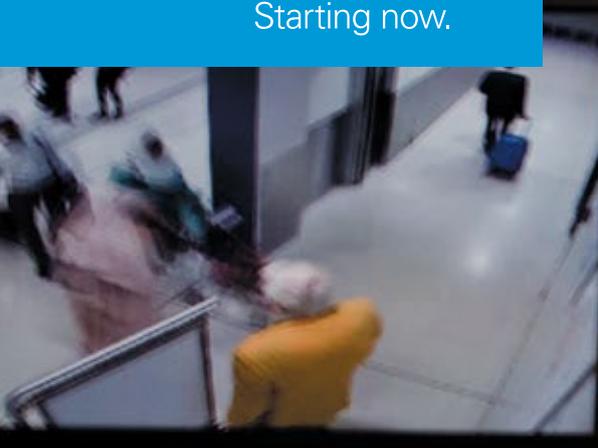




Sydney Airport

The right future.
Starting now.





12.0

SAFETY AND SECURITY

12.0 SAFETY AND SECURITY



Key points

- The development plan within this Master Plan:
 - Will improve airfield safety by reducing the towed aircraft runway crossings and other airfield enhancements
 - Significantly enhances the airfield to ensure runway safety and aircraft operations in low visibility conditions
 - Is compliant with the relevant legislation and is designed with safety and security outcomes in mind
- Sydney Airport proactively manages safety and security:
 - There is a well-established framework to manage safety and security in collaboration with relevant third parties, including aircraft operators, tenants and government agencies
 - There has been significant investment in enhanced infrastructure and technology for safety and security. Sydney Airport is focused on enhancing the awareness culture and in August 2012 Airport Watch was launched in cooperation with the Australian Federal Police. The program is designed to encourage the identification and reporting of suspicious activity at the airport
 - Comprehensive governance mechanisms are in place to ensure that safety and security policies and procedures are followed
 - Without compromising safety and security or compliance with the legislation, Sydney Airport seeks to minimise the inconvenience to passengers and other users of the airport
 - Safety and security design considerations and airspace protection are essential to our operational environment

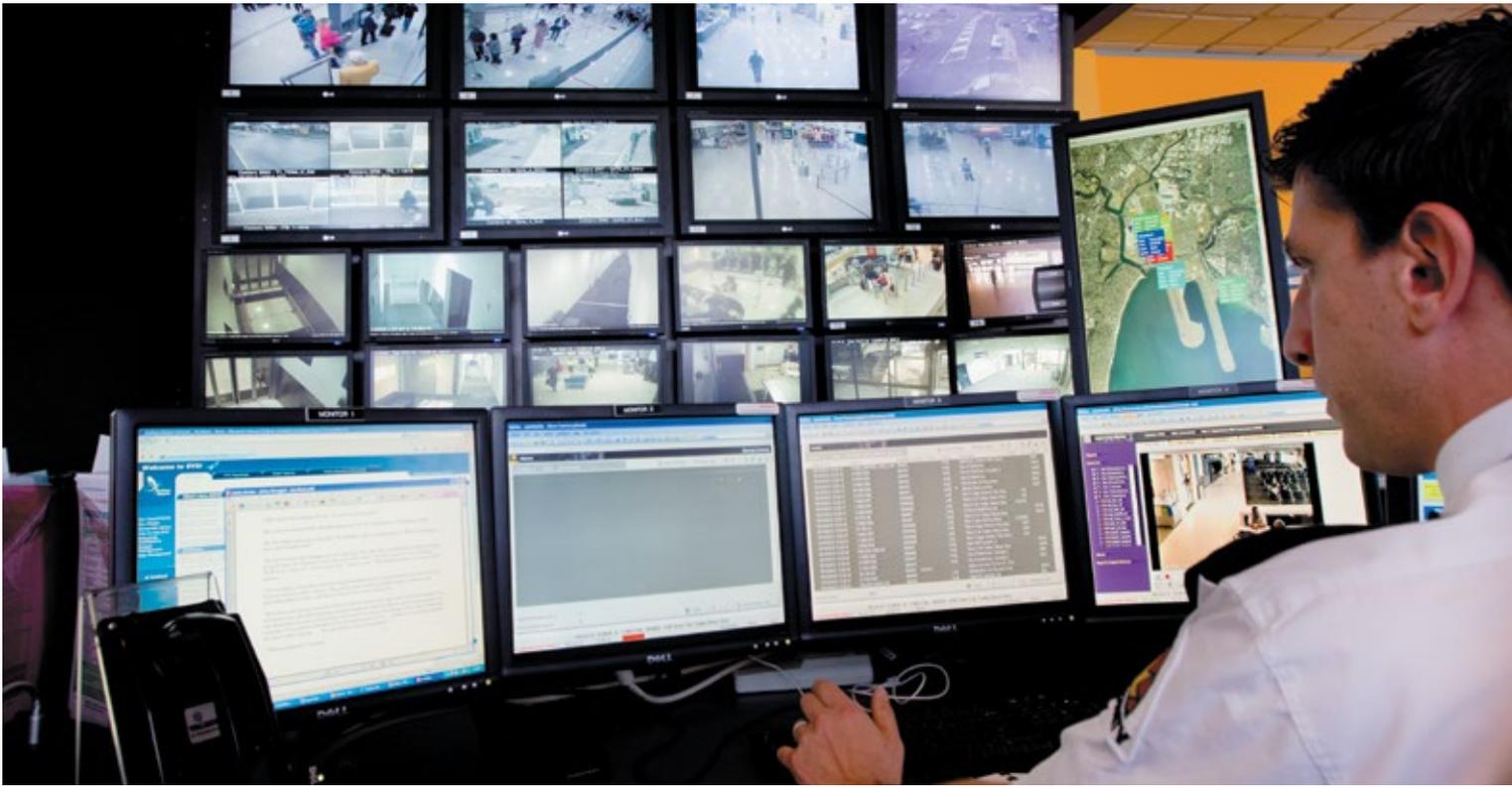
All airport developments are subject to an internal safety and security review to ensure compliance with legislative obligations. The Master Plan was prepared with particular regard to safety, security and risk management. The development plan will improve safety by reducing towed aircraft runway crossings and other airfield enhancements.

