

Section 3

Airport Planning Framework







13.0 Land Use Plan



13.1 Overview

The Land Use Plan in Master Plan 2039 has been prepared to provide the community, and all levels of Government with an understanding of future activities that could be located on different parts of the airport site. It has been prepared in accordance with section 70(2) of the Airports Act.

The Land Use Plan establishes a framework to guide future development of Sydney Airport, but does not lock in the future development outcomes. It must provide a degree of certainty for stakeholders and flexibility to allow investment and development decisions to be able to respond to changing economic conditions and market demands.

The Land Use Plan is generally consistent with Master Plan 2033; however there have been modifications to land use zones to reflect changes to the Airport Development Plan.

The land use zones identify a range of land uses and developments that are permissible in each of the six sectors of the airport. Objectives are provided to guide proponents, the airport and the Airport Building Controller (ABC) of the specific requirements for development in each zone.

13.2 Key Points

Land Uses at Sydney Airport are divided into eight zones:

- AD1 – Aviation Activity and Aviation Support Facilities
- AD2 – Airport Terminal and Support Services
- AD3 – Airport Logistics and Support
- AD4 – Utilities Reservation
- AD5 – Aviation Reservation
- BD1 – Business Development
- BD2 – Enviro-Business Park
- EC1 – Environmental Conservation

The Land Use Plan has many similarities to that set out in Master Plan 2033. Key changes include:

- Land zoned AD3 in the North East Sector, and part of the land in the North West Sector is proposed to be rezoned from AD3 - Airport Logistics and Support to AD2 - Airport Terminal and Support Services
- Land in the South East Sector is proposed to be rezoned from AD1 - Aviation Activity and Aviation Support Facilities to AD3 - Airport Logistics and Support and AD5 - Aviation Reservation
- Additional uses are proposed in the AD1, AD2, AD3 and BD2 zones to provide for greater flexibility of operations in accordance with the Airport Development Plan



Image 13-1: An exterior view of Sydney Airport's T1 International

13.3 Land Use Zones

Land use zones at Sydney Airport identify the desired and permissible land uses within the different sectors of the Airport. Each zone (shown on [Map 21](#)) has a list of objectives and permissible uses considered to be appropriate for that zone.

The area of Sydney Airport land located within each zone is provided in [Table 13-1](#).

Table 13-1: Area of Sydney Airport by Land Use Zoning

Land Use Zone	Approximate Area (ha)
AD1 - Aviation Activity and Aviation Support Facilities	558
AD2 - Airport Terminal and Support Services	190
AD3 - Airport Logistics and Support	47
AD4 - Utilities Reservation	0.1
AD5 - Aviation Reservation	39
BD1 - Business Development	30
BD2 - Enviro-Business Park	12
EC1 - Environmental Conservation	23
Sydney Airport Freehold Land	7
Total	907

13.3.1 Land Use Planning Framework

Section 71(6) of the Airports Act and Regulation 5.02(2) of the *Airports Regulations 1997* indicate that the Land Use Plan should where possible describe land use, zoning and development proposals in a master plan in equivalent details and using terminology consistent with NSW planning, zoning and development law. The Standard Instrument - Principal Local Environmental Plan (Standard Instrument LEP) provides the template for all LEPs in NSW, which prescribe the land use zones, and their permitted uses, for all local government areas in the State.

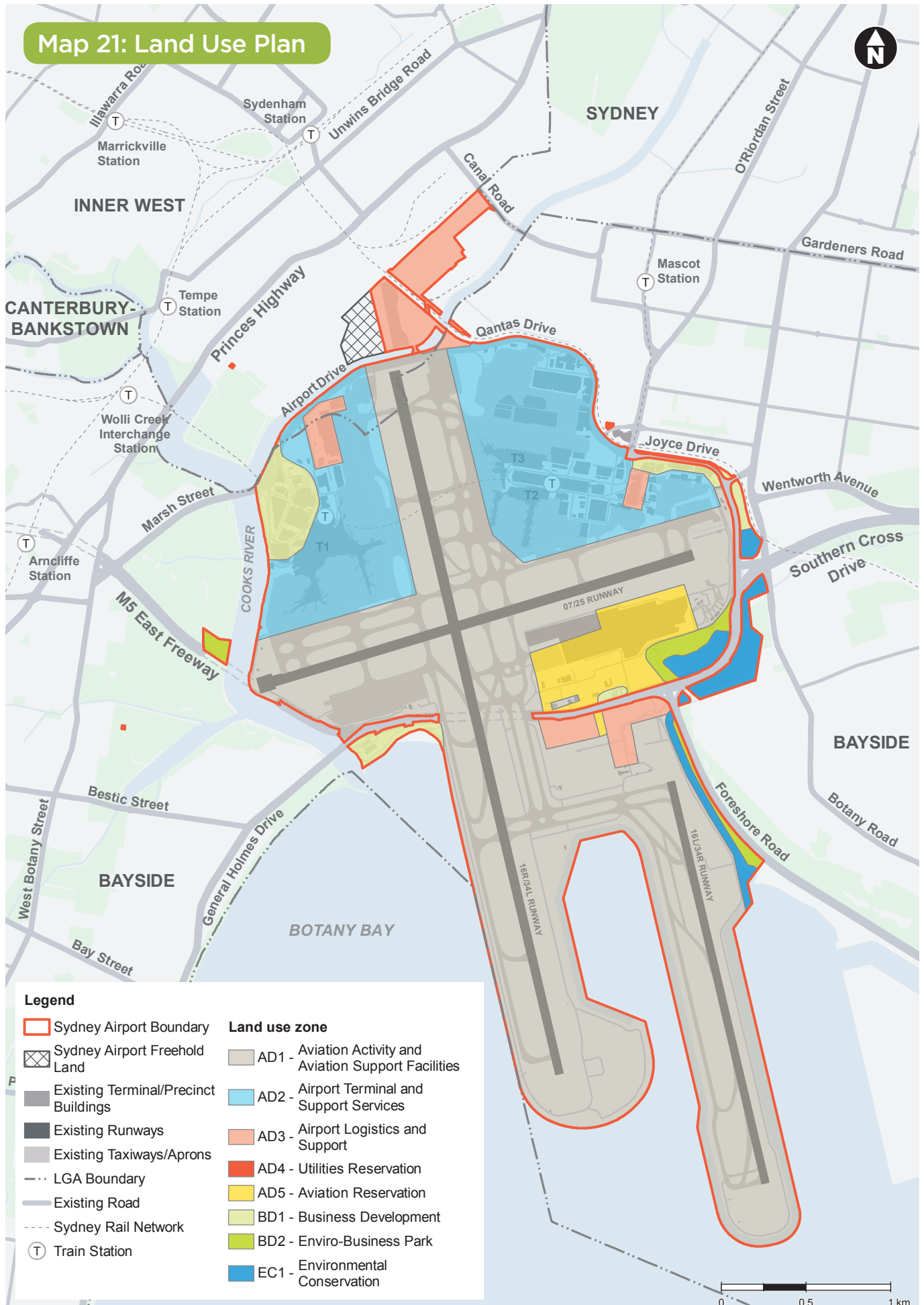
Therefore, where possible, the definitions, terminology and controls from the Standard Instrument LEP have been used for the Land Use Plan, recognising that there are uses proposed to be permitted which are not defined in the Standard Instrument LEP. Consistency with the NSW planning framework, including the Standard Instrument LEP, is detailed in [Appendix E](#).

Proposed development on the airport site is required to be permissible within the relevant zone and must have regard to the objectives of that zone.

Where there are inconsistencies between a current land use on the airport site and the permissible land uses specified for the zone, the current land uses may continue. Redevelopment of this use (including within the curtilage of the current use) shall be regarded as an existing and additional permissible form of development on those sites. This is addressed in more detail in [Appendix E](#).

For the freehold land holdings not subject to the Airports Act, which are approximately seven hectares in area, the NSW planning system applies, including zoning, permitted uses and assessment requirements in the Marrickville LEP (dated 2011).

Map 21: Land Use Plan



13.3.2 AD1 – Aviation Activity and Aviation Support Facilities

The AD1 - Aviation Activity and Aviation Support Facilities zone primarily caters for aviation activities to meet aviation requirements currently and over the planning period. This zone is located in the Runways, South East, and South West Sectors.

Aviation activity, airfield operations and air freight volumes provide the fundamental basis for the planning of airport facilities. In this regard, the Air Traffic Forecasts (see [Chapter 6.0](#)) and Airfield Development Plan (see [Chapter 9.0](#)) have significant influence on the land area required to be reserved for aviation activities and aviation support facilities. Approximately 558 hectares of land (representing 62 percent of the total area of Sydney Airport), is designated as AD1 to meet these operational requirements.

“Transfer corridor”, an existing defined term, has been added to the list of permissible uses in this zone as it is a use complementary to other uses in the zone. Refer to [Table 13-2](#) for the AD1 zone’s objectives and a full list of permissible uses in the zone.

Table 13-2: AD1 – Aviation Activity and Aviation Support Facilities

Objectives	Permissible Uses with Consent	
1. Protect the long term viability and operational efficiency of Sydney Airport for its primary aviation function.	Advertisement	Public administration building
2. Provide for aviation activities and aviation support facilities.	Advertising structure	Research station
3. Facilitate compatible and ancillary functions within the zone, provided that development does not render the land permanently unfit for aviation activities.	Aircraft maintenance facility	Road
4. Coordinate the orderly and economic use and development of land until such time as it is required for aviation activities or aviation support facilities.	Airside passenger holding facility	Service station
5. Ensure heritage items are appropriately considered and managed.	Aviation activity	Signage
	Aviation support facility	Takeaway food and drink premises
	Car park	Temporary structure
	Food and drink premises	Transfer corridor
	Freight handling and transport facility	Transport depot
	Liquid fuel depot and distribution facility	Utility undertaking
	Navigational aids	Warehouse and distribution centre
	Office premises	Works depot
	Parking space	
	Passenger transport facility	

13.3.3 AD2 – Airport Terminal and Support Services

The AD2 - Airport Terminal and Support Services zone applies to land in the North West and North East Sectors, specifically the:

- T1 International Operations Precinct
- T2/T3 Integrated Operations Precinct

Growth of international, domestic and regional air traffic will require ongoing upgrade and expansion of the passenger terminals and support activities (including landside access, car parking and utilities).

To accommodate the forecast growth in passengers, Master Plan 2039 proposes changes to the terminals and associated facilities (refer to **Chapters 6.0 Air Traffic Forecasts** and **8.0 Terminal Development Plan**). Accordingly, approximately 190 hectares has been designated as AD2 (about 21 percent of Sydney Airport).

This includes the proposed expansion of AD2 to incorporate part of the existing AD3 - Airport Logistics zone in both the North West and North East Sectors. This will provide flexibility for future developments, while still allowing current activities.

To support existing uses incorporated into the AD2 zone, it is proposed to include two additional permitted uses:

- Aircraft maintenance facility
- Transport depot

Developments to facilitate the provision of goods and services to meet the quality and standards that international, domestic and regional travellers have come to reasonably expect from a world-class airport, including restaurants, retail premises and take away food and drink premises are also permissible in this zone.

Refer to **Table 13-3** for the AD2 zone's objectives and a full list of permissible uses in the zone.

Table 13-3: AD2 – Airport Terminal and Support Services

Objectives	Permissible Uses with Consent	
1. Protect the long term viability and operational efficiency of Sydney Airport for its primary aviation function.	Advertisement	Office premises
	Advertising structure	Parking space
	Aircraft maintenance facility	Passenger transport facility
2. Facilitate development of contemporary passenger terminals and related facilities for the handling, transfer and processing of passengers that are capable of meeting the standards expected by international, domestic and regional travellers, as well as supporting the needs of Sydney Airport's workforce.	Amusement centre	Public administration building
	Aviation activity	Restaurant
	Aviation support facility	Recreational facility (indoor)
	Business premises	Retail premises
	Car park	Road
	Child care centre	Service station
	Convenience store	Shop
3. Provide for aviation activities and support facilities.	Entertainment facility	Signage
	Food and drink premises	Takeaway food and drink premises
4. Facilitate compatible and ancillary functions within the zone provided that development does not render the land permanently unfit for aviation activities.	Freight handling and transport facility	Temporary structure
	Function centre	Terminal
	Health Service facility (excluding hospital)	Tourist or visitor accommodation
5. Encourage employment opportunities.	Hotel or motel accommodation	Transfer corridor
	Kiosk	Transport depot
6. Ensure heritage items are appropriately considered and managed.	Liquid fuel depot and distribution facility	Utility undertaking
	Medical centre	Vehicle sales or hire premises
	Mixed use development	Warehouse and distribution centre
	Navigational aids	Works depot

13.3.4 AD3 – Airport Logistics and Support

The AD3 – Airport Logistics and Support zone applies to land earmarked for existing and potential future airport logistics and freight development within the North West, North East, South East and Northern Lands Sectors. Sydney Airport handles about half of Australia's international airfreight. To accommodate and support projected growth in airfreight, it is proposed that significant areas of AD3 zoning be allocated.

The Northern Lands Sector accounts for approximately 27 hectares, which is 57 percent of the total area of the AD3 zone. Part of the Northern Lands Sector will be used for the proposed Sydney Gateway connection, which will provide direct motorway access to the T1 and T2/T3 terminal precincts from St Peters Interchange.

Sydney Gateway will pass through Sydney Airport land to the north of the airport with connection points to existing Airport Drive near Link Road and to existing Qantas Drive near Lancastrian Road. New airside and landside links to the Northern Lands Sector will be facilitated with new roads and a bridge over Alexandra canal, Airport Drive and the existing railway.

These new airside and landside links will unlock opportunities for future freight development in this Sector as contemplated in the air freight development strategy.

Development to facilitate freight logistics operations as well as other ancillary uses identified in **Table 13-4** is permissible in this zone, including office space which is ancillary to any of the identified permissible uses.

Table 13-4: AD3 – Airport Logistics and Support

Objectives	Permissible Uses with Consent	
1. Protect the long term viability and operational efficiency of Sydney Airport for its primary aviation function.	Advertisement Advertising structure Aircraft maintenance facility Animal boarding or training establishment Aviation activity Aviation support facility Business premises Car park Freight handling and transport facility Hotel or motel accommodation, excluding any areas in the PSZ Industrial retail outlet Industry Light industry Liquid fuel depot and distribution facility Mixed use development Navigational aids Office premises, excluding any areas in the PSZ	Parking space Passenger transport facility Public administration building Research station Road Self-storage units Service station Signage Storage premises Takeaway food and drink premises Temporary structure Tourist or visitor accommodation, excluding any areas in the PSZ Transfer corridor Transport depot Utility undertaking Vehicle sales or hire premises Warehouse and distribution centre Wholesale supplies Works depot
2. Facilitate the development of freight services and airport logistics (and ancillary office space).		
3. Facilitate compatible and ancillary functions within the zone provided that development does not render the land permanently unfit for aviation activities.		
4. Ensure development is compatible, where practicable, with surrounding land uses in this area.		
5. Ensure heritage items are appropriately considered and managed.		

13.3.5 AD4 – Utilities Reservation

The AD4 – Utilities Reservation zone applies to three small portions of land (approximately 1,470 square metres in total) that are separated from the main Sydney Airport site, as shown on **Map 21**:

- One parcel adjoining the North East Sector
- One parcel near the Princes Highway, north west of the North West sector
- One parcel in Barton Park, south west of the M5 East Motorway

This zone reflects the current usage of the land. Development consistent with the provision of infrastructure, and the softening of the visual impact of such works, is permissible with consent in this zone, as outlined in **Table 13-5**.

Table 13-5: AD4 - Utilities Reservation

Objectives	Permissible Uses with Consent
1. Accommodate special uses off the airport site that are consistent and compatible with surrounding development and land use zones.	Advertisement Advertising structure Recreation areas
2. Ensure heritage items are appropriately considered and managed.	Road Utility undertaking

13.3.6 AD5 – Aviation Reservation

The AD5 – Aviation Reservation zone is reserved both for future aviation activities and aviation support facilities. Land will be incrementally released for aviation purposes over the next 20 years as required. However, until such time as the land is required for aviation activities or aviation support facilities, Master Plan 2039 will facilitate the highest and best use of the land.

The area designated for this purpose (approximately 39 hectares) has been informed by the operational requirements of the airport for the planning period, and represents four percent of the total airport site area.

There are a number of commercial activities that can be located on that land in the interim. We will pursue development strategies that allow for the necessary controls to ensure delivery of the aviation needs detailed throughout Master Plan 2039. This includes ongoing tenure reviews and the consideration and implementation of temporary and alternative uses.

Permissible uses within the zone are outlined in **Table 13-6**. The non-aviation land uses identified in this zone are essentially land uses that are permitted with consent on a short to medium-term basis.

Assessment requirements

Before development approval is granted within the AD5 zone for a use that is for non-aviation purposes, the consent authority must consider whether:

- The development of the kind being proposed will render the land unfit for aviation purposes
- Appropriate provisions are in place to ensure that the land can be vacated as it becomes needed for aviation activities or aviation support facilities

Such measures are to be documented in an application for development approval.

Table 13-6: AD5 – Aviation Reservation

Objectives	Permissible Uses with Consent	
1. Protect the long-term viability and operational efficiency of Sydney Airport for its primary function.	Advertisement Advertising structure Aircraft maintenance facility	Office premises, excluding any areas in the PSZ Parking space
2. Co-ordinate the orderly and economic use and development of land until such time as it is required for aviation activities or aviation support facilities.	Animal boarding or training establishment Aviation activity Aviation support facility	Passenger transport facility Public administration building Research station
3. Integrate compatible aviation, business and industrial activities in accessible locations.	Business premises Car park Convenience store	Restaurant Recreational facility (indoor) Retail premises
4. Facilitate the development of freight services and airport logistics (and ancillary office space).	Educational establishment, excluding any areas in the PSZ Food and drink premises Freight handling and transport facility	Road Self-storage units Service station Shop
5. Encourage appropriate employment opportunities in accessible locations.	Health Service facility (excluding hospital)	Signage Storage premises
6. Ensure that development will not render the land permanently unfit for aviation activities or aviation support facilities when it is required for these purposes.	Hotel or motel accommodation, excluding any areas in the PSZ Industrial retail outlet Industry Kiosk	Takeaway food and drink premises Temporary structure Tourist or visitor accommodation, excluding any areas in the PSZ
7. To ensure heritage items are appropriately considered and managed.	Landscape and garden supplies Light industry Liquid fuel depot and distribution facility Medical centre Mixed use development Navigational aids	Transfer corridor Transport depot Utility undertaking Vehicle sales and hire premises Warehouse and distribution centre Wholesale supplies Works depot

13.3.7 BD1 – Business Development

The BD1 – Business Development zone is dedicated to on-site business development, and applies to land within the North West, North East, South East and South West sectors of Sydney Airport where good access is available to the on-airport and external road network.

