoing
	Continue to model noise impacts for proposed new developments and implement mitigation strategies where necessary	Ongoing
	Continue to include relevant noise mitigation in Construction Environmental Management Plans and conduct inspections	Ongoing
	Continue to enforce the AAL Ground Running Policy	
	Continue to engage with the local community on noise issues	Ongoing
	Continue to provide guidance to stakeholders on noise mitigation strategies	Ongoing
<b>Strive for 100% compliance for developments and airport activities with relevant air quality regulations</b>	Continue to investigate noise abatement measures and where feasible, integrate into airport operations	Ongoing
	Develop and implement a Local Air Quality Management Plan based on the results of the air quality modelling study	2019
	Continue to conduct air quality monitoring as required	Ongoing
	Continue to collect air emissions data from point sources as required	Ongoing
	Continue to maintain a register of ozone depleting substances and phase out where feasible	Ongoing
<b>Maintain and, where feasible, improve stormwater quality and aquatic ecosystems</b>	Continue to provide guidance to stakeholders on air quality improvement strategies	Ongoing
	Review drainage infrastructure, maintenance and vegetation of the airport's internal drainage network	2015
	Incorporate outcomes of drainage review into the SQMIP	2016
	Assess drain ecology and develop an Aquatic Ecology Management Plan for the airport	2019
	Continue to regularly monitor stormwater quality	Ongoing
	Continue to identify sources of pollution as per the SQMIP and mitigate sources of pollution where identified	Ongoing
	Continue to undertake siltation surveys in the Patawalonga Creek Conservation Zone (PCCZ)	Ongoing
	Continue to monitor success of revegetation using the Index of Stream Condition	Ongoing
	Continue to provide guidance to stakeholders on stormwater quality improvement strategies	Ongoing

Goal (2014-2019)	Management Actions (2014-2019)	Timeframe
<b>Maintain and, where feasible, improve soil and groundwater quality</b>	Integrate contaminant trigger criteria into the Contaminated Site Management Plan	<b>2015</b>
	Conduct a thorough review of all Underground Storage Tank integrity testing programs against national standards	<b>2016</b>
	Continue to conduct regular groundwater monitoring	<b>Ongoing</b>
	Continue to implement priority actions from the Contaminated Site Management Plan	<b>Ongoing</b>
	Continue to guide tenants to close out contaminated sites on a risk basis where practicable	<b>Ongoing</b>
	Continue to conduct relevant environmental site assessments for new developments and lease terminations in accordance with the AAL Environmental Site Assessment Guidelines	<b>Ongoing</b>
	Continue to provide guidance to stakeholders on contamination prevention and remediation strategies	<b>Ongoing</b>
<b>Strive for 100% compliance for hazardous substance storages, handling and disposal</b> <b>Systematically remove asbestos from all AAL owned and / or operated infrastructure</b>	Conduct a feasibility study on phase out of ODS	<b>2017</b>
	Continue to store and manage hazardous substances and dangerous goods in accordance with regulatory requirements	<b>Ongoing</b>
	Continue the environmental inspection program of tenants and construction sites	<b>Ongoing</b>
	Continue to implement emergency response plans for hazardous substances spills	<b>Ongoing</b>
	Continue annual asbestos audit and removal program and maintenance of the Asbestos Register	<b>Ongoing</b>
	Continue to maintain the Hazardous Substances Register, ODS Register and PCB Register	<b>Ongoing</b>
	Continue to provide guidance to stakeholders on hazardous substances management	<b>Ongoing</b>