12.1 Investment in enhanced infrastructure and technology

Investment in enhanced infrastructure and technology is important for safety and security at Sydney Airport.

During the previous master planning period significant investment has been made to ensure safety through the following initiatives:

- Transmissometers
 - Transmissometers are instruments that are used to provide accurate runway visibility assessments in low visibility conditions brought about by fog and mist. At Sydney Airport transmissometers are located at three points along all of the runways to provide the tower and pilots with an overall airfield visibility perspective.



- Stop bars

To further enhance airfield safety and reduce the incidence of runway incursions, Sydney Airport has installed runway stop bars at all runway hold points along Runway 07/25, Runway 16R/34L and Runway 16L/34R. The installation of these stop bars provides further visual cues to pilots with respect to the runway hold points. Stop bars, in conjunction with runway guard lights, movement area guidance signs (MAGS) and line markings further assist in the prevention of runway incursions. The number of runway incursions has been on a steady decrease over the past seven years. The stop bar system has been enhanced with elevated stop bar lights to facilitate greater visibility from the aircraft cockpit.

- Advanced surface movement guidance and control system

Sydney Airport was designated by the Civil Aviation Safety Authority (CASA) on 1 July 2012 as an aerodrome to which advanced surface movement guidance and control system (ASMGCS) applies as per Civil Aviation Safety Regulations (CASR) paragraphs 139.252 and 139.254. This requires all vehicles operating on the manoeuvring area to be fitted with electronic surveillance equipment.

- Security infrastructure and technology

Sydney Airport has made significant investment in enhanced infrastructure and technology to deliver strengthened security outcomes. Over recent years, the security regime has been enhanced, for example, through the addition of 100% checked baggage screening, explosive trace detection, liquids aerosols and gels screening, current introduction of body scanners, and expanded closed circuit television (CCTV) and access control coverage.

Current works under way include:

- Installation of high intensity approach lighting for Runway 34L

Operations to Runway 34L will be enhanced by the installation of a reduced length high intensity approach lighting (HIAL) system. The system will facilitate Category I approaches to a runway visual range (RVR) of 800 metres and a Category II approach to an RVR of 350 metres.

- Upgrade of high intensity approach lighting for Runway 16R upgrade

Runway 16R HIAL will be upgraded to provide for Category II approaches to an RVR of 350 metres.

Sydney Airport under this Master Plan and development plan is committed to ongoing improvement of airfield safety and efficiency.

This is anticipated through a number of initiatives including:

- Enhancement of the airfield taxiway system to improve taxiing aircraft flows
- Reduction in potential taxiing aircraft conflicts and points of congestion
- Low visibility initiatives
- Aprons with dual taxilanes
- Reduction in towed aircraft runway crossings and acknowledging that the incidence of powered runway crossing has no impact on the airport capacity and does not generate taxiway congestion. The reduction in towed aircraft runway crossings provides the opportunity for improved airline on-time performance, reduces delays and enhances safety management

Sydney Airport will also continue to work closely with the Office of Transport Security to introduce optimal screening technologies in response to the evolving threat environment. In implementing upgrades to physical security infrastructure, Sydney Airport considers the relevant Australian/overseas security standards or “better practice” guides and consults with subject matter experts.

All airport developments are subject to an internal security review to ensure compliance with legislative obligations.

12.2 A well-established framework to manage safety and security

Sydney Airport is committed to maintaining a safe, secure and reliable airport operating environment through robust management frameworks.

Safety management system

A safety management system (SMS), which is required by Regulation 139.250 of the Civil Aviation Safety Regulations 1998, is in place and operating effectively at Sydney Airport. The SMS outlines the processes for effectively managing safety and is audited annually by CASA.

The SMS provides the system by which long term and daily safety management can be planned, implemented and reviewed in a continuous cycle of improvement.

Traffic management plan

To manage the flow of traffic around aircraft operations and airport infrastructure, the Sydney Airport Traffic Management Plan (the plan) was prepared in accordance with the Work Health and Safety Act 2011. The plan covers the interaction between vehicles and their immediate environment (e.g. pedestrians, other

vehicles and infrastructure) and the processes undertaken to eliminate and/or reduce the risks associated with those interactions within Sydney Airport. The plan addresses hazards associated with pedestrian/vehicle and vehicle/vehicle interactions within the workplace, which are considered to present a risk of harm to people, property or environment if not managed in a careful and systematic way.

The plan has been developed with reference to:

- Airports (Control of On-Airport Activities) Regulations 1997
- Sydney Airport Airside Vehicle Control Handbook (AVCH)
- Work Health & Safety Act and Regulations 2011 (WHS legislation)

Security management system

Security management is carried out in accordance with the regulatory obligations specified in the Aviation Transport Security Act 2004 and the Aviation Transport Security Regulations 2005. Sydney Airport undertakes security risk assessments based on the threat level established by the Australian Government. How Sydney Airport achieves certain security outcomes is shaped by the legislative requirements, the local security risk context and the operational environment. The government continues to highlight that preventative security planning in the current threat environment is the most practical mitigation strategy. Sydney Airport security plans and prevention strategies are consistent with this approach.

The security management system is described in the Transport Security Program. This Master Plan has been reviewed in accordance with Sydney Airport’s security obligations. The program sets out in broad terms Sydney Airport’s security risk context, mitigation measures, and emergency and contingency plans. It is prepared following consultation, correspondence and meetings with relevant third parties, including the Australian Federal Police, NSW Police Force, aircraft operators, tenants and government agencies. Sydney Airport regularly reviews, updates and seeks approval from the Office of Transport Security for changes to the program. An aviation industry participant security guide is produced to provide all industry participants located on Sydney Airport with an understanding of the security management system.

12.3 Creating a strong safety and security culture

A focused approach by Sydney Airport on enhancing the awareness culture for safety and security is a strategic priority. The implementation of appropriate mechanisms for the management and control of safety and security activities as well as a robust regime of compliance is an essential part of ongoing safety and security cultural improvements.