The operational requirements of Sydney Airport over the planning period of Master Plan 2039 have been adequately provided for in our Land Use Plan (refer to [Map 21](#)). Six locations totalling approximately 30 hectares in area, occurring primarily on the periphery of Sydney Airport, have been identified as surplus to aviation requirements.

This land has been reserved for the purpose of business development to:

- Provide employment opportunities in accessible locations
- Support the local workforce
- Locate suitable businesses along significant corridors

In designating this land for the purposes of business development, regard has been given to ground access issues contained in [Chapter 11.0 Ground Transport Development Plan](#). Generally, it is envisaged that development within the BD1 zone will be accessed via our internal road network, with existing access and egress points utilised where possible.

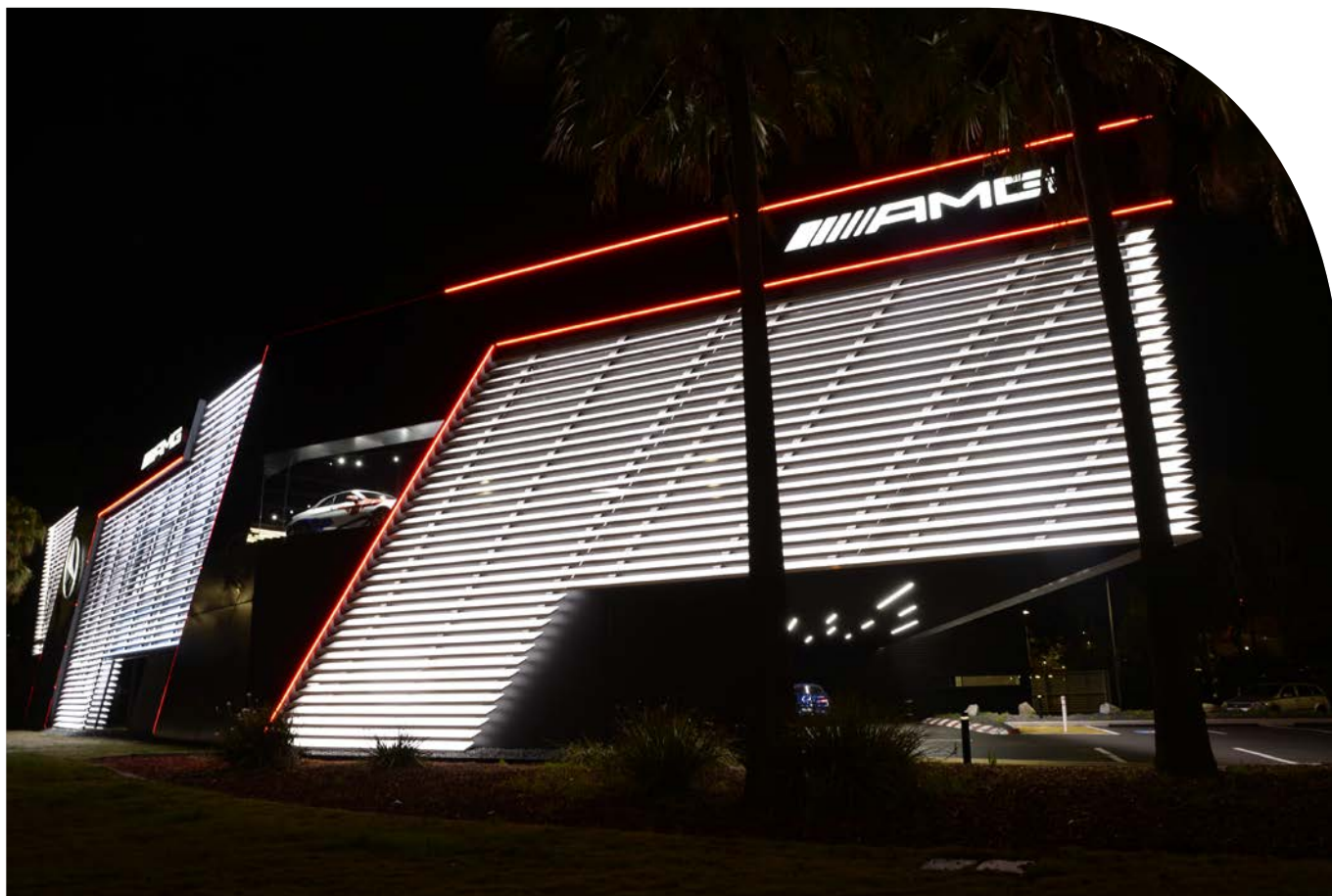


Image 13-2: The world-first AMG Performance Centre in the airport precinct.

The development of these areas for business purposes and resulting floor space will be restricted by operational aviation requirements in conjunction with physical constraints associated with development. Such constraints include:

- Air navigation services requirements
- Obstacle limitation surface (OLS) requirements
- Building height
- Building separation
- Landscaping
- Internal circulation areas and parking
- Access and egress points

Refer to **Table 13-7** for the BD1 zone's objectives and a full list of permissible uses in the zone.

Assessment Requirements

Before development approval can be granted within the BD1 zone, the consent authority must consider whether the development of the kind being proposed will not adversely impact on any aviation activity or aviation support facility, either existing or proposed during the planning period.

Table 13-7: BD1 – Business Development zone

Objectives	Permissible Uses with Consent	
1. Enable a mix of business, retail and industrial uses in locations that are close to and that support the functioning of the Airport.	Advertisement Advertising structure Aviation activity Aviation support facility	Parking space Passenger transport facility Public administration building Recreation Facility (indoor)
2. Integrate suitable and compatible land uses in accessible locations so as to maximise public transport patronage and encourage active transport.	Bulky goods premises Business premises Car park Child care centre Convenience store Educational establishment Entertainment facility Food and drink premises Freight handling and transport facility Function centre	Research station Restaurant Retail premises Road Self-storage units Service station Shop Signage Storage premises Takeaway food and drink premises
3. Encourage employment opportunities and promote businesses along main roads.	Health Service facility (excluding hospital) Hotel or motel accommodation	Temporary structure Tourist or visitor accommodation
4. Enable a limited range of other land uses that will provide facilities and services to meet the day-to-day needs of the local workforce.	Industrial retail outlet Industry Kiosk Landscape and garden supplies Light industry Marina Medical centre Mixed use development Office premises	Transfer corridor Transport depot Utility undertaking Vehicle sales and hire premises Warehouse and distribution centre Wholesale supplies
5. Ensure heritage items are appropriately considered and managed.		
6. Maximise, where possible, the use of existing access and egress points to the on-airport road network.		

13.3.8 BD2 – Enviro-Business Park

The BD2 – Enviro-Business Park zone caters for environmentally sensitive business uses on land:

- Adjacent to and on the western side of Cooks River in the North West Sector
- Within sections of the environmentally significant Mill and Engine Ponds in the South East Sector
- Adjacent to Mill Stream in the South East Sector

The BD2 zone has an approximate area of 12 hectares, which represents approximately 1.3 percent of the area of Sydney Airport.

Development permitted in this zone is of a kind that is able to be consistent with the sensitivities of the environmental values of the land in this zone and on adjacent land. Development permissible in this zone must have no more than a minor impact on the environment, and requires a range of measures to ensure impacts on the locality are either avoided, reduced or minimised.

When any development is operational, it must not pose a significant risk to the health of the immediately adjoining biophysical environment. Any proposed development will be required to comply with the **Environment Strategy 2019-2024**.

The development of these areas for enviro-business purposes will be restricted by operational aviation requirements in conjunction with biophysical constraints associated with development.

Such constraints include:

- Air navigation services requirements
- OLS requirements
- Building height
- Building separation
- Landscaping
- Internal circulation areas and parking
- Access and egress points

It is proposed that 'Road' be added to the list of uses permitted with consent in this zone, as these are considered to be consistent with the uses anticipated within this zone, and meet the objectives of the zone.

Refer to **Table 13-8** for the BD2 zone's objectives and a full list of permissible uses in the zone.

Assessment requirements

Before development approval is granted within the BD2 zone, the consent authority must be satisfied that the development being proposed will not adversely affect Sydney Airport land or environmentally sensitive areas. The design, construction and operation of such developments will need to consider the proximity of the sensitive areas and investigate the incorporation of appropriate mitigating strategies, such as the provision of setbacks and reserves.

Table 13-8: BD2 – Enviro-Business Park

Objectives	Permissible Uses with Consent
1. Provide for a limited range of sustainable development, particularly for business purposes, that will not compromise the ecological, cultural or scientific value of this land or adjacent land including the Mill and Engine Ponds and the Mill Stream.	Advertisement Advertising structure Animal boarding or training establishment Business premises Child care centre
2. Ensure buildings achieve design excellence having particular regard to the surrounding natural and built environment and the associated sensitivities.	Earthworks or engineering works Environmental facility Environmental protection works Food and drink premises
3. Encourage appropriate employment opportunities in accessible locations.	Office premises Parking space
4. Enable a limited range of other land uses that will provide facilities and services to meet the day-to-day needs of the local workforce.	Recreation area Road Service station
5. Incorporate appropriate environmental management principles and controls into development proposals.	Sewage reticulation system Signage Takeaway food and drink premises
6. Ensure heritage items are appropriately considered and managed.	Utility undertaking Vehicle sales and hire premises

13.3.9 EC1 – Environmental Conservation

The EC1 – Environmental Conservation zone applies to land with environmental value within and adjoining the eastern part of the airport site, including the Engine Ponds, Mill Pond and Mill Stream. These waterways form part of the Botany Wetland System and the wider aquatic environment of Botany Bay.

The EC1 zone represents more than 23 hectares (2.5 percent) of the total airport site area.

As a result of the presence of the parallel runway in conjunction with tidal influences, the Mill Stream requires ongoing maintenance to control the accumulation of sediment and facilitate natural flow and flushing processes. Refer to **Table 13-9** for the EC1 zone's objectives and a full list of permissible uses in the zone.

Table 13-9: EC1 – Environmental Conservation

Objectives	Permissible Uses with Consent
<ol style="list-style-type: none">1. Protect the ecological and scenic values of the waterways in this area.2. Maintain the health and natural flows of the waterways.3. Enable maintenance dredging of the Mill Stream and related activities to maintain water depths and to ensure sediment accumulation is managed and controlled.4. Ensure heritage items are appropriately considered and managed.	<p>Advertisement Advertising structure Environmental protection works Kiosk Parking space Recreation area Road Signage Utility undertaking Waterway and foreshore management activities</p>

Assessment requirements

For the purposes of the EC1 zone, advertisements and advertising structures are to be erected only along the roadside.

Before development approval is granted within this zone, the consent authority must first be satisfied that the development of the kind being proposed will not adversely impact on neighbouring environmentally sensitive areas. The design, construction and operation of such developments will need to consider the proximity to the sensitive areas and investigate the incorporation of appropriate mitigating strategies, such as the provision of setbacks and reserves.



Image 13-3: Pied Stilts at Sydney Airport's wetlands.

13.4 Sensitive Developments

Under section 71A of the Airports Act, a draft or final master plan must identify any sensitive developments, which are defined below:

A sensitive development is the development of, or a redevelopment that increases the capacity of, any of the following:

- a. *a residential dwelling*
- b. *a community care facility*
- c. *a preschool*
- d. *a primary, secondary, tertiary or other educational institution*
- e. *a hospital*

A sensitive development does not include the following:

- a. *an aviation educational facility*
- b. *accommodation for students studying at an aviation educational facility at the airport*
- c. *a facility with the primary purpose of providing emergency medical treatment and which does not have inpatient facilities*
- d. *a facility with the primary purpose of providing inhouse training to staff of an organisation conducting operations at the airport*

No sensitive developments are planned to be located at Sydney Airport.

13.5 Consistency with NSW Planning Schemes

The Airports Act outlines that the objectives and proposed development within a draft or final master plan must address the extent of consistency with NSW planning schemes (section 71(6)). If the draft or final master plan is not consistent with these schemes, there must be justifications for such inconsistencies.

NSW legislation relating to land use planning, the relevant planning schemes subject to that legislation, and consistencies of Master Plan 2039 with these schemes is discussed in this section.

13.5.1 Environmental Planning and Assessment Act

The NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) and associated Regulations is the legislative instrument for land use planning in NSW.

Specifically in relation to Master Plan 2039, Parts 3 to 5 of the EP&A Act outline the preparation of environmental planning instruments (including State Environmental Planning Policies, and LEPs), development assessment, and environmental assessment procedures.

The objectives for Master Plan 2039 (refer to [Chapter 2.0 Vision for Sydney Airport](#)) are consistent with the objectives of the EP&A Act, which include encouraging:

- Proper management of natural and artificial resources for the purposes of promoting both the social and economic welfare of the community, and a better environment
- Promotion and co-ordination of the orderly and economic use and development of land
- Protection of the environment, including the protection and conservation of native animals and plants

13.5.2 Regional Planning Strategies

Sydney Airport is identified in the Greater Sydney Region Plan and the Eastern City District Plan, both of which have been prepared under the EP&A Act to guide the future planning of Sydney. These plans acknowledge that the airport is an important economic driver for the Sydney region, and the nation as a whole, and that protection of the site for its ongoing use as an airport, including its role facilitating freight, is critical. This includes ensuring land uses permitted around the airport site are complementary and will not threaten the viability of the operations at the airport.

13.5.3 State Environmental Planning Policies

State Environmental Planning Policies (SEPPs) provide planning controls for areas and/or types of development that are considered to be of State and regional significance to NSW. SEPPs are administered by the Minister for Planning as statutory environmental planning instruments that require consideration in the development assessment and environmental assessment process.

Master Plan 2039 has given regard to the SEPPs (including Sydney Regional Environmental Plans now deemed to be SEPPs) that would apply to Sydney Airport if it were governed by NSW legislation (refer to [Appendix E](#)).

Master Plan 2039, including proposed land uses and the process for gaining approval for development at Sydney Airport, are generally consistent with the provisions of these SEPPs.

13.5.4 Local Environmental Plans

LEPs are required to be prepared for all local government areas (LGAs) within NSW. They identify:

- Zones for land covered by an LEP
- Types of development that are allowed in each zone
- Development standards and controls for the consideration of development on land covered by the LEP

Sydney Airport is located within two local government areas: Bayside Council and Inner West Council. These councils were created in 2016 following council amalgamations in NSW. As the LEPs for each of the amalgamated councils have yet to be revised to reflect the amalgamated council boundaries, the existing LEPs remain in place.

The LEPs that include land within the Airport site are:

- Botany Bay LEP (2013)
- Marrickville LEP (2011)
- Rockdale LEP (2011)

A summary of each LEP is included in [Appendix E](#).

13.6 Land Use Zones for Land Not Subject to the Airports Act

There are two parcels of land located within the Northern Lands Sector owned by Sydney Airport and used for airport operations, which are not subject to the Airports Act (not being Commonwealth-owned land).

These parcels of land are subject to the NSW planning system. **Table 13-10** identifies these parcels of land and their land use zone according to the relevant environmental planning instrument.

13.7 On-Airport Development Approval Process

To ensure that the future development of Sydney Airport is undertaken in a manner that is sustainable and minimises environmental impacts, a rigorous development assessment process has been established to enable us to comply with our obligations under the *Airports (Building Control) Regulations 1996*.

All development proposals are subject to a planning and environmental impact assessment carried out or overseen by us. This process ensures that the Master Plan 2039, **Environment Strategy 2019-2024**, Airports Act and the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) are considered before granting a development approval.

If the assessment indicates that a proposed development is likely to have a significant environmental impact or affects an area identified as environmentally significant in the Environment Strategy, a Major Development Plan (MDP) must be prepared.

Table 13-10: Land not subject to the Airports Act

Location	Relevant environmental planning instrument	Zoning	Area (Approximate)	Use
Land within the Northern Lands Sector (two parcels of land)	Marrickville LEP 2011	IN1 General Industrial	7.0 ha	Proposed for freight and logistics similar to AD3 zone in Master Plan 2039

13.7.1 Major Airport Development

Major Airport Development is defined in Section 89 of the Airports Act. This includes (but is not limited to) the following forms of development:

- Constructing a new runway or extending the length of a runway
- Constructing a new taxiway or extending the length of a taxiway where the construction significantly increases the capacity of the airport and exceeds \$25 million
- Constructing a new building wholly or principally for use as a passenger terminal, where the building's gross floor space is greater than 500 square metres
- Constructing a new building wholly or principally for use as a passenger terminal, where the extension of the building's gross floor space is by more than 10 percent
- Constructing a new building where the building is not wholly or principally for use as a passenger terminal and the cost of construction exceeds \$25 million
- Development that is likely to have significant environmental or ecological impact
- Development of a kind that is likely to have significant impact on the local or regional community

For developments identified in Section 89, an MDP is to be prepared and is to include an environmental impact assessment to consider all potential impacts of the proposed development on the environment.

13.7.2 General development assessment

The *Airports (Building Control) Regulations 1996* require that carrying out a building activity, as defined in Section 98 of the Airports Act (described as a development in the Master Plan 2039), must have our written consent. Our written consent is based on a management process through which the following issues are identified and addressed:

- Stakeholder impact identification
- Infrastructure impacts
- Environmental impacts and management
- Current and future adjoining development interfaces
- Property and legal risk issues

In accordance with the Airports Act and *Airports (Building Control) Regulation 1996*, our written consent must also be accompanied by the consent of the ABC before works commence.

The Development Approval process is outlined in [Appendix E](#).



14.0 Environment



14.1 Overview

All major airports inevitably have some effect on the environment and local communities. Aircraft and ground-based noise and air emissions are a concern for local communities. Airport operations and development can either directly or indirectly generate carbon emissions and waste, consume water and energy, and affect local waterways, wildlife, biodiversity and heritage values.

Minimising these environmental impacts is essential for Sydney Airport to operate sustainably. Environmental management at the airport focuses on a cooperative, proactive approach with regulatory agencies, airport stakeholders and business partners working together to ensure that potential impacts of airport operations are avoided or minimised. We are committed to working with others to ensure that aviation plays its role in protecting the environment.

The industry's challenge is to retain the many positive economic and social benefits that aviation provides, including providing the global economy with the benefits of fast, reliable, safe and efficient connectivity, while reducing or eliminating its negative environmental impacts through the introduction of technological, operational and efficiency advances.

An objective for Master Plan 2039 is to continually improve environmental performance at Sydney Airport over the planning period in order to:

- Reduce the carbon footprint of the airport
- Ensure the airport is resilient to climate change
- Conserve items of natural, indigenous or heritage value
- Protect environmentally significant areas

The details of what we are intending to achieve in the first five years of the planning period are provided in the separate **Environment Strategy 2019-2024**, which is an addendum to Master Plan 2039.