## Environment Strategy Objectives, Goals and Management Actions

Sustainable Development Objectives (by 2034)		
Develop Adelaide Airport through quality buildings of contemporary, sustainable design		
Manage AAL facilities in a manner that minimises cost and natural resource use		
Goal (2014-2019)	Management Actions (2014-2019)	Timeframe
<b>Design, construct and manage AAL assets to meet targets aligned to key Sustainability Performance Indicators</b>	Continue to measure AAL's asset operation in alignment with SPI	Ongoing
	Regularly review progress of operational performance against SPT	2015
	Conduct annual environmental awareness training for all AAL staff	2015
	Create a reporting tool to convey asset management results	2016
	Assess the feasibility of conforming to Global Reporting Initiative standards	2017
	Continue to improve building performance through cost-effective improvements to operation and maintenance practices	Ongoing
<b>Implementation of sustainable design principles</b>	Continue to incorporate sustainable design principles into Development Design Guidelines, encouraging adoption of energy efficiency measures consistent with the Building Code of Australia	Ongoing
	Continue to identify sustainable development opportunities	Ongoing
	Encourage the adoption of external performance metrics	Ongoing
<b>Embed principles of stewardship into corporate processes and through the supply chain</b>	Expand set of Airport environmental guidelines for use by tenants, contractors, and AAL staff	2016
	Continue to encourage customers, partners and suppliers to adopt sustainability principles and practices	Ongoing
	Promote stewardship initiatives throughout the AAL supply chain through preferred 'suppliers of choice'	Ongoing

Energy and Climate Change Objectives (by 2034)		
Minimise future electricity load growth through energy conservation measures and renewable energy Minimise AAL's carbon footprint Influence and guide other airport users to reduce their carbon footprint Adapt to future climate change impacts		
Goal (2014-2019)	Management Actions (2014-2019)	Timeframe
<b>Reduce AAL's per passenger electricity consumption (10% of 2013 levels by 2019)</b>	Develop and implement a carbon reduction plan	2015
	Continue to investigate possible locations for renewable energy installations	2016
	Assess the economic feasibility of a renewable energy power station	2019
<b>Reduce AAL's per passenger greenhouse gas emissions (5% of 2013 levels by 2019)</b>	Continue annual measurement of the company carbon footprint	Ongoing
	Continue certification to Level 1 of ACI's Airport Carbon Accreditation scheme	Ongoing
	Seek certification to Level 2 of ACI's Airport Carbon Accreditation scheme	2015
	Assess feasibility of achieving Level 3 certification	2015
	Develop and implement a Green Vehicle Program	2015
	Detail and enforce minimum energy efficiency standards for plant and equipment, including motor vehicles, in the company purchasing policy	2017
<b>Strive to realise reductions in tenant energy consumption</b>	Assess voluntary carbon offset options	2017
	Develop and implement an Airport Stakeholder Engagement Plan for carbon management	2015
	Support and facilitate fuel reduction initiatives by aircraft operators where possible	Ongoing
	Assess the feasibility of introducing biofuels for Ground Service Equipment in partnership with airlines	2017
<b>Improve AAL's preparedness against the likely impacts of climate change on infrastructure and operations</b>	Continue to provide guidance to tenants on techniques for measuring emissions and reducing energy consumption	Ongoing
	Complete climate vulnerability and adaptation study	2015
	Conduct detailed infrastructure review against climate adaptation study outcomes	2016
	Incorporate, where required, new pavement and building standards into development and construction guidelines	2019
	Accommodate, where required, extreme weather events into the Airport Emergency Plan	2016
	Continue to participate in local and State adaptive planning processes	Ongoing



## Environment Strategy Objectives, Goals and Management Actions

Water Objective (by 2034)		
Minimise the proportion of potable water consumption at Adelaide Airport		
Goal (2014-2019)	Management Actions (2014-2019)	Timeframe
<b>Reduce AAL's per passenger potable mains water consumption (10% of 2013 levels by 2019)</b>	Investigate opportunities to utilise stormwater harvested from the car park scheme and Adelaide Airport Stormwater Scheme	2015
	Assess opportunities for introducing more water efficient management of Terminal 1 cooling towers and other infrastructure, and assess end-of-life replacement options	2106
	Continue to seek opportunities for implementing water sensitive urban design principles	Ongoing
	Continue to update the water meter network to improve data accuracy, where required	2015
<b>Increase the number of connections made to non-potable water sources, where practicable</b>	Encourage new developments to connect to the recycled water network	Ongoing
	New developments to incorporate water sensitive urban design features such as rainwater tanks or other water harvesting systems	Ongoing
<b>Increase the number of tenants implementing water efficiency measures, where possible</b>	Provide tenants with water efficiency awareness raising tools and materials to use in their workplaces	2019