Ground handling culture and licence system

To drive cultural improvements to ramp safety and ground handling behaviour on the airside, Sydney Airport has formed a consultative group consisting of airlines, ground handlers and airport management. This group is progressing the development of guiding principles that will shape a formalised regime of ground handlers' conditions of use licensing. This strategy is supported by the Sydney Airport Airline Operators Committee and those companies that provide ground handling services to ensure an enhanced safety culture. This approach supports recent changes to Work Health and Safety (WHS) legislation that have increased the level of accountability for managers of all organisations. Regulatory bodies such as WorkCover NSW and CASA have indicated their intention to take a higher level of interest in airside ground activities to ensure compliance with associated acts and regulations.

Security culture

Sydney Airport is focused on establishing a strong security culture among airport staff. Individuals play a critical role in delivering security outcomes. Security measures are only effective if they are upheld by vigilant security attitudes. Robust security cultures support all elements of preventative security, including ensuring physical security measures are operational and effective, security procedures are adhered to, and suspicious activity is identified and resolved. Sydney Airport invests in regular staff security awareness campaigns.

Airport employees are well placed to identify and report suspicious, unusual or changed behaviours by members of the public or fellow staff. The Australian Government has implemented a new national aviation security awareness strategy called Airport Watch. The roll-out of this strategy is being managed by the Australian Federal Police and is designed to complement the existing security awareness program at Sydney Airport. This community approach, similar in principle to Neighbourhood Watch programs, not only focuses on identifying suspicious activity, but on real time resolution.

12.4 Governance mechanisms in place

Quality management system

A centralised and integrated quality management system (Q-Pulse) has been implemented to support the safety and security framework. Q-Pulse allows Sydney Airport to collect all relevant information related to incidents and the subsequent investigation in one system. In terms of internal, external and regulatory auditing, the system can schedule and track audit activities easily as well as keep track of findings and corrective actions. Analysis can be performed on incidents and corrective actions as well.

Safety audits

CASA as regulator conducts an annual safety audit of Sydney Airport to assess management's compliance with approved operational procedures and to ensure airport facilities meet the requirements under the manual of standards. As a supplementary control, an annual aerodrome technical inspection (ATI) complements the CASA audit and is undertaken by an independent auditor.

The SMS has also been reviewed, resulting in changes to the enterprise risk processes, changes in management, and the updating of various documents associated with the SMS manual. Sydney Airport has an internal audit program to ensure Sydney Airport engaged contractors are complying with the CASA Manual of Standards and WHS legislation.

Security audits

Sydney Airport engages a government licensed and professionally qualified security service provider. The security service contract is managed utilising a high standard of key performance measures and, in addition, maintains a strong policy of compliance management which includes an internal regime of audits, inspections and tests.

Along with passenger and checked baggage screening, the main security functions that are undertaken by Sydney Airport's security service provider include airport perimeter patrols, airside/terminal/landside foot patrols, gate access control, and general CCTV security surveillance and alarm monitoring.

The Office of Transport Security conducts two audits of Sydney Airport each year to ensure compliance with government-mandated airport security measures. These audits are supplemented by ongoing inspections, testing and observations to assess Sydney Airport's compliance with the approved Transport Security Program and the requirements of aviation security legislation. Sydney Airport is also audited by both international and domestic airlines as well as other international government and regulatory agencies. This includes, for example, audits by the United States Transportation Security Administration.

12.5 Seeking to minimise the impact on passengers and staff

Sydney Airport seeks to minimise the impact on passengers and staff without compromising safety and security or compliance with the legislation.

Security with service

"Security with service" is viewed as critical to the end-to-end passenger experience at Sydney Airport.

A collaborative approach with Sydney Airport's security service provider, named the One Aviation Security Team, has been implemented to deliver a new mission

of “professional security with service and integrity”. The One Aviation Security Team has resulted in improvements to the delivery of contracted security services at Sydney Airport and is positively changing the way people see and experience aviation security. The resultant “security with service” outcomes will continue to be monitored by Sydney Airport through both internal and external passenger/staff surveys.

12.6 Designing with safety and security in mind

Considering safety and security design requirements in development planning is essential to our safe operational environment.

Aircraft crash risk

The proposed on-airport land uses are considered to be appropriate. On-airport, issues relating to crash risk are considered by Sydney Airport in the approval process when assessing proposed developments. Off-airport, land use zoning falls within the jurisdiction of the surrounding local government areas. No legislation or guidelines exist at a federal or state level governing permissible land uses with respect to aircraft crash risk. Although no special arrangements have been put in place by these authorities, Sydney Airport will continue to work with them on a case-by-case basis.

Security by design

“Security by design” considerations have been incorporated into the land development plan included within this Master Plan. Incorporating measures during detailed design such as structural design, vehicle control and crowd management has benefits in terms of their effectiveness and of minimising costs, and can better take account of the needs of passengers. Future security obligations relating to enhanced airside inspection, airport front of house areas including terminal forecourts, and other physical security measures are proposed to be considered and Sydney Airport will work closely with the Office of Transport Security on these matters.

12.7 Airspace protection is essential for a safe operating environment

The protection of the immediate airspace around airports is essential in ensuring and maintaining a safe operating environment and to provide for growth. For this reason, it is necessary to restrict some types of development and land uses in the vicinity of airports. This is to guarantee that designated airspace segments remain obstacle-free, thereby contributing to the safety, efficiency and regularity of aircraft operations.

Since Sydney Airport is able to control on-airport development activities, the primary focus of airspace protection is in off-airport areas and developments under the control of other authorities. Airspace protection therefore involves aspects of land use planning

and development control that need to be managed cooperatively with external responsible authorities.

Airports (Protection of Airspace) Regulations 1996

Under the Airports (Protection of Airspace) Regulations 1996, a system has been established for the protection of airspace at and around regulated airports, such as Sydney Airport, in the interests of the safety, efficiency or regularity of existing or future air transport operations. The regulations define prescribed airspace for an airport, which includes the airspace above any part of either an obstacle limitation surface (OLS) or procedures for air navigation services – aircraft operations surfaces (PANS-OPS). These regulations apply to both on-airport and off-airport developments.