14.2 Key Points

- Sydney Airport continues to work with the broader aviation community to ensure the airport operates in a way that is environmentally, socially and economically responsible
- In 2016, we achieved Level 3 Airport Carbon Accreditation. The airport has successfully reduced carbon emissions per passenger by over 27 percent (compared to a 2010 baseline) and is targeting a 50 percent reduction in emissions per passenger by 2025
- We have implemented a number of carbon reduction measures including:
 - Introduction of six new electric buses
 - Upgrade of terminal and apron lighting systems
 - Numerous demand management initiatives such as equipment upgrades and replacement
- As part of our commitment to addressing climate change, we have invested in on-site solar
- We are planning to invest in further carbon reduction opportunities, and renewable energy as part of Master Plan 2039, playing an active part in supporting the transition to a low-carbon economy
- A Climate Adaptation Plan has been developed to better inform decisions for ensuring a resilient airport
- The increasing number of quieter and more fuel-efficient next generation aircraft flying to Sydney Airport has resulted in lower air and greenhouse gas emissions and lower ground-based noise emissions per movement.
- We are working to minimise air quality and ground-based noise impacts associated with the airport operations, including initiatives such as:
 - Installation of FEGPU and PCA at all new terminal gates and remote apron aircraft stands
 - Continuation of background noise monitoring, modelling of new significant sources of noise and installation of a new air quality monitoring station
- A number of water saving initiatives have been implemented to minimise water usage, including expansion of the T1 recycled water treatment plant, which has kept potable water use per passenger at historically low levels
- A Heritage Management Plan has been prepared which recognises the:
 - Pressures on existing heritage items associated with continued growth of the airport
 - Need to conserve important heritage elements and to implement a strategic and holistic interpretation of the airport's history
- Major road and ground access improvements will include measures to increase pedestrian, cycling and sustainable transport connections to and from the airport
- Additional train services to the airport will make it more convenient to access for both passengers and staff
- A sustainable approach will be taken with development envisaged in Master Plan 2039, integrating innovative design features that deliver smarter environmental solutions while enhancing the passenger experience
- We have achieved a 4-Star Communities rating for Master Plan 2039 under the GBCA.

14.3 Environment within Master Plan 2039

Master Plan 2039 considers a 20-year planning period, as required by the Airports Act. As such, environment matters and management have been considered in the context of this timeframe, with more detail found in the separate [Environment Strategy 2019-2024](#), which is an addendum to Master Plan 2039.

This approach has been adopted to ensure that the Airport Development Plan takes a longer term view of development impacts on the environment. We are committed to ensuring that there is a continuous improvement in environmental management at the airport over the next 20 years.

A number of environmental achievements have and are being delivered to minimise the airport's effect on the environment and to ensure that the airport operates sustainably. These achievements will be built on through the implementation of new initiatives over the next five years.

In addition, to ensure that the future development of the airport is undertaken in a manner that is sustainable and minimises impacts on the environment, a rigorous development assessment process has been established to enable us to comply with our obligations under legislation and also meet our corporate objectives, which include a number of sustainability commitments (see [Chapter 4.0 Sustainability](#) for further detail). Environmental management initiatives have been developed to align with our achievement of a 4-Star Green Star Communities Rating.

14.3.1 Legislative requirements for environment

The legislative framework governing environmental management at the airport includes the:

- Airports Act
- *Airports Regulations 1997*
- *Airports (Environment Protection) Regulations 1997*
- EPBC Act

The Airports Act requires an airport master plan to specify a range of environmental matters including:

- An Environment Strategy [Section 71(2)(h)]
- Assessment of environmental issues that might reasonably be expected to be associated with the implementation of an airport master plan [Section 71(2)(f)]
- Plans for dealing with these environmental issues, including plans for ameliorating or preventing environmental impacts [Section 71(2)(g)]

DIRDC is the regulatory authority responsible for administering legislation at Sydney Airport. An Airport Environment Officer (AEO) has been appointed by DIRDC to oversee the implementation of environmental aspects of the legislation at the airport. As the airport lessee company, we also have a role in governing environmental management of airport tenants.

The Sydney Airport Environment Policy and the [Environment Strategy 2019-2024](#) are key documents for ensuring that the forecast growth and development of the airport envisaged in Master Plan 2039 are undertaken in an environmentally responsible manner.

14.3.2 Our environmental responsibilities

In accordance with the Sydney Airport Environment Policy, we recognise our responsibility in managing the airport in a sustainable manner. We are committed to the environmental principles of:

- Environmental protection
- Addressing climate change and sustainability
- Knowledge and awareness
- Continual improvement
- Community and stakeholder involvement
- Pollution control
- Compliance
- Systematic management

14.4 Environmental Management Framework

Environmental management at Sydney Airport is driven by a number of mechanisms including:

- Legislation
- Lease agreements
- International and Australian standards and programs
- Aviation industry standards
- Our vision, values and policies

In accordance with the principles of AS/NZS ISO 14001, we have an Environmental Management System (EMS). The cornerstone of the EMS is the Environment Strategy, which provides strategic policies, objectives and targets for environmental management of the airport within the EMS framework.

14.5 Summary of Environmental Achievements

Since Master Plan 2033 was approved in 2014, and in accordance with the *Sydney Airport Environment Strategy 2013-2018*, we have implemented many environmental initiatives. [Table 14-1](#) provides a summary of some of the key achievements during this time period. A more comprehensive list of achievements is provided in the [Environment Strategy 2019-2024](#).



Image 14-1: Wetlands at Sydney Airport

Table 14-1: Summary of environmental achievements, 2013 to 2018

Summary of recent environmental achievements

Environmental aspect	Initiative/achievement
 Sustainability and environmental management	<p>Sydney Airport has prepared the 2017 Sustainability Report which outlines our sustainability strategy that underpins the airport's strategic vision and establishes a number of targets and indicators for evaluating performance and driving continuous improvement.</p> <p>Sydney Airport has entered into partnerships with Conservation Volunteers Australia, Qantas and schools within Sydney and regional NSW to deliver sponsorships and innovative environmental education programs.</p>
 Climate change mitigation and adaptation	<p>Sydney Airport has introduced six new electric buses to replace diesel buses. The new electric buses will deliver carbon emission reductions, improve local air quality, lower noise levels and reduce waste fluids.</p> <p>Sydney Airport has developed a new Energy Savings and Carbon Reduction Plan including a detailed review of airport operations to identify existing and potential carbon reduction opportunities. Sydney Airport has investigated and/or implemented a number of energy savings measures in accordance with this plan including introduction of electric buses and development of a solar energy project. Between 2010 and 2017 Sydney Airport has delivered a reduction in carbon emissions per passenger of 27.2 percent.</p> <p>Sydney Airport implemented a Climate Risk Assessment and Adaptation Plan, which aims to evaluate strategies to manage climate change and sea level rise, and to ensure that risks are being appropriately managed on an ongoing basis. A flood study and lightning protection study are currently being undertaken under the Adaptation Plan.</p> <p>In 2016, Sydney Airport achieved and has since maintained Level 3 Airport Carbon Accreditation and continues to work to reduce its carbon footprint. Airport Carbon Accreditation is an internationally recognised certification system designed to recognise participating airports' efforts to manage and reduce their carbon emissions. Sydney Airport achieved its original carbon reduction target of 25 percent per passenger, well ahead of the target date of 2020.</p>
 Air quality	<p>In 2018, Sydney Airport has installed and commissioned a new air quality monitoring station and has commenced air quality monitoring on the airport site.</p> <p>Sydney Airport continues to facilitate discussions with Airservices and other key stakeholders on ways to minimise aircraft taxiing times, idling times and engine usage.</p> <p>Sydney Airport has installed a number of new facilities for the charging of electric GSE. Working in partnership with airlines and ground handlers, a number of charging units have been installed to provide power for electric tugs and other GSE. Sydney Airport has also introduced six new electric buses to replace diesel buses.</p>

Environmental aspect

Initiative/achievement



Ground-based noise

A number of noise impact assessments have been prepared for major development projects which include consideration of key noise sources from operations at the airport. Project specific noise management measures have been developed to mitigate noise impacts.

In 2016, Sydney Airport undertook noise monitoring in residential areas surrounding the airport which will provide a baseline for future noise assessments.

All T1 and T2 contact positions with aerobridges are now fitted with FEGPU and all T1 contact positions are fitted with PCA. Sydney Airport is currently developing a program to increase airline usage of FEGPU and PCA.



Ground transport

Sydney Airport is currently implementing major road and ground access improvements to the T1 and T2/T3 precincts. The works include measures to increase pedestrian, cycling and public transport connections to and from the airport which will have flow-on environmental benefits.

Sydney Airport continues to advocate for improvements to public and sustainable transport modes. In 2017, Transport for NSW provided an additional 200 train services per week to the airport, decreasing wait times and making it more convenient for staff and passengers to travel by train.



Water quality and water use

Sydney Airport has prepared a (draft) Stormwater Quality Management Plan which aims to improve the quality of stormwater leaving the airport site. Sydney Airport completes biannual stormwater monitoring on the airport.

The operation of the T1 Recycled Water Treatment Plant and implementation of a number of water savings measures has helped to realise a significant reduction in potable water use per passenger during the past decade. Potable water use for Sydney Airport remains at historically low levels.



Biodiversity

Sydney Airport developed a Wetland Management Plan and continued implementation of the Wetlands Enhancement Program which aims to improve the quality and function of the Sydney Airport Wetlands, which are a valuable asset for the airport, the local community and the environment. This includes carp control, weed control, native fish restocking and maintenance of revegetation works.

Surveys were undertaken to determine the presence of Green and Golden Bell Frog and Long-Nosed Bandicoot within the airport site, but none were identified.

On-going monitoring of wildlife (birds and bats) and periodic feral animal control was carried out within the airport site.

Environmental aspect

Initiative/achievement



Heritage

Sydney Airport has developed a Heritage Interpretation Strategy to assist in mitigating the heritage impacts associated with on-going development within the airport site. Under the strategy Sydney Airport has constructed a community facility for plane spotting enthusiasts (Sheps Mound) and is developing an on-line experience centre to recognise and celebrate the airport's heritage.

Sydney Airport has completed detailed archival recordings of all identified heritage elements within the airport site that have been impacted by development. The recordings were undertaken in accordance with applicable heritage guidelines.

Sydney Airport has prepared a (draft) Plan of Management to guide the ongoing management of the figs trees located near the Engine Pond.



Waste and resource recovery

Sydney Airport engaged specialist waste consultants to undertake a detailed waste audit and assessment across the airport. The review identified opportunities for improvement in recycling, recovery and waste minimisation. Sydney Airport is preparing an action plan to implement the findings of the review.

In 2015, Sydney Airport's waste contract was reviewed and the target for post collection recycling was increased from 25 percent to 30 percent. Sydney Airport recycling data continues to indicate that an increasing proportion of Sydney Airport's waste is being recycled rather than ending up as landfill.



Soil and land management

Sydney Airport has developed an Environment Protection Plan and implemented a proactive integrity testing program of its USTs and ASTs on the airport to ensure the early identification of any leaks and prevent the potential for soil and/or ground water contamination.

Sydney Airport has implemented a proactive groundwater monitoring program. Groundwater monitoring wells have been installed in the vicinity of all USTs, with ongoing groundwater monitoring to ensure the early detection of any leaks.

Sydney Airport continues to manage known and suspected contaminated sites in accordance with regulatory requirements and the contaminated sites strategy.

14.6 Key environmental matters for Sydney Airport

14.6.1 Overview

Key environmental matters associated with Sydney Airport's operations include:

- Climate change mitigation and adaptation
- Air quality
- Ground-based noise
- Water quality and water use
- Biodiversity
- Heritage
- Waste and resource recovery
- Soil and land management

For each of the key environmental issues, consideration has been given to the legislative requirements, current management practices and strategy for addressing such issues in the 20-year planning period of Master Plan 2039.

Specific details for each key environmental matter, including our five-year implementation strategy, are discussed in detail in the [Environment Strategy 2019-2024](#).

Other parts of Master Plan 2039 of relevance to environmental management include:

- [Chapter 4.0 Sustainability](#)
- [Chapter 7.0 Development Plan Overview](#)
- [Chapter 11.0 Ground Transport Development Plan](#)
- [Chapter 12.0 Utilities Development Plan](#)
- [Chapter 15.0 Aircraft Noise](#)

14.6.2 Climate change mitigation and adaptation

The Intergovernmental Panel on Climate Change Fifth Assessment Report¹ states with high confidence that Australia is already experiencing impacts from recent climate change, including a greater frequency and severity of extreme weather events. In the future, Sydney is expected to experience:

- An increase in frequency, intensity and duration of:
 - Extreme rain and flooding events
 - Extreme heat events
- An increase in time spent in:
 - Drought
 - Severe bushfire weather
- Rising sea levels and an increase in the impacts of coastal flooding events

In responding to climate change, there are two broad response strategies to which we are contributing:

- Mitigation of carbon emissions to reduce the rate of climate change
- Adaptation of infrastructure, systems and organisations to reduce the impacts of climate change

Carbon emissions

Most carbon dioxide emissions associated with aviation are as a result of in-flight emissions from aircraft. As well as emitting carbon dioxide, aircraft contribute to climate change by the formation of condensation trails and emission of nitrogen oxides that form ozone, a greenhouse gas, when emitted at cruise altitudes.

The best estimate of aviation's impact on climate change, given by IATA, is about three percent of the contribution from human activities. However, with airline travel becoming more popular in Australia and around the world, this contribution could possibly reach five percent by 2050.²

IATA recognises the need to address the global challenge of climate change and has adopted a set of ambitious targets to mitigate carbon dioxide emissions from air transport:

- An average improvement in fuel efficiency of 1.5 percent per year from 2009 to 2020
- A cap on net aviation carbon dioxide emissions from 2020 (carbon-neutral growth)
- A reduction in net aviation carbon dioxide emissions of 50 percent by 2050, relative to 2005 levels

¹ IPCC, *Climate Change 2014: Synthesis Report*, 2014.

² IATA and Carbon Offsetting Scheme for International Aviation, *Climate Change Targets*, 2009.

The aviation industry's challenge is to retain the many positive economic and social benefits that aviation provides while reducing its negative environmental impacts. Signing of the Global Aviation Industry Commitment to Action on Climate Change by aviation industry leaders was an important demonstration of the aviation industry's worldwide commitment to introducing technological, operational and efficiency advances that will reduce its contribution to climate change.

Energy and carbon strategy

As a signatory to the Global Aviation Commitment to Action on Climate Change, Sydney Airport has recently committed to a target of being carbon neutral by 2025.

In 2016, we achieved and have since maintained a Level 3 Airport Carbon Accreditation, which is an internationally recognised certification system designed to assess and recognise participating airports' efforts to manage and reduce their carbon emissions. As part of the accreditation process, Scope 1, 2 and 3 emissions from operation of the airport were calculated. The 2017 Scope 1 and 2 emissions results are summarised in the [Environment Strategy 2019-2024](#).

By 2017, we had exceeded our goal of reducing emissions per passenger by 25 percent by 2020, achieving over 27 percent reduction on the 2010 baseline, as shown in [Figure 14-1](#).

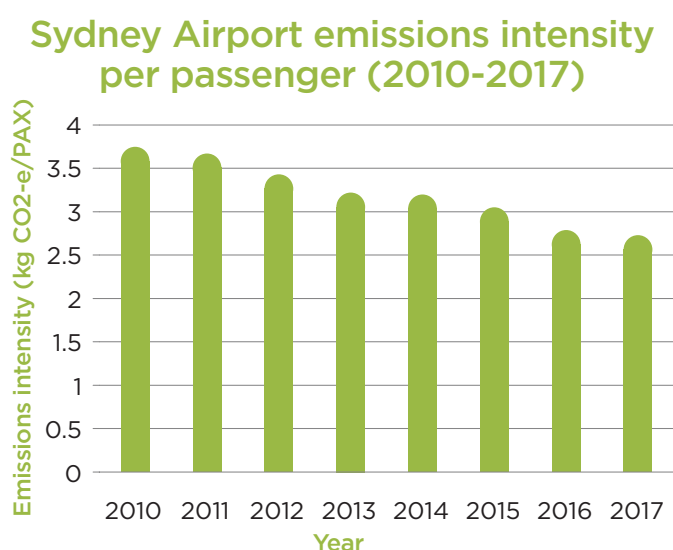


Figure 14-1: Sydney Airport emissions intensity per passenger, 2010 to 2017

A number of factors contributed to this achievement, including:

- Stable energy consumption (as a result of implementation of efficiency projects and improved energy management strategies), despite unprecedented growth in airport facilities
- Fuel switching initiatives, replacing diesel buses with electric buses
- Increased passenger numbers
- Reduction in the grid electricity emissions factor

A new target has been established, which is to achieve a 50 percent reduction in emissions per passenger by 2025. We continue to work on actions to reduce the carbon footprint of the airport.

In 2017, an Energy Savings and Carbon Reduction Plan was developed, which complements our Energy and Carbon Strategy and identifies new energy saving, greenhouse gas emission reduction and energy efficiency opportunities.

As electricity and natural gas consumption are the major sources of Scope 1 and 2 carbon emissions, they are a major focus in the Energy Savings and Carbon Reduction Plan. We will continue to develop and research further sustainable, cost effective energy initiatives, including the use of additional renewable energy such as solar.

Scope 3 emissions are divided into categories depending on the ability of an airport to control, guide or influence emissions. Surface access to the airport by staff and passengers is a major source of Scope 3 emissions; this issue is addressed in [Chapter 11.0 Ground Transport Development Plan](#).

Climate adaptation

The Sydney Airport Climate Risk Assessment and Adaptation Plan (Adaptation Plan) was completed in 2016. Key risks were identified as follows:

- Pressure on external utilities (electricity, water and sewerage) leading to supply interruptions and/or increased costs
- Operational disruptions from airfield flooding, surface failures, subsidence and drainage issues in extreme rainfall events
- Inundation of critical systems, buildings and infrastructure leading to operational disruptions
- Inundation of access roads to the airport not controlled by the airport

A flood study is currently underway to better understand the specific risk of inundation at the airport. This will include hydrologic modelling of future climate change scenarios and will also consider the potential impacts of major projects currently planned or under construction in the vicinity of the airport. This study will inform specific actions needed to minimise flood risk from extreme rainfall events and coastal flooding.

Climate change and energy use – Our 20-Year Response

We will continue to manage carbon emissions and the potential impacts of climate change by implementing the strategies and initiatives summarised below:

- Drive improved performance through the setting of targets to reduce carbon intensity and energy use
- Continue to identify and implement cost effective energy efficiency and saving opportunities
- Invest in renewable energy and new technology that improves environmental efficiency
- Participate in appropriate accreditation and rating schemes which provide the framework and mechanisms to guide and achieve sustainable development and initiatives
- Implement the Adaptation Plan, ensuring this Plan evolves in response to new science, new global, Australian or aviation policies and new information such as the flood study currently underway
- Work with business partners and service providers to identify airfield efficiency opportunities, to better manage airport wide carbon emissions
- Embrace new technology, e.g. electric vehicles, automated vehicles



Image 14-2: A wind sock located airside at the airport

14.6.3 Air quality

Our objective for air quality is to minimise air emissions from ground-based airport operations and activities.