Waste Objective (by 2034)		
Increase the proportion of airport waste diverted from landfill		
Goal (2014-2019)	Management Actions (2014-2019)	Timeframe
<b>Increase the per passenger volume of waste recycling from AAL facilities (10% of 2013 levels by 2019)</b>	Revise and implement the Waste Management Strategy for T1	2014
	Establish a T1 food organics recycling scheme	2015
	Investigate upstream waste elimination opportunities in partnership with T1 tenants, including use of compostable products	2016
	Develop and implement an updated Waste Management Strategy for AAL operations	2016
<b>Implement a green purchasing program</b>	Develop and implement a Green Purchasing Policy focussing on waste reduction	2015
	Run a staff education campaign on the Green Purchasing Policy	2016
<b>Facilitate waste reuse and recycling by tenants, where feasible</b>	Develop and communicate guidelines on recyclable construction materials	2017
	Encourage airport food and beverage tenants to compost food waste	2019
	Continue to support airline programs aimed at recycling on-aircraft waste	Ongoing
	Continue to support airport tenants to expand their waste avoidance, reuse and recycling programs	Ongoing
	Continue to encourage recycling and rejuvenation of demolition and construction waste	Ongoing

Land and Heritage Objectives (by 2034)		
Enhance biodiversity		
Conserve places of significant natural, indigenous and heritage value		
Minimise the risks presented by wildlife to aviation safety		
Goal (2014-2019)	Management Actions (2014-2019)	Timeframe
<b>Improve native biodiversity of target zones within the airport</b>	Develop an Aquatic Ecology Management Plan for the PCCZ	2015
	Review detailed flora and fauna surveys of the PCCZ	2016
	Continue to implement the Conservation Zone Management Plans	Ongoing
	Research and develop a long term strategy to assess and mitigate impact on native habitats	2018
	Partner with external stakeholders to support a biodiversity program in State-controlled easements or drains	2015
	Implement the SQMIP, in particular, upgrade the stormwater network with sustainable vegetated filtration systems	2016
	Continue to monitor the open stormwater network using the Index of Stream Condition	Ongoing
	Continue to implement the AAL Landscape Guidelines	Ongoing
<b>Protect significant heritage values</b>	Continue to apply biodiversity no net loss policy	Ongoing
	Finalise a Heritage Management Strategy	2015
	Develop Heritage Management Plans, where required	2019
	Continue to implement procedures for identifying and protecting archaeological artefacts	Ongoing
<b>Strive to reduce wildlife strike rates involving higher risk species</b>	Continue to promote communication between AAL and traditional custodians	Ongoing
	Implement Wildlife Hazard Management Plan, in particular, complete airside vegetation mapping and conduct a grass trial for runway strips	2015
	Undertake comprehensive on-airport wildlife hazard mapping linked to vegetation	2016
	Develop and integrate Wildlife Hazard Management Zone mapping into the Building Application process	2016
	Use Wildlife Hazard Management Zone mapping as a tool to educate off-airport stakeholders on minimising strike risk	Ongoing
	Continue to collaborate with airport neighbours on fox control	Ongoing
	Continue to review and implement the Wildlife Hazard Management Plan	Ongoing



**APPENDIX**

**KEY  
ENVIRONMENTAL  
MANAGEMENT  
SYSTEM  
DOCUMENTATION**





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## Key Environmental Management System Documentation

EMS Element	Policies / Plans / Reports	Procedures
<b>Policy</b>	Sustainability Policy Environment Policy	Planning Procedure
<b>Planning</b>	Airport Environment Strategy	Environmental Management System Manual Risk Management Manual Aspect Identification Procedure Risk Management Procedure Tenant Risk Ranking Procedure Planning Procedure
<b>Implementation</b>	Environment Management Plan Contaminated Site Management Plan Stormwater Quality Management and Improvement Plan Asbestos Management Plan Patawalonga Creek Conservation Zone Management Plan Patawalonga Creek Conservation Zone Revegetation Plan Wildlife Hazard Management Plan Waste Management Plan Carbon Management Plan Water Management Plan Airport Emergency Plan Training Plan	Legal Monitoring Requirements Procedure Training Procedure Document Control Procedure Incident and Hazard Reporting System Guide
<b>Checking &amp; Monitoring</b>	Environment Management Plan	Monitoring Procedure Tenant and Construction Inspection Procedure Internal EMS Audit Procedure Non-conformance Procedure
<b>Reporting &amp; Review</b>	AAL Monthly Environment Reports DIRD Annual Environment Report	Management Reporting and Review Procedure Management System Review Procedure



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