The regulations stipulate that for controlled activities, specific approval is required from the Department of Infrastructure and Regional Development. Controlled activities include constructing or altering a building, or any other activity that causes a thing attached to or in physical contact with the ground to intrude into the prescribed airspace. This includes cranes and other temporary structures.

The regulations require that proponents of proposed controlled activities provide Sydney Airport with the details of the proposal, which are then assessed against the OLS and PANS-OPS and navigation aid protection criteria. Where it is assessed to affect the safety, efficiency or regularity of air transport at Sydney Airport, Sydney Airport will oppose the infringement of the OLS and/or PANS-OPS surfaces. In considering development proposals, local government authorities should be cognisant of the restrictions imposed by the Airports Act and regulations.

Sydney Airport sends an annual letter to all local government areas surrounding the airport, reminding them of their obligations in ensuring compliance with the Airports (Protection of Airspace) Regulations 1996, as well as providing comments relating to airspace protection for local government area local environment plans.

Obstacle limitation surfaces

The OLS is a series of surfaces in the airspace surrounding an airport. The OLS defines the airspace to be protected for aircraft operating during the initial and final stages of flight, or manoeuvring in the vicinity of the airport. **Figure 12.1** depicts the OLS associated with Sydney Airport.

They are established in accordance with International Civil Aviation Organisation (ICAO) specifications, as adopted by Australia’s CASA. Australia is a signatory to the Convention on International Civil Aviation (Chicago 1944) from which the Manual of Standards Part 139 – Aerodromes (including OLS) was developed and subsequently adopted.

The drawings of the OLS and PANS-OPS depicted in **Figures 12.1 to 12.5** and described below give heights (to Australian height datum – AHD) above which developments, both on and off airport, need to consider issues relating to obstacle height. Detailed drawings of all of these surfaces are available from Sydney Airport.

Procedures for air navigation services – aircraft operations surfaces

At major airports such as Sydney, radio-navigation aids and satellite navigation enable aircraft to operate safely in poor weather conditions. PANS-OPS are established to protect those stages of take-off, landing or manoeuvring when aircraft are operating in non-visual (instrument) conditions. Pilots must be assured of obstacle clearance in these circumstances, although transition from or to visual conditions will still occur at some point in the flight.

The ICAO standards for PANS-OPS surfaces require surfaces to be defined for each published procedure for aircraft operating in accordance with that procedure. The PANS-OPS surfaces should not be infringed in any circumstances. The PANS-OPS surfaces at Sydney Airport are relatively complex because of the number of published instrument procedures. **Figures 12.2 to 12.5** give simplified depictions of Sydney Airport's PANS-OPS surfaces.

Navigation aid and radar restricted surfaces

Airservices Australia operates a number of radio navigation aids that provide guidance to aircraft operating in poor weather conditions. Airservices Australia also operates a number of surveillance systems which provide surveillance of aircraft in the air and aircraft and vehicles operating on the ground at Sydney Airport.

To meet the necessary performance requirements, airspace restrictions are established for each item of equipment and procedure. Unlike OLS and PANS-OPS, it may be possible under some circumstances (subject to detailed modelling and analysis) to permit infringements of the protective surfaces without degradation in system performance. Protection of the navigation aid and radar restricted surfaces is a mandated requirement of CASR 139 and CASR 171.

Sydney Airport refers all proposed developments and crane operations which may impact on nav aids and radar to Airservices Australia for assessment.

Engine-out procedures

Under Civil Aviation Order CAO 20.7.1B, operators of aircraft having an all-up weight in excess of 5,700kg are required to consider obstacle clearance requirements in the event of an engine failure. The specific procedures applicable to meeting these requirements are a matter for the aircraft operator concerned. Unless specifically requested by an operator, Sydney Airport's airspace

protection role does not extend to protecting CAO 20.7.1B surfaces, except where they are protected by an equivalent or more limiting OLS or PANS-OPS requirement.

Restrictions to external lighting

CASA has the power under the Civil Aviation Regulations 1988 to control ground lights where they have the potential to cause confusion or distraction from glare to pilots in the air. To assist lighting designers and installation contractors in the vicinity of airports, CASA has established guidelines on the location and permitted intensities of ground lights within a 6km radius of airports. External advertising, sports field floodlighting and street lighting are some of the more likely lighting sources requiring consideration.

The intensity of external lighting, the intensity of reflected sunlight, and smoke, dust or particulate matter may also be considered controlled activities under the Airports (Protection of Airspace) Regulations 1996, and therefore subject to the regulatory regime described in this chapter.

Figure 12.6 shows the lighting intensity guidelines with respect to Sydney Airport's runways.

Stack and vent efflux issues

Air turbulence can result from ground activities. Where these exceed 4.3 metres per second, the emission of steam or other gas may be considered controlled activities under the Airports (Protection of Airspace) Regulations 1996. Industrial activities such as manufacturing and cogeneration plants adjacent to airports are the types of industries that can produce these effects.

Wildlife management

Sydney Airport monitors and controls the presence of birds on or in the vicinity of the airport in accordance with CASA regulations. Sydney Airport's wildlife management plan describes the practices and procedures to manage wildlife hazards caused by the presence of birds or animals on or near the aerodrome. The plan has been developed based on the knowledge of local wildlife populations and the hazards various species pose to aircraft. This plan is developed in conjunction with the airport Wildlife Working Group (WWG), a forum for key stakeholder and local authority consultation, and ensures wildlife management is consistent with the Sydney Airport Environment Strategy.