The types of activity that result in air pollutant emissions at airports are identified in the *National Pollutant Inventory Emission Estimation Techniques for Airports*³. These activities generate emissions via fuel combustion or evaporation. Ground-based activities that generate emissions at Sydney Airport include:

- Aircraft main engines
- Aircraft auxiliary power units (APUs)
- Aircraft ground support equipment and other airside vehicles
- Tests on aircraft engines and APUs
- Landside road traffic, including parking facilities
- Heat-generating plant
- Emergency power generators
- Fuel storage and distribution
- Solvent use during aircraft maintenance
- Fire training

Other contributors to overall emissions in the area surrounding the airport include major roads and motorways, Port Botany (from container ship, rail and heavy truck movements) as well as petrochemical and heavy industries located in the Randwick-Botany Industrial Complex.

The Australian National Pollutant Inventory (NPI) provides information on air pollutant emissions within the Sydney-Wollongong-Newcastle airshed from industrial and mobile sources for 2015/16. As shown in **Table 14-2** the emissions from the airport in 2016 were compared with the NPI data for the airshed in 2015/16. Emissions from the airport represent less than one percent of total emissions within the airshed.

Table 14-2: Sydney Airport emissions compared with emissions in Greater Sydney, Newcastle and Wollongong

Pollutant	Emissions in Sydney-Wollongong-Newcastle (NPI data for 2015/16) (tonnes per year)	Emissions from Sydney Airport in 2016 ^(a) (tonnes per year)	Emissions from Sydney Airport in 2016 (% of NPI for airshed)
CO	670,000	2,942	0.44
NOx	710,000	3,553	0.50
PM10	960,000	251	0.03
SO2	970,000	94	0.01
VOC	99,000	463	0.47

Sources:

(a) NPI: www.npi.gov.au

Air pollutants of concern for the airport include:

- Carbon monoxide (CO)
- Volatile organic compounds (VOC)
- Oxides of nitrogen (NOx)
- Oxides of sulphur (SOx)
- Particulate matter (PM10 and PM2.5)

A summary of predicted emissions of these pollutants to air from the different types of activity at Sydney Airport (based on modelling for the years 2016, 2024 and 2039) is shown in **Figure 14-2**.

In addition to the quantification of air emissions, we also undertake facility-wide atmospheric dispersion modelling of our operations. This work has been completed using the US Federal Aviation Administration's (FAA) Aviation Environmental Design Tool (AEDT). AEDT is a modelling tool that allows us to understand the contribution of our activities to local air quality. This analysis is used to inform key priorities for air quality management, and focus our air quality monitoring program to provide a targeted understanding of the influence of our operations on ambient air quality.

We are committed to reducing emissions associated with ground-based airport activities and to improving local air quality. We are actively supporting the introduction of quieter and more fuel-efficient next generation aircraft by investing in upgrades to the airfield and terminal infrastructure.

Fuel efficiency of aircraft has significantly improved over recent decades, resulting in lower air and greenhouse gas emissions. Fuel efficiency is expected to improve further with the introduction of next generation aircraft such as the A380, B787 and A350 XWB.

We have implemented a number of air quality improvement measures outlined in Environment Strategy 2013-2018, including fitting terminal gates and some remote apron aircraft stands with FEGPU, PCA and introducing six new electric buses to replace diesel buses. We also actively support increased use of sustainable transport modes such as public transport and active transport to minimise airport traffic related emissions.

As part of our commitment to improving local air quality, we have recently installed a new air quality monitoring station and have commenced air quality monitoring within the airport boundary.

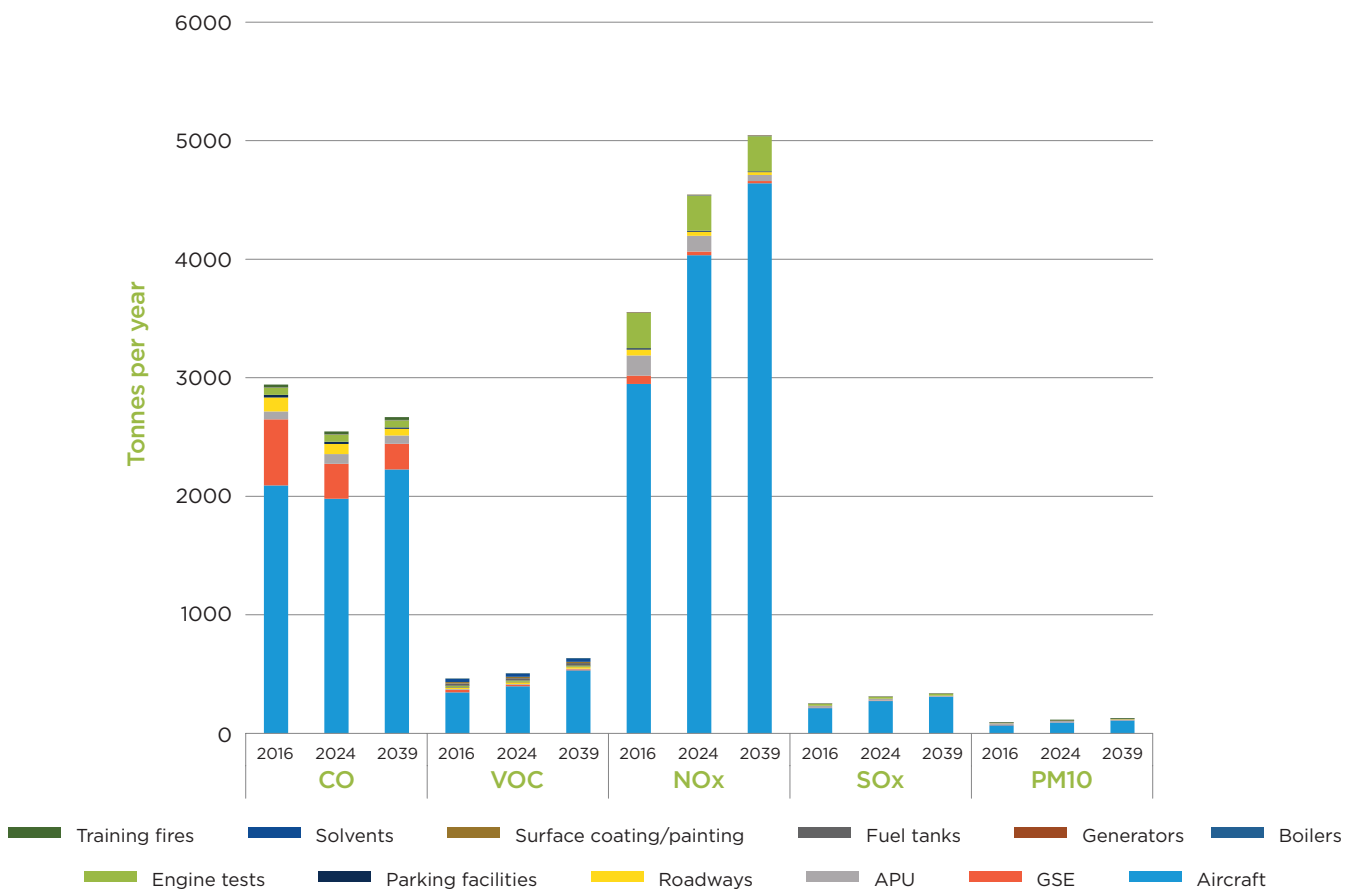


Figure 14-2: Predicted emissions to air from Sydney Airport's operations (2016, 2024 and 2039)

Air Quality – Our 20-Year Response

Impacts on local air quality may occur as a result of proposed new developments, particularly those that facilitate new and additional aircraft operating areas such as hangars, gates and aprons.

We will continue to manage and reduce potential impacts on air quality by implementing the following strategies and initiatives:

- Monitor and measure air quality through the onsite monitoring station
- Develop an airport wide air quality management strategy
- Provide infrastructure that facilitates quieter and more efficient next generation aircraft
- Ensure FEGPU and PCA is provided at all new gates and at remote aircraft stands
- Work with airlines to reduce the use of APUs and diesel fuelled equipment
- Work with our business partners and service providers to identify airfield efficiency opportunities to minimise emissions to air
- Investigate the best approach to provide infrastructure and utilities to support electrification of GSE and vehicles across operations
- Ensure that potential air quality impacts are assessed and managed for the construction and operational phases of development proposals
- Implement the tenant management strategy and ensure tenants include air quality management in their Environmental Management Plans (EMPs)
- Encourage staff and passengers travelling to and from the airport to use public transport or other sustainable modes of transport
- Actively engage with aircraft manufacturers and research bodies to gain an improved understanding of aircraft emissions and the options available to reduce emissions

14.6.4 Ground-based noise

Noise from ground-based activities at Sydney Airport is managed separately from noise from in-flight aircraft operations. The *Airports (Environment Protection) Regulations 1997* provide guidelines for ground based noise. Aircraft noise is discussed in [Chapter 15.0 Aircraft Noise](#).

Ground-based noise is generated from a number of sources on the airport including:

- Road traffic
- Construction and development activities
- Operation of audible alarm and warning systems
- Operation of plant and equipment
- Taxiing aircraft
- Ground running of aircraft engines
- Operation of aircraft APUs

Engine ground running, which is an essential part of aircraft operations and maintenance, is regulated by a policy that includes a comprehensive set of operational rules designed to maintain safety levels, comply with relevant standards and practices, and minimise noise impacts on areas surrounding the airport site boundaries. We are committed to implementing those rules and minimising complaints from ground-based noise.

The increasing number of next generation aircraft flying to Sydney during the planning period is expected to reduce the need for high-power engine ground runs. It is considered that this will help minimise ground-based noise impacts on areas around Sydney Airport.

Ground-based noise from developments at the airport, such as new or expanded aircraft aprons or ground access improvements, is assessed during the development approval process. Where appropriate, management measures are proposed to mitigate potential noise impacts. Noise impacts associated with construction activities are also assessed during the development approval process. In recent years we have completed updated noise monitoring of background noise in residential areas surrounding the airport site which will be used to provide a baseline for future noise assessments.

Over the past five years, we have implemented a number of measures to reduce ground-based noise. All T1 and T2 contact positions with aerobridges are now fitted with FEGPU. PCA is also fitted to contact positions at T1. FEGPU and PCA are a quieter alternative to APUs, which are a known source of ground-based aircraft noise. We continue to encourage increased airline usage of FEGPU and PCA.

Areas of new residential and mixed use development have occurred or are proposed in areas surrounding the airport site, such as at Mascot, Wolli Creek, Arncliffe and Cooks Cove. The encroachment of residential development has the potential to reduce the criteria for ground-based noise at the airport, resulting in increased mitigation and/or a restriction on future allowable ground-based noise sources.

We will continue to monitor residential development in areas surrounding the airport and will liaise with the NSW Government and local councils to advocate that these developments only occur in suitable locations and achieve appropriate standards for noise insulation.

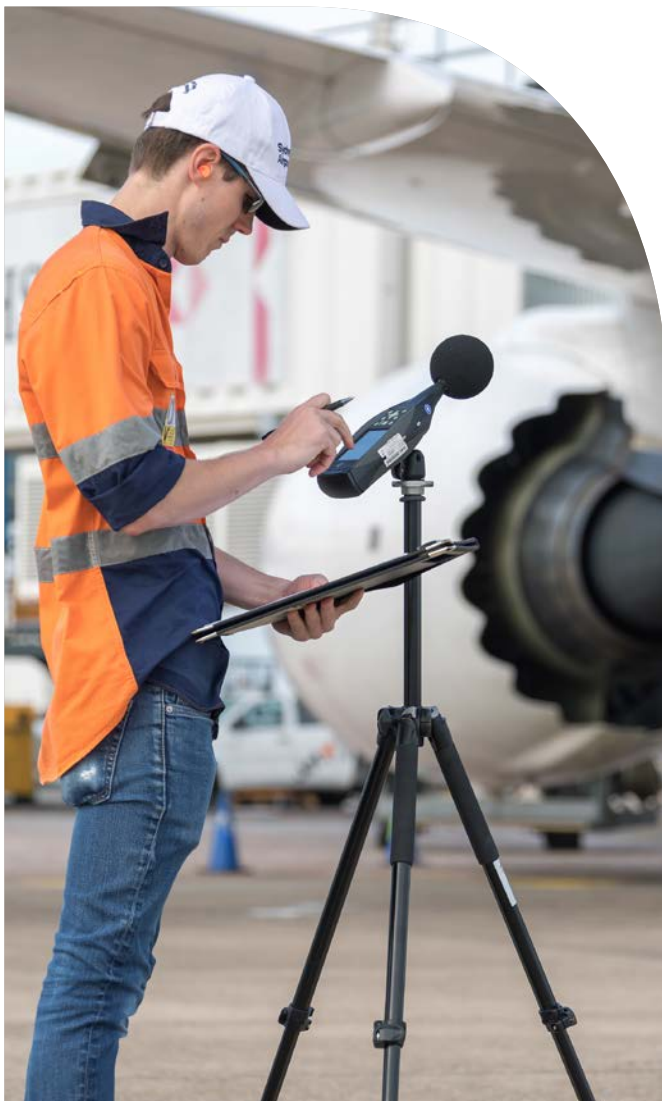


Image 14-4: Completing ground-based noise monitoring at Sydney Airport

Ground Based Noise – Our 20-Year Response

New developments have the potential to increase the level of ground-based noise at the airport, particularly developments that facilitate new aircraft operating areas such as hangars, terminal gates and aprons. Ground transport and construction noise may also result in impacts beyond the boundary of the airport.

We will manage and reduce potential impacts associated with ground-based noise by implementing the strategies and initiatives summarised below:

- Review the proposed hangar, terminal, aircraft bay and apron layouts (particularly in the North East and South East sectors of the airport) to ensure that noise reduction strategies are considered at the planning and design stage
- Develop a tool to enable cumulative ground-based noise modelling for the airport site to better manage the overall noise footprint of the airport to be determined and to inform noise management strategies
- Monitor residential developments proposed in the vicinity of the airport site to ensure that they will not unreasonably compromise the ongoing operations of the airport
- Liaise with the NSW Government and local councils to ensure developments in the vicinity of the airport achieve appropriate standards for noise insulation
- Continue to undertake regular monitoring of ground-based noise sources at the airport
- Provide infrastructure that facilitates cleaner, quieter and more efficient next generation aircraft
- Ensure FEGPU and PCA is provided at all new gates and at remote aircraft stands
- Continue to work with airlines to reduce the use of APU's and diesel fuelled equipment
- Continue to ensure that ground-based noise is assessed and managed for the construction and operational phases of development proposals
- Carry out ground-based operational noise modelling for major developments impacting airport operations, assess noise predictions against relevant criteria and develop appropriate noise management measures

14.6.5 Water quality and water use

Water quality

Sydney Airport is surrounded by waterways. Activities on the airport that have the potential to impact on the water quality of surrounding waterways include:

- Spills from aircraft servicing and maintenance
- Refuelling and washing activities
- Stormwater run-off from areas of construction and maintenance activities
- Bulk liquids and hazardous materials storage
- Fire training exercises
- Runway de-rubberisation
- Vehicle traffic to and from the airport
- Litter disposal
- Sewerage systems and pumping stations

To minimise the impact of airport operations on surface water quality in adjacent waterways, we work closely with airport tenants, operators and contractors to manage activities that have the potential to impact on water quality and continue to identify opportunities to improve water quality.

We have a number of mechanisms in place to manage water quality. These include:

- Passive filtration systems such as swales and vegetated garden beds to absorb pollutants and decrease runoff volumes
- Gross pollutant traps
- Detention basins to allow settlement of sediments and other pollutants before exiting the system
- Two dedicated spill response vehicles
- Provision of spill control kits on all aircraft parking aprons
- Pollution control flame traps on all aprons where aircraft refuelling or maintenance takes place
- Emergency stop gates on stormwater discharge points, particularly from aircraft refuelling areas
- Spill response and emergency response procedures

We regularly monitor the quality of water leaving the airport through stormwater channels and runoff to ensure stormwater management measures are treating stormwater as designed, and to monitor discharge to Cooks River, Alexandra Canal, Mill Stream and Botany Bay.

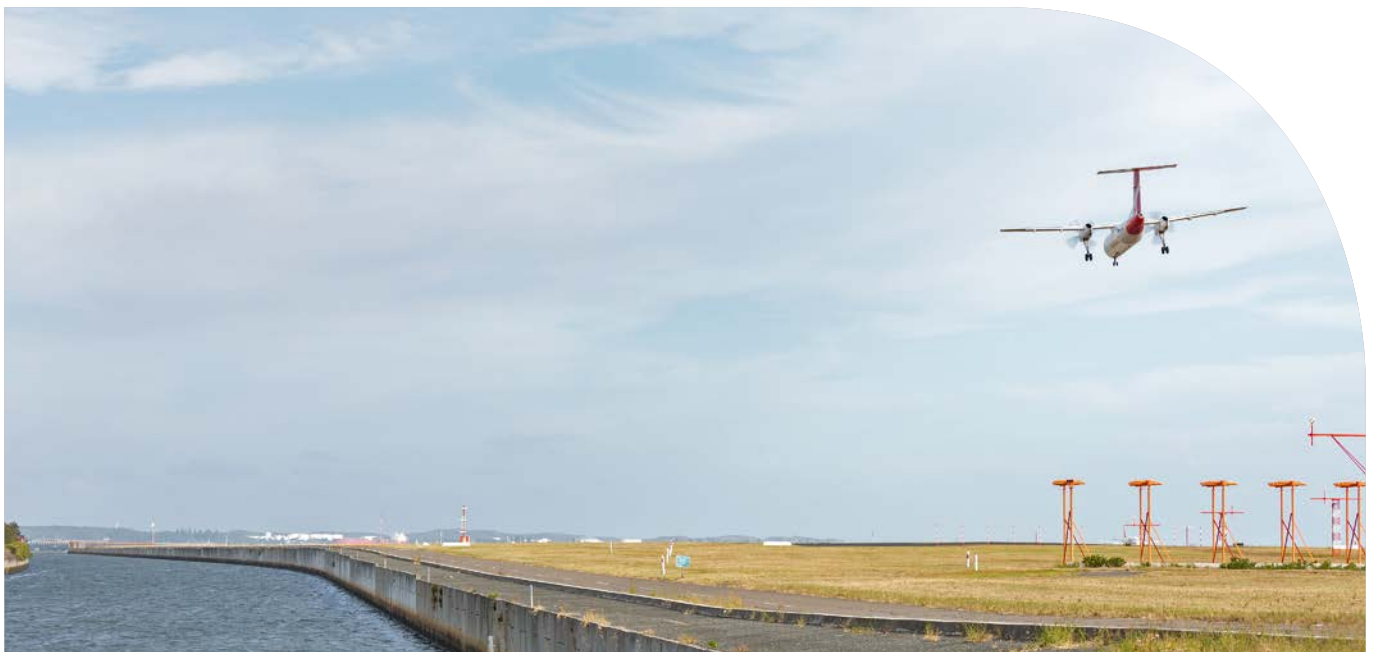


Image 14-5: Mill Stream at Sydney Airport

Water use

We are a major water user for NSW. Water use at the airport includes:

- Restroom and toilet facilities within the terminals
- Cooling towers (for air conditioning)
- Construction and maintenance activities
- Vehicle washing facilities
- Retail outlets

Sustainable water use and security/reliability of water supply are a priority, and we are committed to securing alternative non-potable water supplies across the airport where feasible and to reducing the total water consumed per passenger.

The T1 recycled water treatment plant was upgraded in 2017. Operation of the recycled water treatment plant has helped realise a significant reduction in potable water use per passenger during the past decade. The plant has a capacity of 960,000 litres a day and is delivering savings up to 600,000 litres of recycled water a day.

In addition to the recycled water treatment plant a number of water saving initiatives implemented over recent years include:

- Installation of water saving fittings in T1
- Replacement of a number of valves to stop water leaks and overflows
- Replacement of a number of pumps to reduce energy and water consumption
- Implementation of a new strategy to match supply with peak demand periods, which will result in reduced energy and water consumption
- Introduction of an after-hours toilet inspection program for the early identification and rectification of leaks

As a result of the upgraded recycled water treatment plant and the water savings initiatives listed above, potable water use per passenger remains at historically low levels.

Water quality and use – Our 20-Year Response

Continued growth of the airport as proposed in Master Plan 2039 will have implications for water use, stormwater, and the water quality of surrounding waterways.

We will improve the efficiency of water use and manage potential impacts on stormwater, groundwater and the water quality of surrounding waterways, by implementing the initiatives summarised below:

- Investigate the feasibility of developing a new recycled water treatment plant to provide recycled water to the T2/T3 precinct
- Investigate the feasibility of further expanding the capacity of the recycled water treatment plant in the North West Sector of the airport site to address increased demand for non-potable water
- Continue to implement cost effective water efficiency and saving opportunities
- Consider introducing water sensitive urban design and rainwater harvesting into new developments within the airport site as appropriate
- Consider the impacts associated with climate change (increased rainfall intensities and elevated sea levels) on the performance of the stormwater drainage network and level of flood protection at the airport site, and use this information to inform the design of proposed developments and associated stormwater infrastructure
- Continue to ensure that stormwater quality is considered for the construction and operational phases of development proposals
- Continue to develop, implement and review our management plans including the Stormwater Quality Management Plan and Wetland Management Plan
- Incorporate design features to reduce contaminant loads in stormwater such as gross pollutant traps and interceptors

14.6.6 Biodiversity

The natural environment and biodiversity of Sydney Airport and its surroundings has been significantly altered by development of the area. The majority of the land is now hardstand with few areas of native vegetation. While significant fauna habitats are limited, the Sydney Airport Wetlands, vegetated pockets and grassed areas provide an opportunity for a number of species to occur on the airport site including birds, reptiles, amphibian species, mammals and fish.

Previous surveys have been undertaken across the airport site for the Green and Golden Bell Frog and Long-Nosed Bandicoot, but no sightings were recorded. A number of fig trees located across the airport site may provide limited foraging habitat for the Grey-headed Flying-fox.

Several studies have documented the biodiversity values of the airport, with the most recent site wide assessment carried out in 2018.

The key area of natural biodiversity value for the airport is the Sydney Airport Wetlands – part of the Botany Wetlands – comprising:

- Engine Pond East
- Engine Pond West
- Mill Pond
- Mill Stream

This important environmental and historical resource is listed in the Directory of Important Wetlands in Australia and is considered an environmentally significant area under the Airports Act. We implement a management plan for the Sydney Airport Wetlands. The plan guides how we manage the wetlands to preserve and, where possible, enhance this area of the airport.



Image 14-6: Our environment team conducting water quality testing at Sydney Airport's wetlands

The ongoing implementation of our wetland enhancement program aims to increase the numbers of native fish species and, more generally, improve the quality and ecological function of the wetlands themselves. Initiatives completed under the program include:

- Installation of a fish ladder to enable fish passage from Botany Bay upstream into the wetlands, via the pond weir
- Installation of a gross pollutant trap to improve the quality of stormwater runoff into the ponds
- Exotic fish (carp) removal programs
- Revegetation works at Engine Pond East
- Native fish release programs
- Terrestrial and aquatic weeding

The presence of wildlife on or in the immediate vicinity of the airport site can create a hazard to aircraft operations. We regularly monitor fauna and implement management measures as required to maintain aircraft safety. Feral animal control for species such as foxes and rabbits is also carried out across the airport site periodically.

We work to ensure our biodiversity objectives are consistent and balanced with objectives for aviation safety.

Biodiversity – Our 20-Year Response

Development proposals within the South East Sector have the potential to affect the biodiversity values of this area. The main impacts are associated with the proximity of proposed development to the Sydney Airport Wetlands, which are identified as an environmentally significant area, and the proximity to areas frequented by protected species.

We will manage and reduce potential impacts on the ecology and biodiversity of the airport and its surrounds by implementing the initiatives and strategies summarised below:

- Ensure that appropriate measures and/or buffer zones are incorporated into development proposals, including those within the vicinity of land zoned for environmental conservation (EC1) and areas identified as environmentally significant
- Continue to seek opportunities to improve the health of the Sydney Airport Wetlands and other surrounding waterways, as appropriate
- In line with our green star commitments, identify opportunities to improve the 'liveability' of the airport environs by making the Sydney Airport Wetlands more accessible to the community
- Continue to identify new, and build on existing, partnerships that deliver positive biodiversity outcomes for the airport and surrounding environment
- Develop a strategy for providing planting within or in the vicinity of the airport site to compensate for vegetation removed during on-going development of the airport site
- Ensure that potential biodiversity impacts are considered as part of the assessment of development proposals, and managed appropriately
- Continue to develop, implement and review management plans including the Stormwater Quality Management Plan, and Wetland Management Plan

14.6.7 Heritage

Sydney Airport is one of the world's oldest continually operating airports. However, for at least sixty millennia before the airport came into being, thousands of generations of Aboriginal people lived on our ancient continent and across today's coastal area of Sydney, including on and around the site of today's Sydney Airport⁴.

The coastal area of Sydney we know today was very different 20,000 years ago. At that time, during the last Ice Age, Botany Bay itself did not exist and the coastline was situated up to 20 kilometres to the east of where it lies today. The area in and around the bay, including today's airport site, was a vast wetland, fed by waters flowing down the Cooks and Georges Rivers. Aboriginal people lived during and successfully adapted to a period of rapid change to the environment and landscape.

European settlement and colonisation changed everything for the Aboriginal people of coastal Sydney. Aboriginal people continued to live across the coastal area well into the 19th century, including family groups living at Elizabeth Bay, Rose Bay, Camp Cove, Botany, La Perouse and Kurnell, as well as along the Georges and Cooks Rivers. The descendants of many of these families live in these areas to this day and the airport site is close to Indigenous communities in La Perouse and Redfern.

This coastal area is rich in natural, cultural and historical significance. We acknowledge the special significance that land in this area holds for Indigenous people and have invested in programs to protect it, including zoning for environmental conservation and initiatives such as our Sydney Airport Wetlands enhancement program.

Sydney Airport continues to work with both the La Perouse Local Aboriginal Land Council and the Metropolitan Local Aboriginal Land Council on initiatives such as the development of our first Reconciliation Action Plan.

The airport site is also host to a number of other significant pieces of Sydney's industrial and water supply infrastructure, the ruins of which are still located on the airport site today.

The airport's layout, runways and other built, landscape and archaeological elements are the product of a century of development on the site, as well as early colonial farming and the industrial development of Sydney.

We recognise the non-indigenous heritage values associated with the site of today's Sydney Airport. These heritage values are associated with the airport as a whole and are embodied in the location, form and function of its individual elements. This includes the arrangement of streets, buildings and runways, and the ways in which these attributes reflect the airport's history of change and growth.

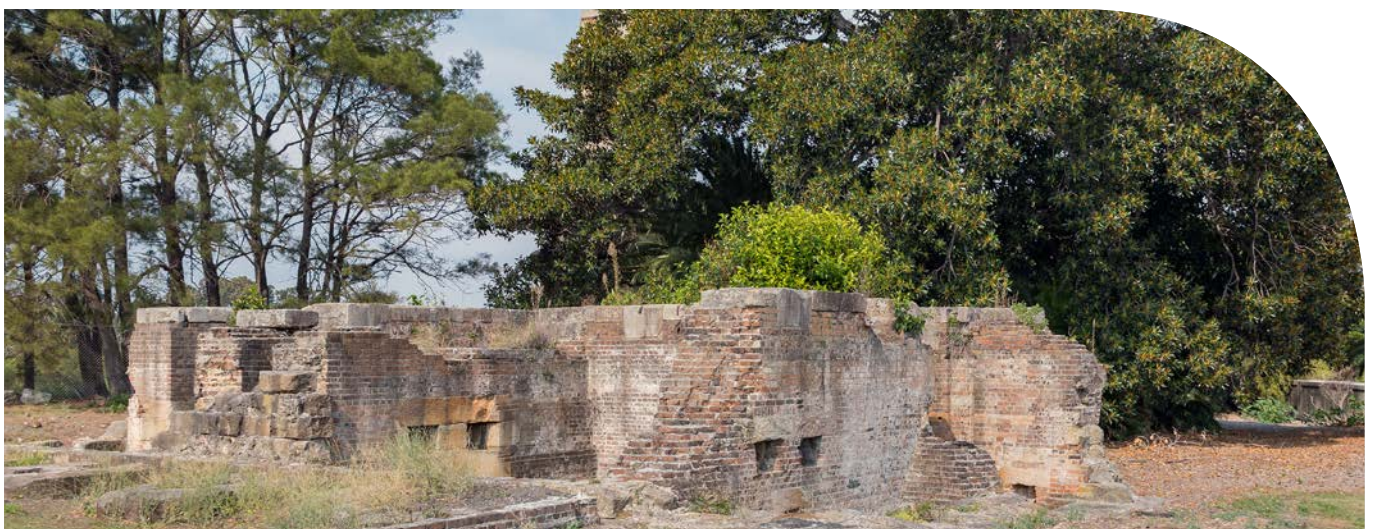


Image 14-7: Botany Water Pumping Station ruins which supplied water to Sydney from 1859 to 1885

⁴ Paul Irish, Hidden In Plain View - The Aboriginal Pople of Coastal Sydney, 2017

Map 22: Environmentally Significant Areas



We implement a Heritage Management Plan, updated in 2018, to protect heritage values. The plan balances heritage conservation with the need for Australia's busiest airport to continue to develop to meet the growing needs of airlines and passengers. Where potential impacts on heritage are identified, we undertake heritage impact assessments and implement strategies to manage and mitigate those impacts.

Three heritage items have previously been identified as environmentally significant areas under the Airports Act and are also recognised as significant in the Heritage Management Plan (refer to [Map 22](#))

- The location and form of Keith Smith Avenue (horseshoe-shaped). It has historical significance as a key remnant of the early airport and has dictated the form of the T2/T3 precinct since its construction in 1930
- The location and function of the main north-south and east-west runways. The runways form a cruciform over the full extent of the airport site. Both runways were originally constructed between 1947 and 1955, during the first phase of the post-World War II redevelopment
- Sydney Airport Wetlands (incorporating Engine Ponds East and West, Mill Pond and Mill Stream)

Retention and protection of these items is important in ensuring that the heritage significance of the airport and the history of the airport site can be interpreted in a meaningful manner, despite ongoing development and growth of the airport. The Heritage Management Plan also identifies a number of other items of heritage significance including:

- A number of buildings in the Jet Base and T2/T3 precinct
- The Lauriston Park Estate street layout
- The Wimble's Ink Factory
- The fourth and fifth control towers
- The Southern and Western Suburbs Ocean Outfall Sewer
- Sewage pumping station 38
- Engine Ponds (Sydney Airport Wetlands)
- The Botany Bay pumping station and chimney ruins
- Building 60 (old control tower)

To help meet the objectives of the Heritage Management Plan, we have developed a Heritage Interpretation Strategy. The strategy employs a range of interpretative devices such as artworks, installations, inlays, interior finishes, signage and place naming.

Heritage – Our 20-Year Response

Proposed developments within Master Plan 2039, particularly within the North East Sector, will have significant impacts on a number of heritage significant structures including buildings and hangars within the Jet Base, the Wimble's Ink Factory, the Lauriston Park Estate street layout and hangars such as Hangar 3 and 13. Airservices Australia are also proposing changes on the airport site that will impact the fourth and fifth control towers.

Subject to airport operational and development requirements, some important heritage elements within the airport will, wherever possible, be retained and enhanced such as the Sydney Airport Wetlands and the Botany Water Pumping Station and chimney ruins. In addition, Sydney Airport will pursue opportunities for the airport's history and significance to be interpreted as part of new development.

We will ensure potential impacts on heritage values associated with the airport are managed and reduced by implementing the initiatives summarised below:

- Conserve the significant places of the airport, in line with the Heritage Management Plan
- Actively conserve heritage elements listed as Environmentally Significant under the Airports Act
- Deliver and continually build upon the online experience centre, to tell the history of the airport site, detail its significance and its aviation history
- Integrate heritage interpretation devices into new and existing Sydney Airport facilities, through delivery of an interpretation strategy
- Ensure that heritage items of recognised significance are recorded to an appropriate archival standard
- Establish an archive of historical records of the history of Sydney Airport and the site
- Implement the management plan for the fig trees and the Sydney Airport Wetlands, located in the South East Sector

14.6.8 Waste and resource recovery

Operations at Sydney Airport generate a range of solid and liquid wastes from various sources. We aim to manage the impacts of this waste by:

- Avoiding unnecessary resource consumption and waste generation
- Minimising waste by changing behaviours
- Recycling and recovering of beneficial materials
- Disposing of waste to landfill as a last resort

Airlines are responsible for management and disposal of waste from their aircraft. We also have limited opportunities with other waste streams, for example a large amount of waste generated at the airport is currently not able to be recycled due to quarantine restrictions and requirements. Accordingly, recycling efforts focus on the non-quarantine waste stream.

Our waste contract sets a 30 percent target for recycling post collection. Recycling data is monitored annually and continues to indicate that a greater proportion of the airport's waste is being recycled rather than ending up as landfill. In 2017, approximately 42 percent of total non-quarantine waste volume was recycled.

We have undertaken a detailed waste audit and review across the airport. The review indicated that waste generation per passenger at Sydney Airport is at the lower end compared to other international airports. It also identified a number of opportunities for improvement in recycling, recovery and waste minimisation.

We are preparing a Waste Action Plan to implement the findings of the review. Through the development and implementation of a Waste Action Plan, we will continue to pursue opportunities to minimise waste and improve resource recovery initiatives.

Waste and resource recovery - Our 20-Year Response

Increasing volumes of waste are associated with increasing passenger and aircraft numbers, retail developments and commercial developments such as office buildings. Over the Master Plan 2039 planning period, a substantial amount of construction and demolition waste will also be generated. Construction of new developments will also result in increased resource use.

We will manage the impacts associated with the increased generation of waste and use of resources by implementing initiatives and strategies summarised below:

- Prepare and implement a waste action plan for our operations to improve recycling, resource recovery and waste minimisation
- Ensure that appropriate consideration for waste management and resource recovery is included in the planning and design for all major proposed developments within the airport site
- Continue to review the capacity of the waste system to ensure development plans incorporate the expansion of docks, waste collection areas and locations
- Ensure that waste management and resource recovery are considered for the construction phase of development proposals, aligning with Green Star requirements
- Ensure that sustainable procurement principles are considered and implemented in procuring goods and materials associated with proposed major developments within the airport site
- Continue to implement the tenant management strategy and ensure that tenants include waste management and resource recovery in their EMPs

14.6.9 Soil and land management

Most of the Sydney Airport site has been extensively modified by landfilling, terrain flattening and airport-related development. Due to this, and the long history of aviation and related uses at the airport (including fuel storage and distribution and firefighting training), the site contains a number of areas that are subject to soil and groundwater contamination.

To assist in the ongoing management of these sites, we implement a contaminated sites strategy. The strategy involves:

- A comprehensive risk classification system
- Contaminated sites register
- Groundwater monitoring program
- Pollution prevention programs and measures
- Identification of remediation opportunities

Since 2008, we have been actively remediating the former Joint Oil Storage Facility (JOSF) site by extracting hydrocarbons through a purpose-built remediation system. This site has experienced soil contamination resulting from on-site fuel storage from the mid-1950s. In 2014, we commissioned the next phase of the remediation system, located in the area of the JOSF plume below the T2 taxi holding area.

The risk of contamination to soil and groundwater from spills, fuel storage tanks and fuel pipelines is managed through:

- The Airport Tenant Management Strategy
- Regular workplace inspections
- Well defined standard operating procedures
- Independent monitoring and testing
- Asset management

Per- and poly-fluoroalkyl substances

The airport site is known to be impacted by per- and poly-fluoroalkyl substances (PFAS). The predominant known source of PFAS on the airport site is historic use of certain fire fighting foams used by fire fighting service providers or during fire training exercises.

Due to the widespread use of PFAS within a number of industrial applications, there is potential that PFAS found on the airport site is from other sources, including those originating from off-site.

As part of our ongoing environmental management and monitoring we will continue to work with the tenants who have caused PFAS contamination and relevant government authorities to assess, monitor and manage that contamination in accordance with the Environment Strategy 2019-2024 and the Airports Act, Regulations and guidelines.

In 2018, the Commonwealth, State and Territory environment ministers endorsed Australia's first PFAS National Environmental Management Plan.

As PFAS is considered an emerging contaminant, our strategy will continue to evolve. We have in place, and continue to develop, procedures and plans to implement relevant government guidelines.

Spill response and hazardous materials

The aviation operations at Sydney Airport involve the storage and regular use of a range of hazardous materials and chemicals. The main hazardous material used at the airport is aviation fuel. Aviation fuel is supplied to the airport by two underground pipelines and is stored at the JUHI located in the North West Sector.

Aviation fuel is distributed across the airport from the JUHI storage facility via a number of underground pipelines to apron hydrant outlets located adjacent to aircraft gates. Bulk tanker vehicles are used for the fuelling of regional and GA aircraft and helicopters where hydrant access is not available.

Other activities involving the use of hazardous materials include:

- Maintenance facilities operated by airport tenants
- Fire training, which requires the storage and use of firefighting foam
- Construction and related activities
- The use of liquid hydrocarbons (other than aviation fuel), solvents, paints, pesticides and herbicides

Effectively managing hazardous materials, and ensuring an effective response to any spills of hazardous materials, is important in minimising potential environmental impacts and also in ensuring that our work health and safety obligations are met.