Figure 12.1
Obstacle Limitation Surfaces (OLS)
Current and Future OLS

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

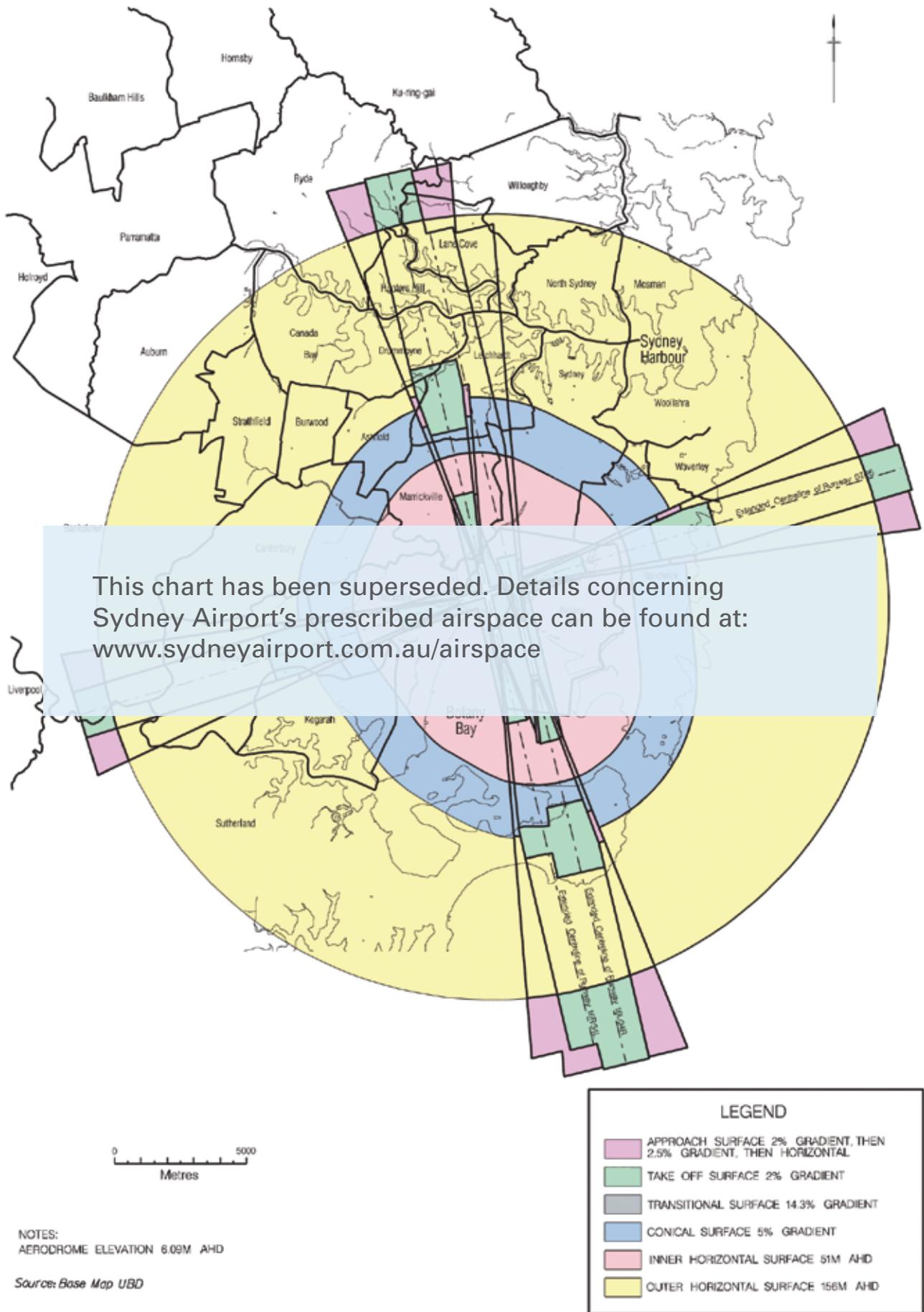


Figure 12.2
 Current and Future PANS-OPS
 Surfaces Basic ILS

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

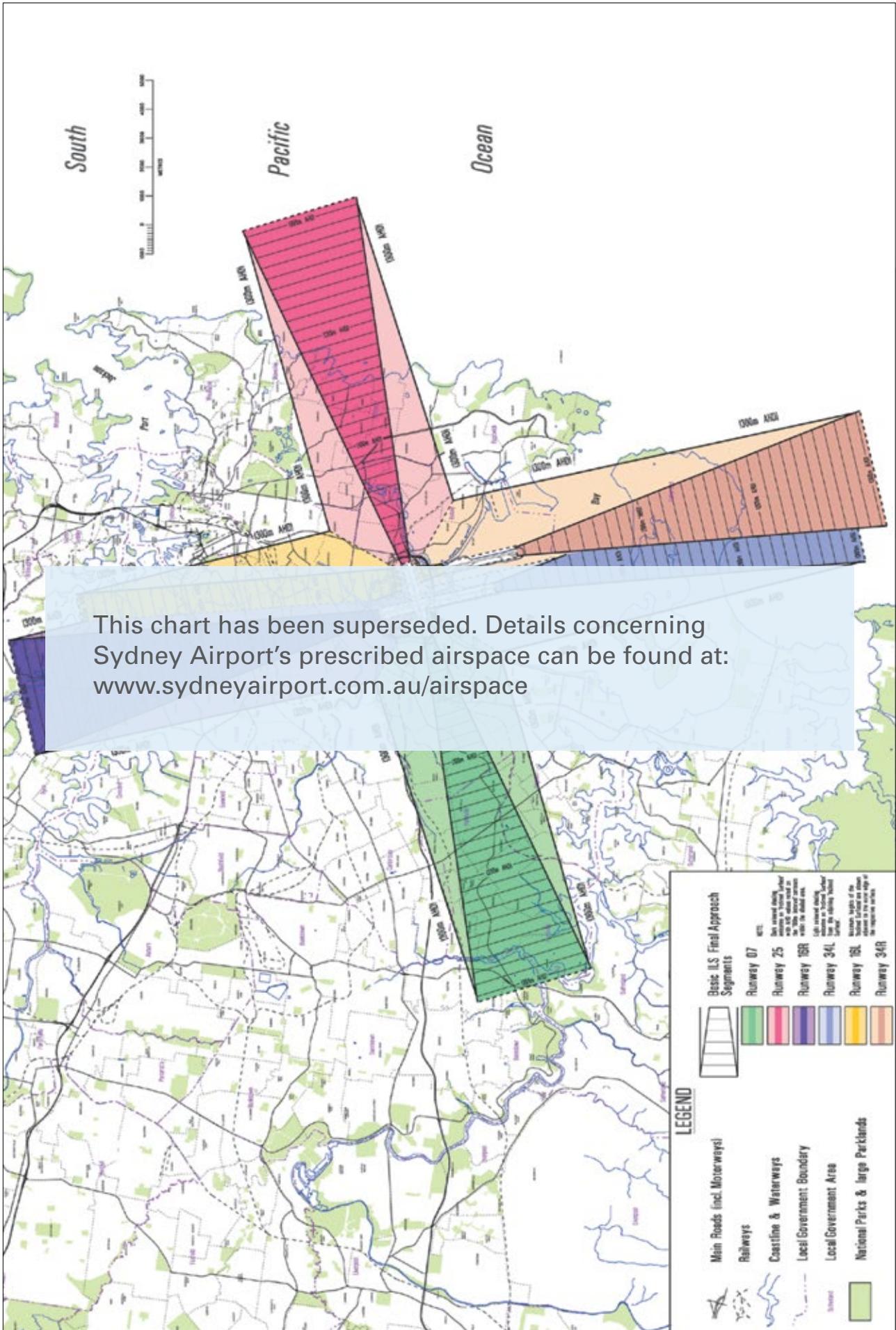


Figure 12.3
Current and Future PANS-OPS Surfaces
LLZ / DME Final Approach Segments