We maintain a hazardous materials storage database, which includes a register of all known storage facilities on the airport for both us and tenants.

The following measures are also employed by us to minimise environmental impacts should a spill or an incident occur:

- Spill response – we have two designated spill response trucks, to ensure all minor spills are addressed as soon as possible. Spill kits are also available at aircraft parking bays and other identified potential risk areas
- Spill response procedures – we have developed spill response procedures and guidance material for tenants to ensure the correct handling and reporting of spills
- Emergency response – incidents involving hazardous materials are incorporated into the Airport Emergency Plan to ensure procedures are in place to deal with such incidents
- Infrastructure – pollution control gates, flame traps and other infrastructure are in place to control and contain any spills/losses, assisting with protecting the local environment

Soil and land management - Our 20-Year Response

New developments at the airport have the potential to impact on soil conditions through vegetation clearing, excavation, installation of fuel infrastructure, erosion and sedimentation, and disturbance of potential or actual acid sulphate soils and contaminated land.

We will manage the impacts on soil quality and contaminated land by implementing the initiatives and strategies summarised below:

- Infrastructure will be designed and constructed to minimise disturbance of contaminated sites where possible
- Opportunities to replace hazardous materials and fuel with new technology, such as batteries for stand-by power, will be investigated
- Develop and implement contaminant or site-specific strategies, where appropriate
- Work proactively with tenants to manage potentially contaminating activities and to actively manage historical contamination
- Continue to implement the contaminated sites strategy to address the management of known contaminated sites
- Maintain a contaminated sites register including a detailed map illustrating areas of known contamination across the airport site
- Continue to monitor developing global, national and state information and guidance regarding emerging contaminants of concern including PFAS and implement management strategies as appropriate
- Ensure potential soil quality and contaminated land risks are assessed and appropriate management measures identified for both the construction and operational phase of developments
- Investigate opportunities to remediate known contaminated sites within the airport site to the extent practicable

15.0 Aircraft Noise



15.1 Overview

Noise from aircraft operations continues to be one of the most significant environmental issues for people living around airports or under flight paths.

Sydney Airport works closely with the community, aviation industry, and the Australian, NSW and local governments to manage and where possible minimise aircraft noise impacts.

The responsibility to manage aircraft noise impacts at Sydney Airport is shared by many organisations. As well as Sydney Airport, the International Civil Aviation Organization (ICAO), the Australian, NSW and local governments, airlines, aircraft and engine manufacturers and regulators all play important roles.

Noise sharing is the key aim of our Long Term Operating Plan (LTOP), which involves varying the use of our runways to produce different combinations of flight paths affecting different parts of Sydney. Master Plan 2039 assumes that there will be no change to the curfew, movement cap or noise sharing arrangements and no change to the flight paths or runways within the planning period.

15.2 Key Points

- The responsibility to manage aircraft noise impacts at the airport is shared by many organisations including Sydney Airport
- The roles of Sydney Airport in relation to noise management are to:
 - Provide and maintain on-airport infrastructure to facilitate noise sharing
 - Support the use of quieter new generation aircraft
 - Ensure guidelines are in place to control noise generated by engine ground running and respond to ground-based noise complaints
 - Publish relevant and accurate information about noise impacts that can be easily accessed, including noise descriptors such as flight path movement charts, frequency-based aircraft noise charts and respite charts
- Sydney Airport actively participates in the Sydney Airport Community Forum, responding to aircraft noise and related environmental issues at Sydney Airport
- Sydney Airport supports ICAO's 'Balanced Approach' which is based on the following four pillars:
 - Noise reduction at source with quieter aircraft and noise-reducing engine/wing technologies and advancements in airframe design
 - Land use planning and development controls to safeguard and protect local communities from aircraft noise disturbance and passive noise control programs
 - Noise abatement operating procedures in the air and on the ground
 - Operating restrictions imposed on certain aircraft types and airport runway use and hours of operation
- Further details with regard to noise related matters are contained in [Chapter 16.0](#), [Section 16.4](#).



Image 15-1: Coming in to land at Sydney Airport

15.3 Governance of Aircraft Noise

A range of international and local industry players and regulatory authorities have roles and responsibilities for managing aircraft noise (see **Figure 15-1**).

We manage operations at the airport and ensure the effective delivery and coordination of airport-related services and facilities:

- Providing and maintaining on-airport infrastructure to facilitate noise sharing and supporting the use of quieter new generation aircraft
- Publishing noise descriptors and other plans to manage and communicate noise impacts from aircraft operations at Sydney Airport
- Ensuring guidelines are in place to control noise generated by engine ground running
- Handling ground-based noise complaints at Sydney Airport



Figure 15-1: Aircraft noise roles and responsibilities

Noise from ground-based activities at Sydney Airport is managed separately from noise caused by in-flight aircraft operations. Engine ground running, which is an essential part of aircraft operations and maintenance, is regulated by a comprehensive set of operational rules designed to maintain safety, comply with relevant standards and practice, and minimise noise. This is addressed in **Chapter 14.0** Environment.

As well as facilitating noise sharing with supporting infrastructure, Sydney Airport is directly involved in managing aircraft noise by working closely with the Commonwealth, NSW and local governments, and by consulting and engaging with the Sydney Airport Community Forum (SACF), the local community and the airlines that use the airport.

Together, we work to balance the economic and social benefits of aviation with the need to minimise noise impacts.



DIRDC

DIRDC advises the Minister for Infrastructure and Transport on the policy and regulations for airports and the aviation industry and administers the Airports Act and Air Navigation (Aircraft Noise) Regulations.

DIRDC enforces Sydney Airport aircraft movement cap and curfew and the granting of curfew dispensations. It also supports the Sydney Airport Community Forum.



Sydney Airport Community Forum

A community representative forum providing advice to the responsible Minister, Sydney Airport and aviation authorities on aircraft noise abatement and related environmental issues at Sydney Airport, particularly as the primary body for consultation on LTOP.



NSW and Local Governments

The NSW government determines the planning frameworks for areas around the airport, the aim being to ensure inappropriate development is avoided in areas where aircraft noise impacts are (or are forecast to be in the future) excessive. Local councils are responsible for implementing these frameworks.



Sydney Airport

- Provides and maintains on-airport infrastructure to facilitate noise sharing and support the use of quieter new generation aircraft
- Publishes relevant and accurate information about noise impacts that can be easily accessed including noise descriptors such as flight path movement charts, frequency-based aircraft noise charts and respite charts
- Ensures guidelines are in place to control noise generated by engine ground running
- Responds to ground-based noise complaints at Sydney Airport.

15.4 Describing Aircraft Noise

Aircraft noise is complex and varies according to a range of factors, including:

- The age, size, type and number of engines of an aircraft
- Aircraft weight and load factors
- Aircraft thrust settings, speed and altitude
- Airline standard operating procedures
- Pilot performance
- Weather conditions

Aircraft noise is produced on the ground and during all phases of flight. Community concerns associated with aircraft noise generally relate to aircraft take-off and landing and associated flight paths and frequency and the time of day at which flights occur. Many in the community place a high value on having lengthy periods of “respite”, that is periods of time when there are no aircraft flying overhead.

Sound is measured in units called decibels (dB). An ‘A-weighted’ sound level, expressed as dB(A), indicates the relative loudness of sound in the air as perceived by the human ear. In a normal environment with background and ambient noise, a three decibel change represents the threshold of detectability and is not likely to be noticeable.

15.5 Aircraft Noise Impacts

With continued global and national economic development, the propensity to travel for leisure and business-related purposes continues to drive increased air traffic movements. This in turn can increase the impact on the communities around the airport and under flight paths. Despite modern aircraft technology and airline fleet replacement continuing to reduce the measured noise levels for individual aircraft on approach to and departure from the runways, public concern around noise remains.

Recent research in the field of aircraft noise management and related levels of community annoyance, has identified the following contributing factors:

- Socio-economic and lifestyle expectations in relation to the environment
- Equitable sharing of actual and perceived negative impacts of aircraft noise
- Subconscious fear of aircraft accidents
- Feelings of loss of control, stress and poor psychological health
- Providing a focal point for other real or perceived negative aspects of airport development.

There is evidence that these types of non-acoustic factors may be as important as the noise exposure level in determining reported annoyance. Some of these factors are mapped in **Figure 15-2**.

The effects of noise generated by aircraft or from other sources on human health and wellbeing have been extensively studied in Australia and around the world. Relationships between exposure to excessive noise, annoyance and, in some cases, health impacts, have been documented.

It is vital that airports work with their local communities proactively managing noise generated from aircraft arrivals and departures and communicating in an open and transparent way about the impact of airport operations. This has been shown to be important in reducing community concerns and achieving acceptance and tolerance of the airport as air traffic grows.

Sydney Airport and its aviation industry partners are striving to achieve this through the initiatives described in the following sections.

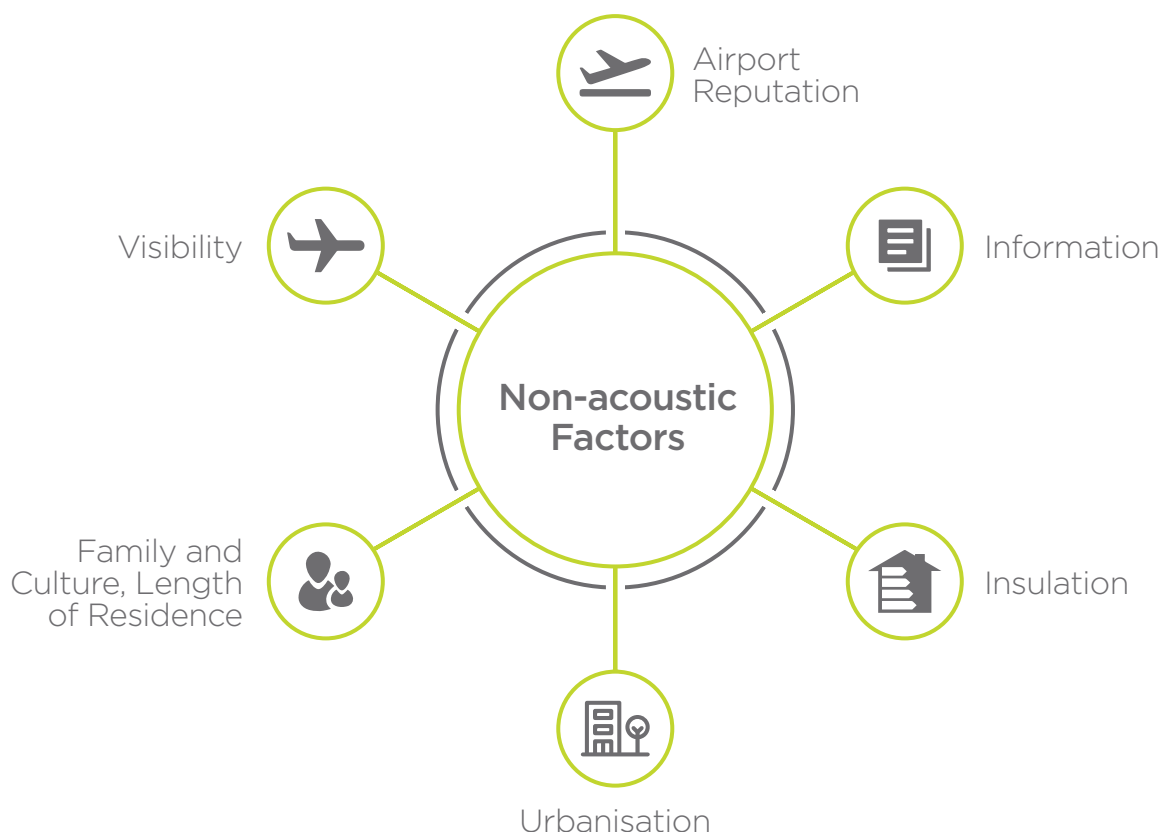


Figure 15-2: Non-acoustic factors to be considered in noise management
(Source: Based on Hooper, ICAO Green Airports Seminar, 2017)

15.6 The Four Pillars of the ICAO Balanced Approach

A useful framework for understanding aircraft noise management can be found in the International Civil Aviation Organisation's (ICAO) 'Balanced Approach'. This guidance material promotes better environmental outcomes in relation to potential aircraft noise impacts for communities living around airports or underneath or near flight paths.

ICAO's Balanced Approach consists of four key pillars illustrated in **Figure 15-3**.

ICAO's overarching policy on aircraft noise, especially comprehensive guidance on its reduction, is published in *ICAO Doc. 9829 - Guidance on the Balanced Approach to Aircraft Noise Management* (Balanced Approach Guidance). In 2007 the Balanced Approach Guidance was expanded to include 'People Issues', to address communication strategies and the availability of enhanced public information on aircraft noise.

Pillar 1 Reduction at the Source

Noise reduction at source with quieter aircraft and noise-reducing engine/wing technologies and advancements in airframe design



Pillar 2 Land Use Planning & Management

Land use planning and development controls to safeguard and protect local communities from aircraft noise disturbance and passive noise control programs



Pillar 3 Noise Abatement Operational Procedures

Noise abatement operational procedures in the air and on the ground



Pillar 4 Operating Restrictions

Operating restrictions imposed on certain aircraft types and airport runway use and hours of operation.



Figure 15-3: ICAO 'Balanced Approach' to aircraft noise management

15.6.1 Pillar 1 – Reduction at the Source

The ‘Reduction of Noise at the Source’ of noise is the first of the four pillars underpinning ICAO’s Balanced Approach.

Since the 1970s, ICAO has set progressively tighter certification standards (known as Chapters) for the noise emitted from civilian aircraft. Each Chapter sets noise level compliance criteria for different aircraft during take-off and landing. The large majority of civilian aircraft now operating in the global fleet mix fall within Chapters 3 and 4, and generally reflect step changes in aircraft technology. All new aircraft manufactured from 2006 onwards must meet the Chapter 4 noise standard.

A new Chapter 14 standard applies to all newly certified larger aircraft on or after 31 December 2017 and for lower weight new aircraft as of 2020. At Sydney Airport, some aircraft including the Boeing B787 and Airbus A350, are already meeting the more stringent standards.

The application of ICAO’s noise standards falls under the authority of each member state. For example, Chapter 2 aircraft have been banned from operating in Australia since April 2002. Marginally compliant Chapter 3 aircraft (Chapter 2 aircraft retro-fitted with a ‘hush-kit’ to meet Chapter 3 standards) were also banned from major Australian airports (including Sydney Airport) in September 2010.

No further restrictions are pending at this stage in Australia. However, as shown in **Figure 15-4**, airline fleet renewal and modernisation programs continue, in many cases, to progressively introduce into service new generation, quieter aircraft (for example the Boeing B787, B737Max, Airbus A350, A320neo) in place of ageing, noisier aircraft (like the Boeing B747, B767 and Airbus A340) which are being retired.

It is acknowledged that, despite the noise emitted by individual aircraft having decreased over time, the frequency of such flights has grown.

Pillar 1 at Sydney Airport

Reduction at the Source is being achieved in the following ways:

- In 2018, 21 airlines are operating next generation aircraft which represents:
 - 25 percent of all scheduled international movements
 - 452 next generation movements per week
 - Average seat configuration of 383 seats – 33 percent higher than the overall international average
- Since 2010, legacy four engine aircraft (B747/ A340) numbers have reduced by 68 percent, from an average of 38 movements per day to under 15 movements per day
- In 2017, SYD was the 11th busiest airport in the world for next generation aircraft movements, and 9th in terms of seats

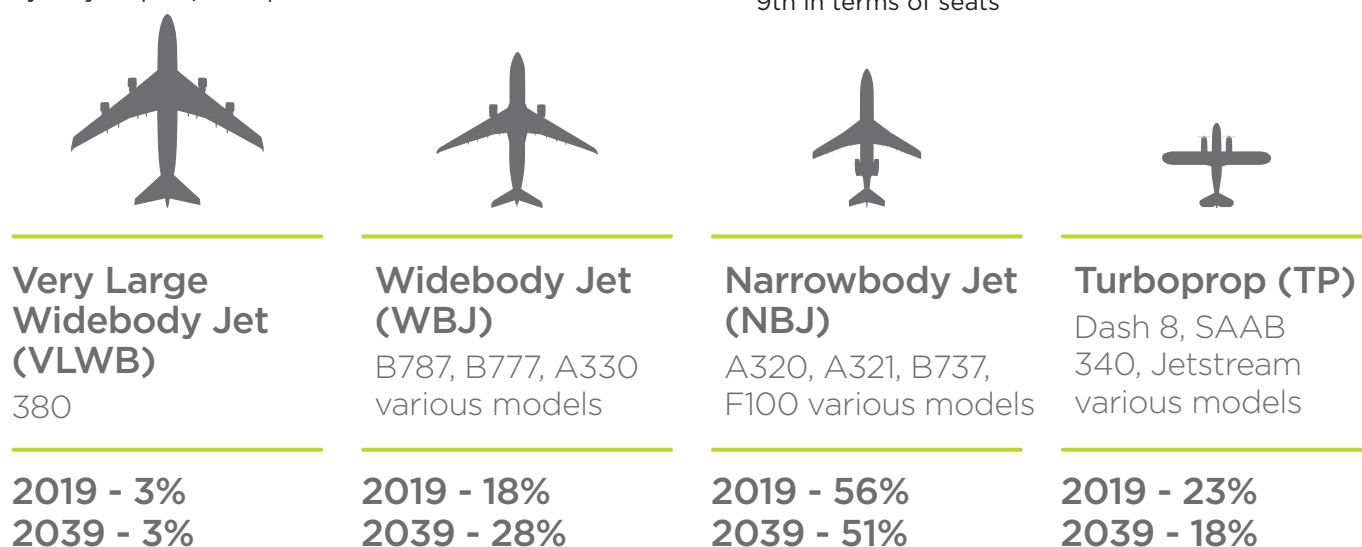


Figure 15-4: Sydney Airport fleet mix

15.6.2 Pillar 2 – Land Use Planning and Management

The second pillar of ICAO's Balanced Approach is 'Land Use Planning and Management'.

Land use planning and development controls near airports can help to minimise the impact of aircraft noise on people living in surrounding communities:

"The number of people affected by aircraft noise is dependent on the way in which the use of land surrounding an airport is planned and managed, and in particular the extent to which residential development and other noise-sensitive activities are controlled" (ICAO).

There are three key land use planning instruments:

Planning instruments control development in accordance with its compatibility with airport operations, and seek to minimise the extent to which the local community is exposed to aircraft noise. This is the basis of Australia's Aircraft Noise Exposure Forecast (ANEF) system, discussed in **Chapter 16.0 – Safeguarding Sydney Airport**

- **Mitigating instruments** are noise mitigation measures, ranging from mandated noise insulation by local planning authorities for new homes that fall inside designated noise contours, through to the acquisition of existing properties
- **Financial instruments** can involve a noise insulation fund to support property owners to mitigate noise impacts, or the application of broader noise-related airport charges to fund an insulation program or to incentivise aircraft operators to progressively renew their fleets with new generation, quieter aircraft.

Pillar 2 at Sydney Airport

Planning instruments

To reduce new development of sensitive uses in noise affected areas surrounding the airport, Sydney Airport publishes its updated ANEF (as part of this Master Plan) and works closely with the NSW Government and surrounding local councils in relation to land use planning controls.

Planning instruments are addressed in detail in **Chapter 16.0 – Safeguarding Sydney Airport**.

Mitigation instruments

Some local planning authorities require noise insulation to be included in new homes they approve that fall within designated noise contours.

Sydney Airport continues to work with Airservices Australia in relation to flight procedures to assist with mitigating aircraft noise.

Financial instruments

There are currently no financial instruments operating at Sydney Airport in relation to aircraft noise mitigation.

15.6.3 Pillar 3 – Noise Abatement Operational Procedures

Noise Abatement Operational Procedures' (NAPs) are the third pillar of ICAO's Balanced Approach. Operational measures tend to be specific to either aircraft take-off or landing but can result in cumulative improvements. They encompass a wide variety of techniques, but generally fall under one or more of four areas (see [Figure 15-5](#)).¹

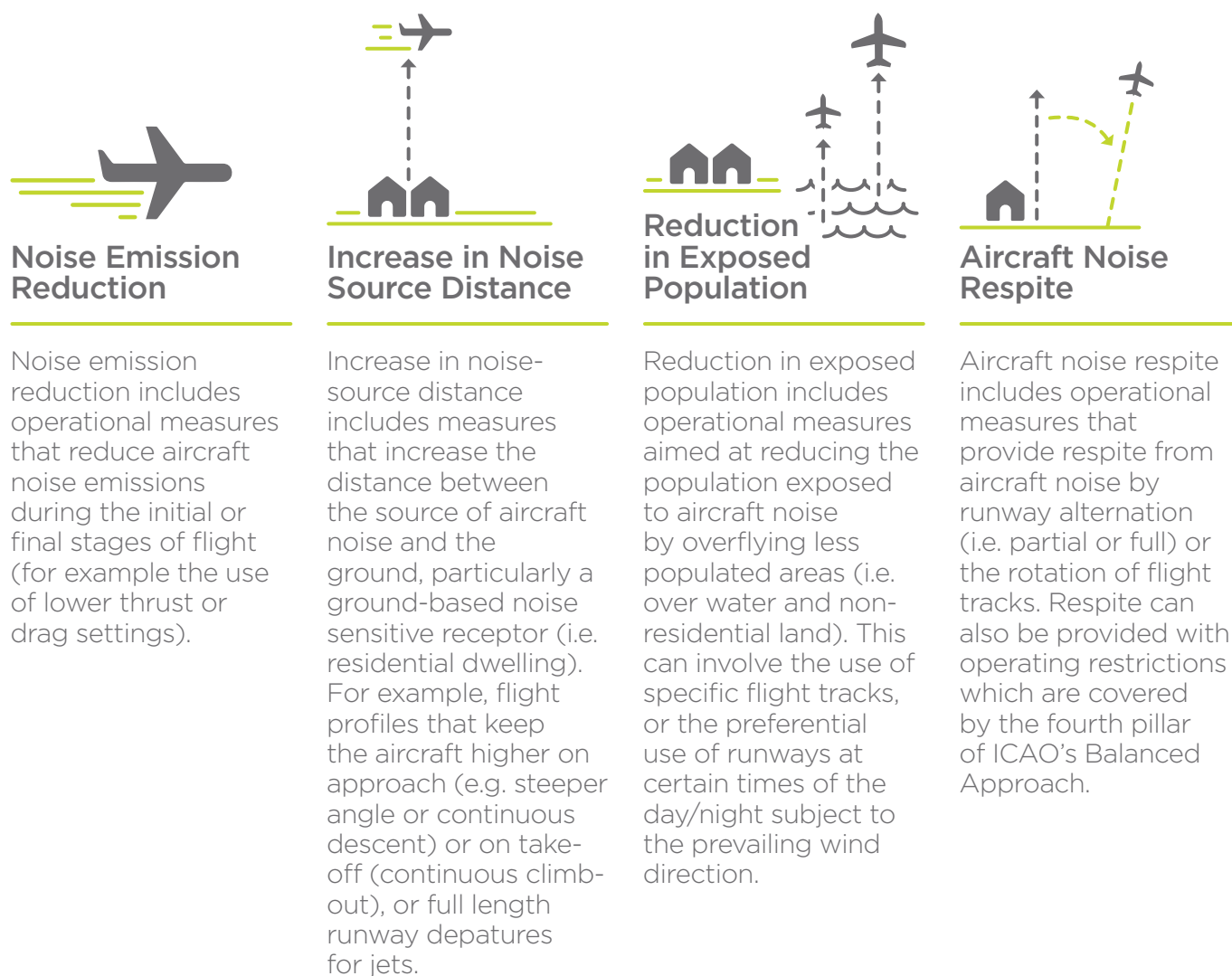


Figure 15-5: Noise abatement procedures

¹ CAA UK CAP 1165 | Managing Aviation Noise (2014)

Pillar 3 at Sydney Airport

Minimising the effect of noise on residents and providing respite from aircraft noise at Sydney Airport for those residents who are affected has been the Australian Government's objective since 1997 through its directive to Airservices Australia to implement LTOP for Sydney Airport.

Mitigation instruments include the use of preferential runways and routes, as well as noise abatement procedures (NAPs) to be used by pilots during take-off, approach and landing, to minimise noise during aircraft operations in the vicinity of an airport. Sydney Airport implements NAPs to minimise noise impacts in areas around Sydney Airport and / or under flight paths. Airservices Australia conducts reviews to check the effectiveness of NAPs.

As with previous master plans for Sydney Airport, Master Plan 2039 assumes that LTOP will remain in force during the planning period, and that Sydney Airport will continue to provide and maintain the necessary on-airport infrastructure to facilitate this. LTOP is a preferential runway regime based on the principle of noise sharing, with 10 defined Runway Modes of Operation (RMOs) as shown in [Figure 15-6](#) to [Figure 15-8](#) and [Appendix F](#). The various RMOs have different combinations of flight paths in the vicinity of the airport.

Where and when possible, the preference is to direct aircraft over water (i.e. Botany Bay to the south of the airport and the uninhabited Kurnell sand dunes) rather than residential areas.

The Australian Government and Airservices Australia have extensive information on the development, implementation, historic and current usage of the runway ends, flight paths and the various LTOP modes on their respective websites.

The noise sharing modes are Modes 5, 7 and 14a. Modes 12, 13 and SODPROPS are also considered to be noise sharing modes and the use of Mode 9 can also produce noise sharing outcomes. SODPROPS refers to 'simultaneous opposite direction parallel runway operations', with flights predominantly occurring over Botany Bay.

It is anticipated that the noise sharing RMOs can, subject to weather, continue to be used throughout the planning period. However, it is acknowledged that due to forecast increased traffic levels overall, there will be fewer opportunities for noise sharing than there are today.

The estimated times of the day during which noise sharing RMOs would be available in 2039 on the forecast representative busy day (subject to weather) are shown in [Figure 15.8](#). On days that are less busy than the representative busy day, it is expected that the times during which noise sharing RMOs can be used will be greater than shown there.

Airservices Australia provides ATC and air traffic management (ATM) services to aircraft at Sydney Airport, both for approach and departure paths and the en-route network. When selecting an RMO at Sydney, ATC must ensure that, subject to safety and weather conditions:

- Flight paths over water (i.e. Botany Bay) or non-residential areas are preferred where possible
- The rest of the air traffic is shared over surrounding communities
- Within safety and operational constraints, runway noise sharing RMO's change throughout the day to maximise respite from aircraft noise in individual areas

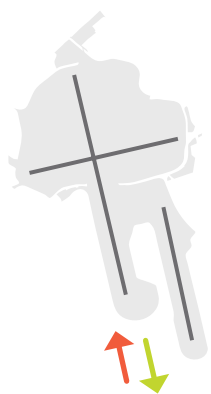
Sydney Airport, as a member of SACF and the LTOP Implementation and Monitoring Committee (IMC), continues to support the sharing of aircraft noise in areas around Sydney Airport within the LTOP's constraints of safety and operational efficiency.

Sydney Airport supports the periodic review of mode selection rules used by Airservices Australia air traffic control to ensure that any increases in the use of noise sharing modes made possible by advances in technology are achieved (subject to the overriding need to maintain safety).

Mode 1 - Curfew

D 16R
A 34L

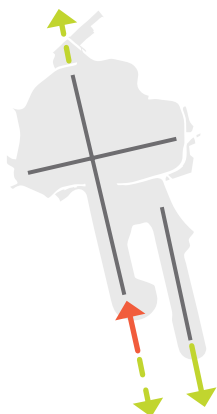
Departures to South
Arrivals from South



SODPROPS

D 16L, 16R(h)
A 34L

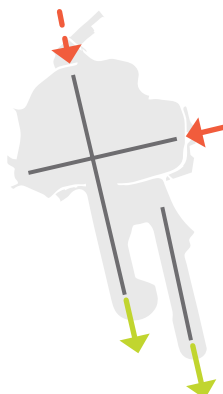
Departures to South
Arrivals from South



Mode 5

D 16L, 16R
A 25, 16R(h)

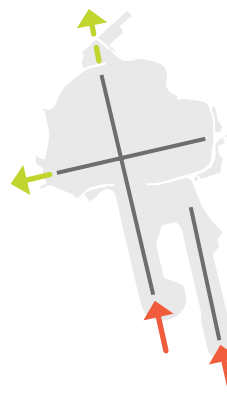
Departures to South
Arrivals from East



Mode 7

D 25, 34L(h)
A 34L, 34R

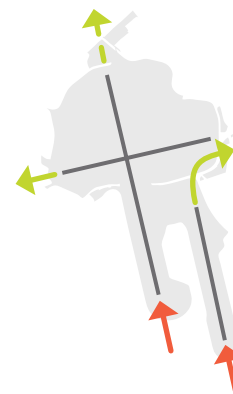
Departures to West
Arrivals from South



Mode 8

D 25, 34R, 34L(h)
A 34L, 34R

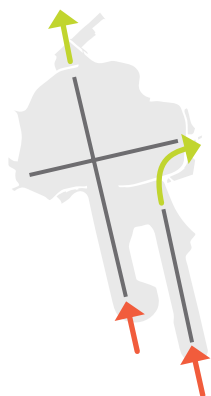
Departures to West,
East & North East
Arrivals from South



Mode 9

D 34L, 34R
A 34L, 34R

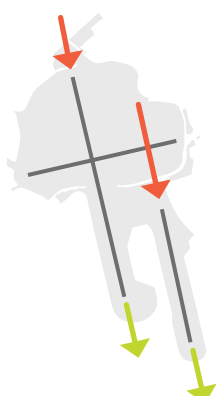
Departures to North & East
Arrivals from South



Mode 10

D 16L, 16R
A 16L, 16R

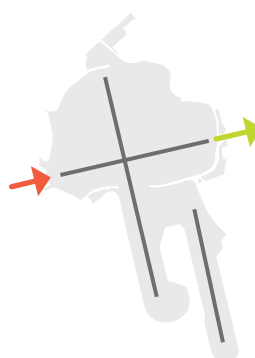
Departures to South
Arrivals from North



Mode 12

D 07
A 07

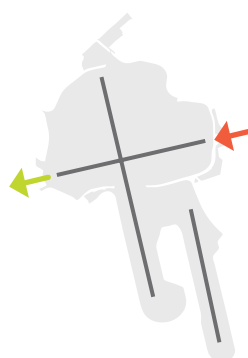
Departures to East
Arrivals from West



Mode 13

D 25
A 25

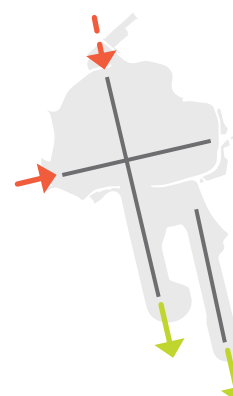
Departures to West
Arrivals from East



Mode 14a

D 16L, 16R
A 07, 16R(h)

Departures to South
Arrivals from West



Departure →

Long Haul (h) Departure →

Arrival →

Long Haul (h) Arrival →

Source: Sydney Airport Operational Statistics January 2018

Figure 15-6: Runway modes of operation

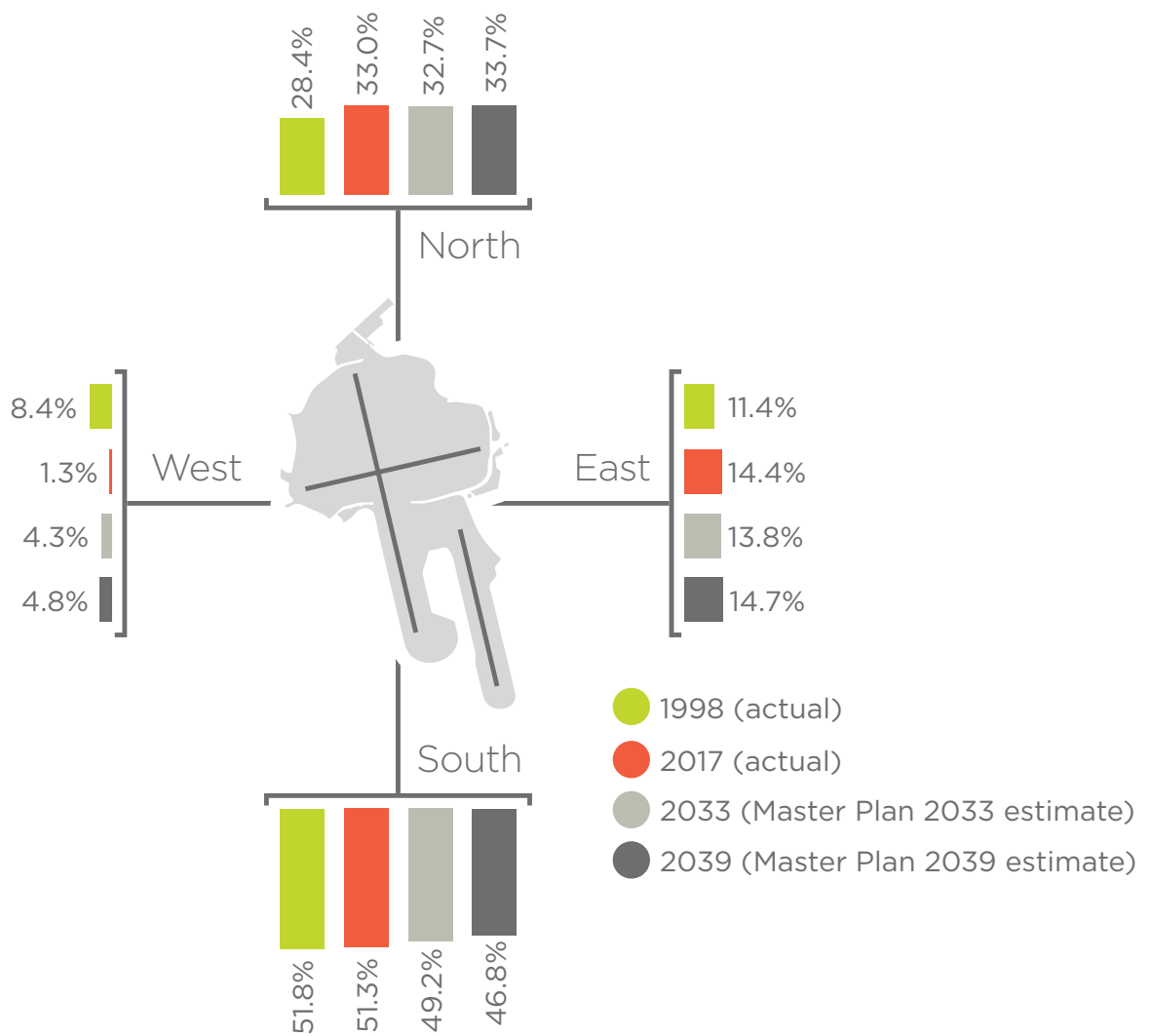


Figure 15-7: Runway end impacts since 1998

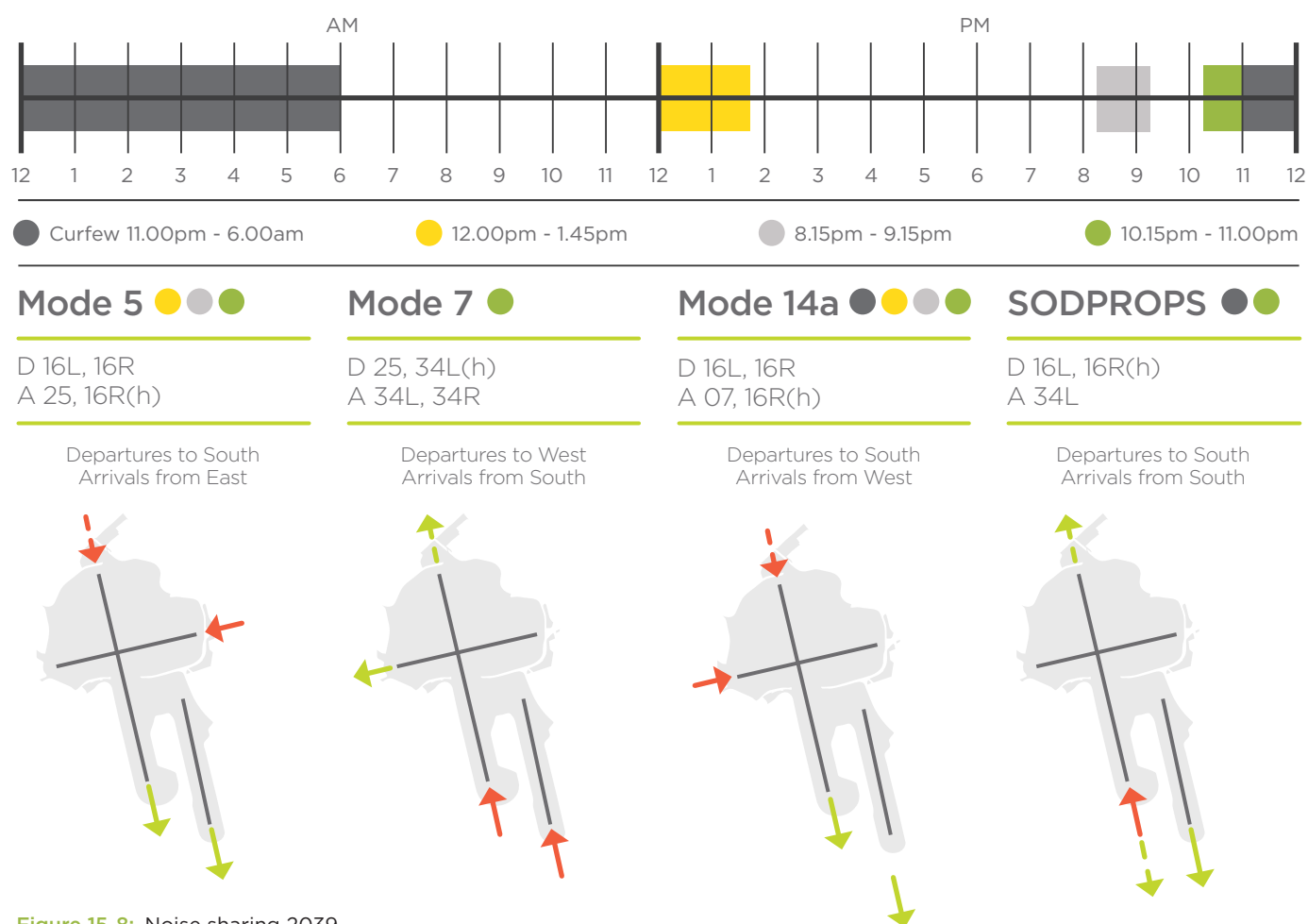


Figure 15-8: Noise sharing 2039

15.6.4 Pillar 4 – Operating Restrictions

‘Operating Restrictions’ are the fourth and last pillar of ICAO’s Balanced Approach, which can in turn be classified into four broad categories:

1. **Global restrictions** apply to all air traffic movements and generally relate to cumulative noise levels, whether based on a movement cap or a cumulative noise quota count system
2. **Aircraft-specific restrictions** apply to certain aircraft types based on international noise certification standards or related noise performance
3. **Partial restrictions** relate to operating restrictions that apply to a specific time of day (e.g. night curfew), predetermined days of the week, nominated flight phase operations (take-off or landing) or RMOs
4. **Progressive restrictions** relate to the implementation of noise mitigation measures such as a reduction in the number of air traffic movements (i.e. annual movement caps), conditional runway movement limits (i.e. attached to development approvals) or a reduction in the cumulative noise quota count.