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

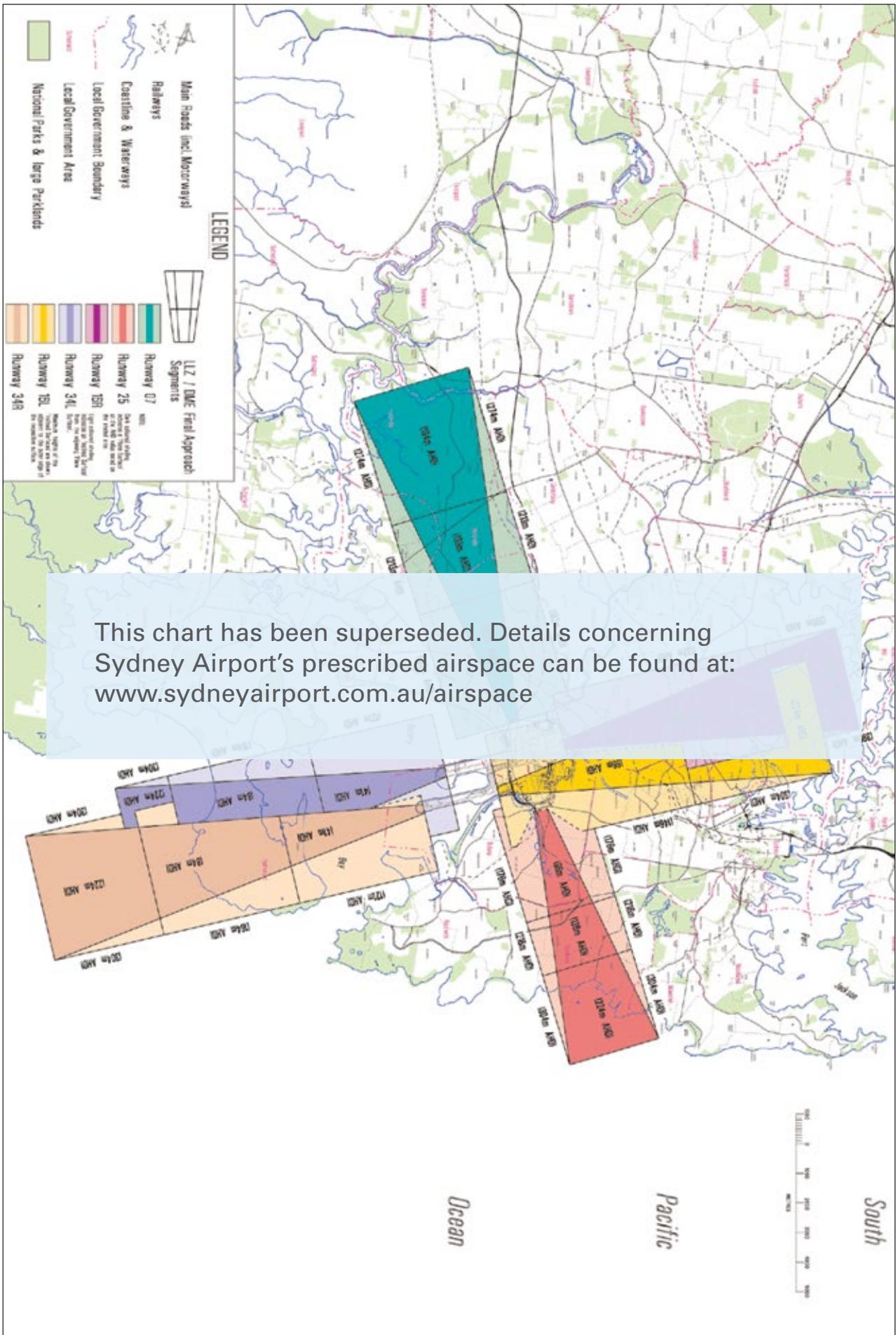


Figure 12.4
 Current and Future PANS-OPS
 Surfaces Circling Procedures

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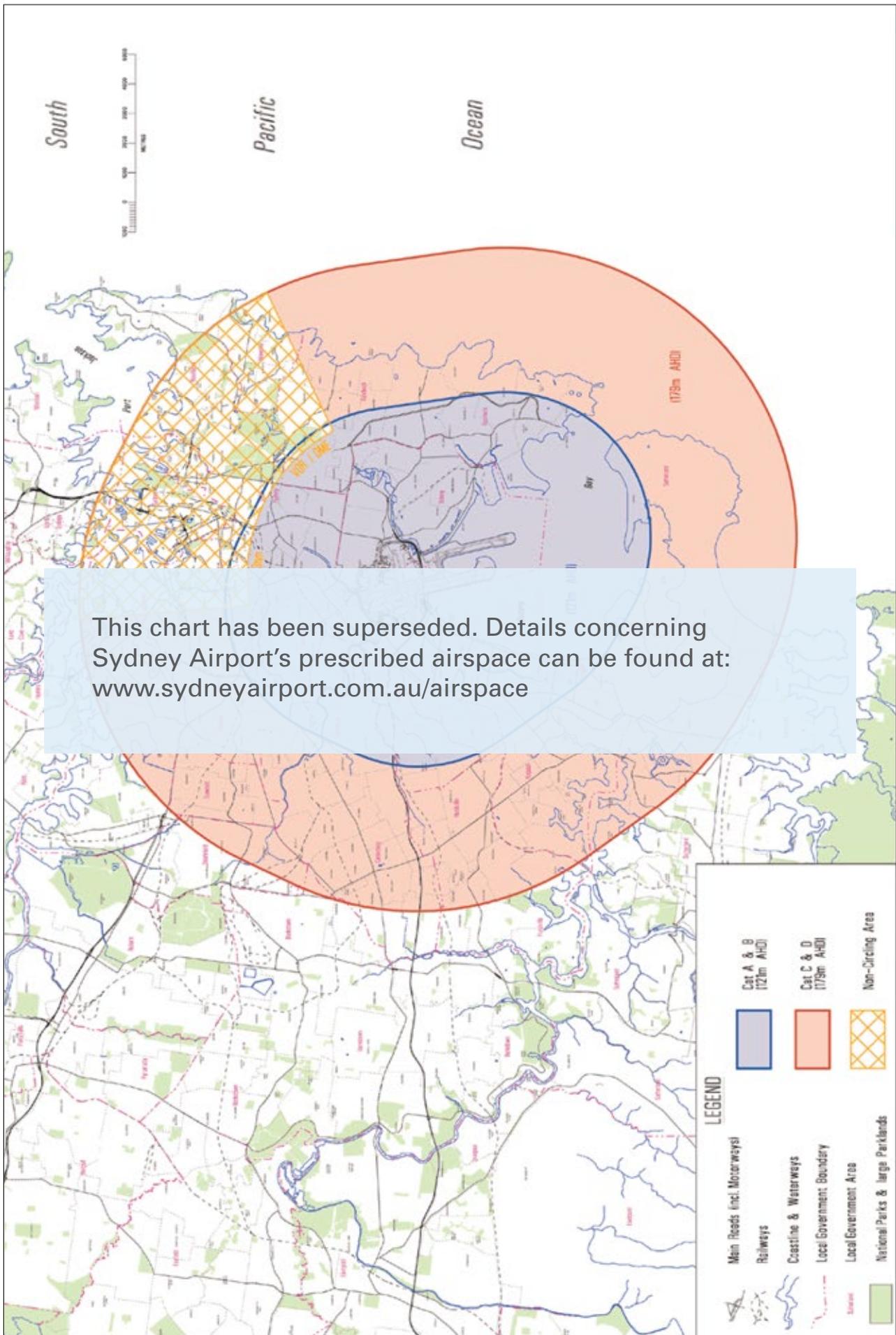


Figure 12.5
Current and Future PANS-OPS Surfaces
VOR / DME Final Approach Segments

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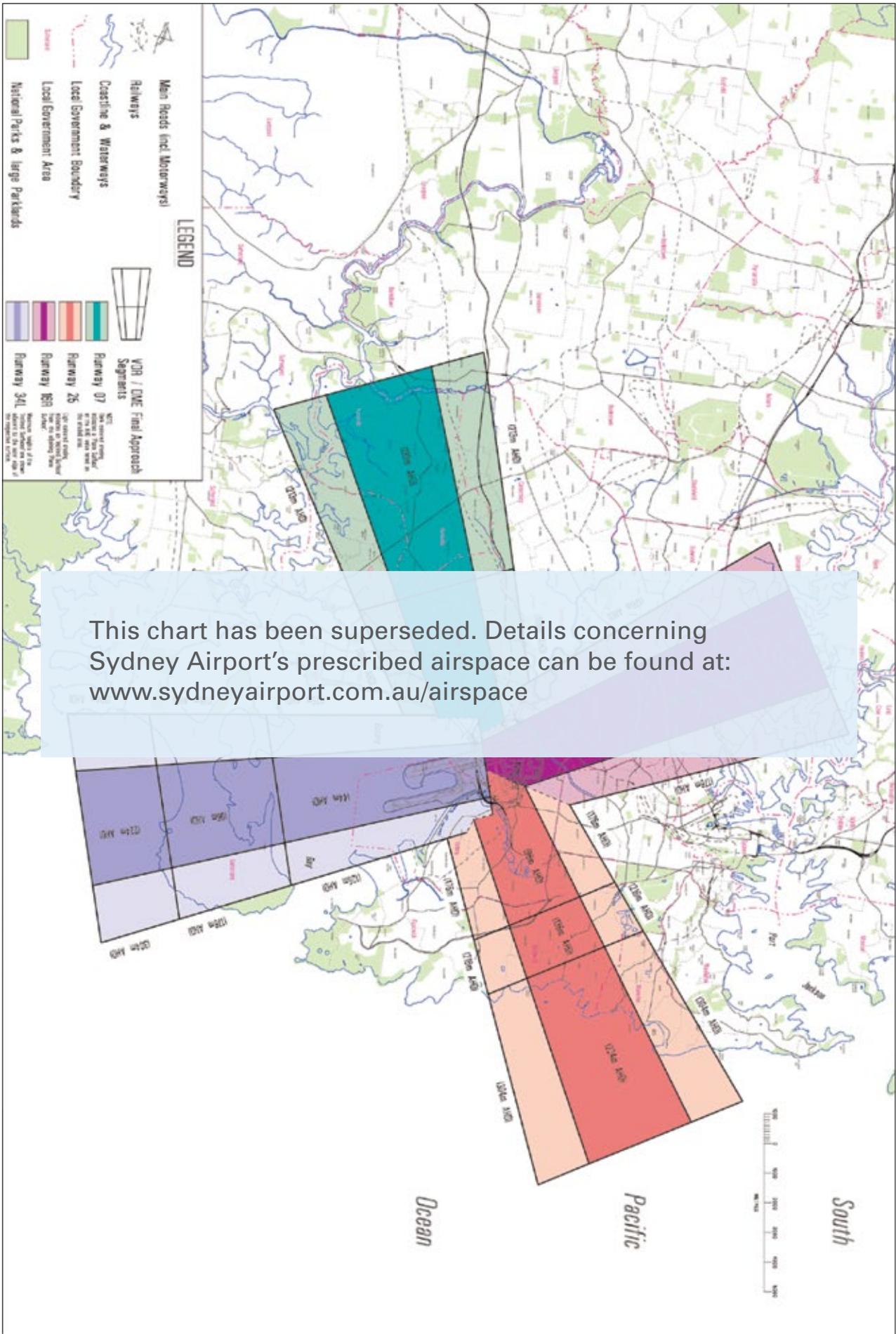
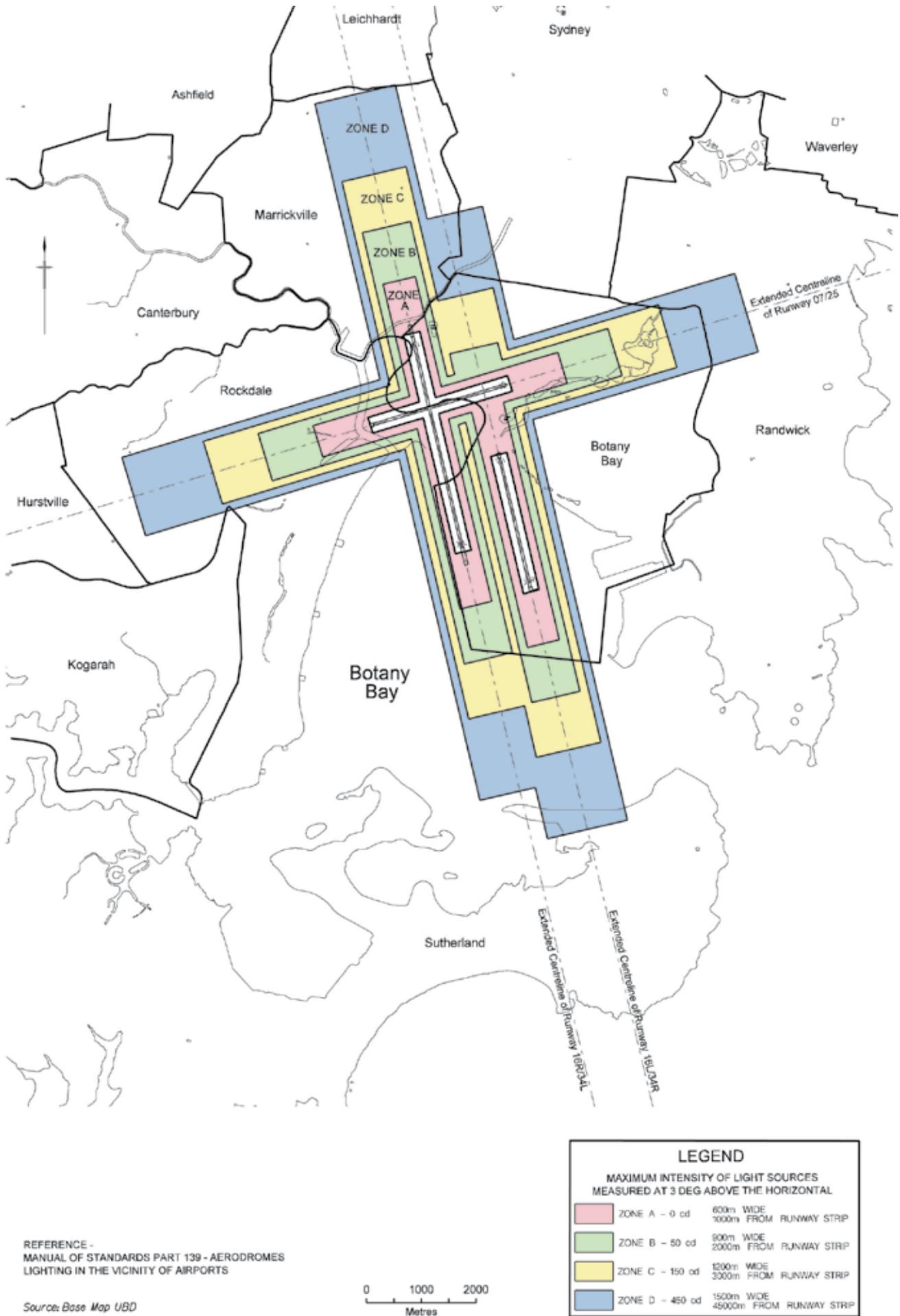


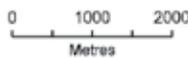
Figure 12.6
Current and Future Restricted Light Zones

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



REFERENCE -
 MANUAL OF STANDARDS PART 139 - AERODROMES
 LIGHTING IN THE VICINITY OF AIRPORTS

Source: Base Map UBD



LEGEND	
MAXIMUM INTENSITY OF LIGHT SOURCES MEASURED AT 3 DEG ABOVE THE HORIZONTAL	
■ ZONE A - 0 cd	600m WIDE 1000m FROM RUNWAY STRIP
■ ZONE B - 50 cd	900m WIDE 2000m FROM RUNWAY STRIP
■ ZONE C - 150 cd	1200m WIDE 3000m FROM RUNWAY STRIP
■ ZONE D - 450 cd	1500m WIDE 4500m FROM RUNWAY STRIP