Pillar 4 at Sydney Airport

Operating restrictions apply at Sydney Airport as shown in **Figure 15-9**, including:

- *Sydney Airport Curfew Act 1995*
 - 11pm to 6am curfew (restricts operations to specific types of aircraft or operations and specific runway assignment rules)
- *Sydney Airport Demand Management Act 1997*
 - Cap with maximum of 80 movements per hour
 - Protection of regional access to Sydney Airport (“regional ring fence”)
 - Long Term Operating Plan (LTOP), including Runway Modes of Operation and respite from aircraft noise

Sydney Airport Demand Management Act



Cap
80
movements
per hour

Sydney Airport Curfew Act



11pm to 6am
Curfew



Noise
certification
of aircraft



Long Term
Operating
Plan (LTOP)



Runway
modes of
operation

Figure 15-9: Operational restrictions at Sydney Airport

15.7 Aircraft Noise Mapping

Various metrics and graphics are used to describe and communicate current and future aircraft noise impacts, including:

- ANEF
- Flight path movements and respite charts
- Charts showing aircraft noise levels between 6am and 11pm (N70) and between 11pm and 6am (N60)

To compare forecast noise impacts with historical or present day noise impacts, Airservices Australia publishes historical and present day flight path movement, respite and N70 charts on its website. These are discussed in the following pages.

15.7.1 Australian Noise Exposure Forecast

The ANEF is a land use planning tool to guide zoning in the vicinity of the airport. The latest ANEF, and comparison with that in Master Plan 2033, are provided in **Chapter 16.0 – Safeguarding Sydney Airport** and **Appendix G**.

15.7.2 Flight paths

The flight paths used by aircraft arriving or departing from Sydney Airport are determined by Airservices Australia.

Master Plan 2039 assumes that the existing flight paths will remain unchanged throughout the planning period. **Map 23** and **Map 24** shows the flight paths used by jet and non-jet aircraft. The flight paths shown are those used by aircraft in the very early stages of flight (immediately after take-off) or very late stages of flight (immediately before landing).

Flight paths can vary in practice by up to several kilometres or more. This occurs for a range of reasons including weather conditions, requirements for aircraft separation or variations in aircraft performance.

15.7.3 Flight path movements and respite

Flight path movement charts have been used for around 20 years and are widely accepted as a simple tool for reporting Sydney Airport's noise exposure pattern. Airservices Australia publishes these charts in its monthly Sydney Operational Statistics reports.

Map 25 shows the projected average daily jet flight path movements for 2039, including:

- Where those aircraft usually fly
- How many flights are forecast (including the average daily movements and daily range)
- The percentage of Sydney Airport's overall movements these flights represent
- The percentage of days when there will be no aircraft movements on a path

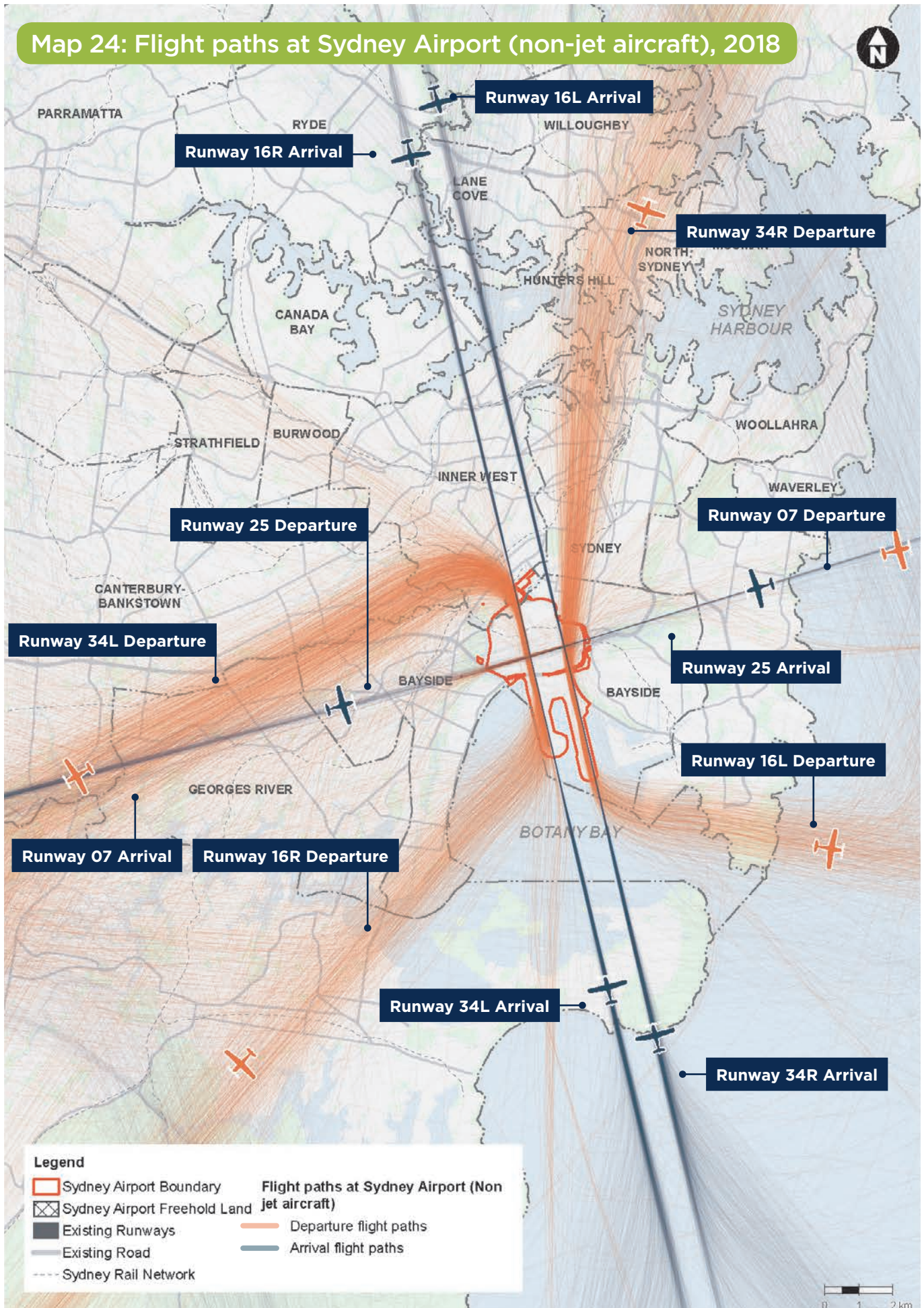
Map 26 shows the projected average daily jet aircraft respite periods in 2039, based on the number of whole clock hours (e.g. 9.00am to 10.00am) when there are no aircraft movements at all on a particular flight path, and reporting these as a percentage of the sum of all clock hours in the period in question. This figure shows respite during three discrete periods:

- Morning – 6.00am to 7.00am
- Daytime – 7.00am to 8.00pm
- Evening – 8.00pm to 11.00pm

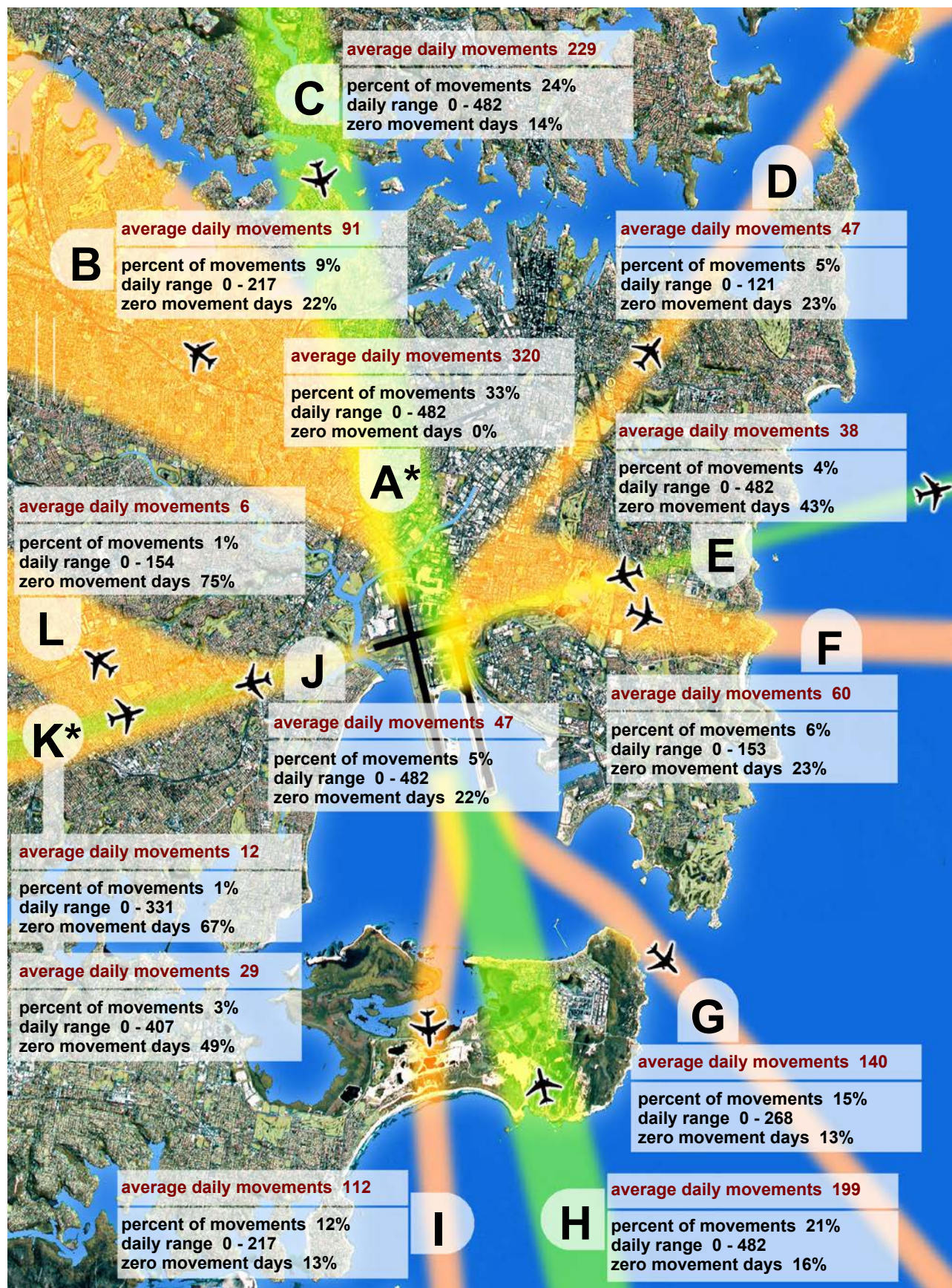
Map 23: Flight paths at Sydney Airport (jet aircraft), 2018



Map 24: Flight paths at Sydney Airport (non-jet aircraft), 2018

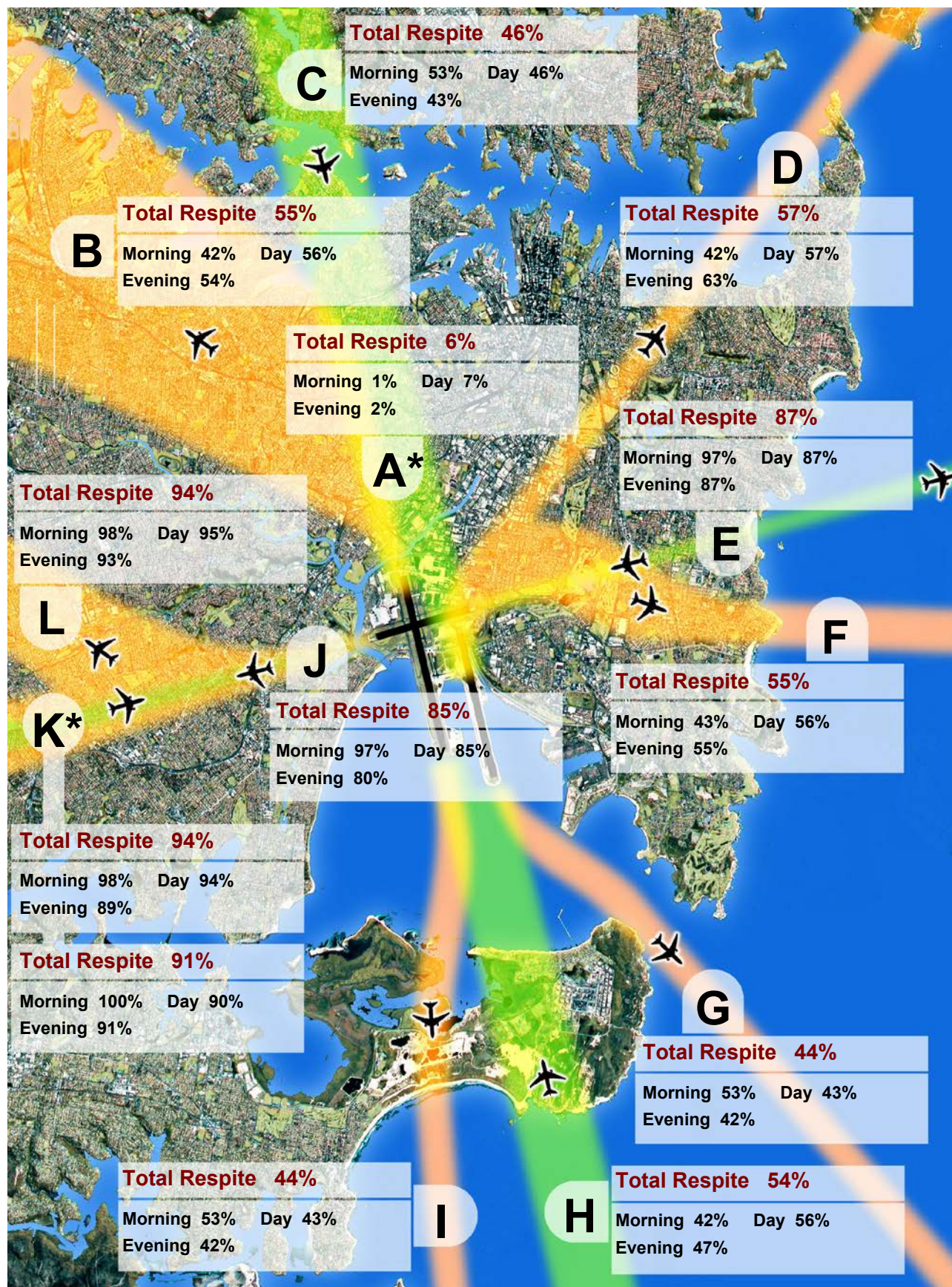


Map 25: Average daily jet aircraft movement periods 2039



Note : Track A* is Tracks B and C combined. Track K* shows departures (top box) and arrivals (bottom box).

Map 26: Average daily jet aircraft respite periods 2039



Note : Track A* is Tracks B and C combined. Track K* shows departures (top box) and arrivals (bottom box).
 A respite interval is a 60 minute period when there are no jet movements (R60).
 Morning: 06:00 to 07:00 Day: 07:00 to 20:00 Evening: 20:00 to 23:00 Total Respite: 06:00 to 23:00

15.7.4 Frequency-based aircraft noise charts

Knowing how many times a particular noise level will be exceeded in an area can be important. For this reason, frequency-based measures of aircraft noise are used. Typically, contour maps showing the number of events louder than 70 dB(A) are used. These are known as N70 contours.

The N70 level is chosen because it is equivalent to the single event level of 60 dB(A) specified in Australian Standard AS2021:2015 as the indoor design sound level for normal domestic areas in dwellings. An external single noise event will be attenuated by approximately 10 dB(A) by the fabric of a house with open windows. This is the sound pressure level of a noise event that is likely to interfere with conversation or with listening to radio or television.

Map 27 shows the forecast N70 chart for Sydney Airport in 2039 and, for comparison, the equivalent contours for 2033.

From the community's perspective, it is also important to know the number of noise events that are forecast to occur during sleeping hours. AS 2021:2015 identifies 50 dB(A) as the inside noise level above which aircraft noise can be considered to be intrusive during sleeping hours. This inside noise level would generally be experienced during a 60 dB(A) outside noise event. A contour map showing the number of events louder than 60 dB(A) – known as the N60 contour – is therefore an effective way of conveying this information to the community. Given its purpose, noise events shown are limited to those occurring between 11.00pm and 6.00am.

Map 28 shows the forecast N60 chart for Sydney Airport in 2026 (operations between 11.00pm and 6.00am only). As noted in section 16.4.2, the noise charts developed for this master plan, including the N60 (curfew hours) in **Map 28**, assumes that Western Sydney Airport opens in late 2026 and that as a consequence, there are changes to the curfew arrangements at Sydney Airport.

Operations allowed during the curfew period

The Australian Government's rules for the operation of the curfew are in the Commonwealth's *Sydney Airport Curfew Act 1995* and *Sydney Airport Curfew Regulations 1995*.

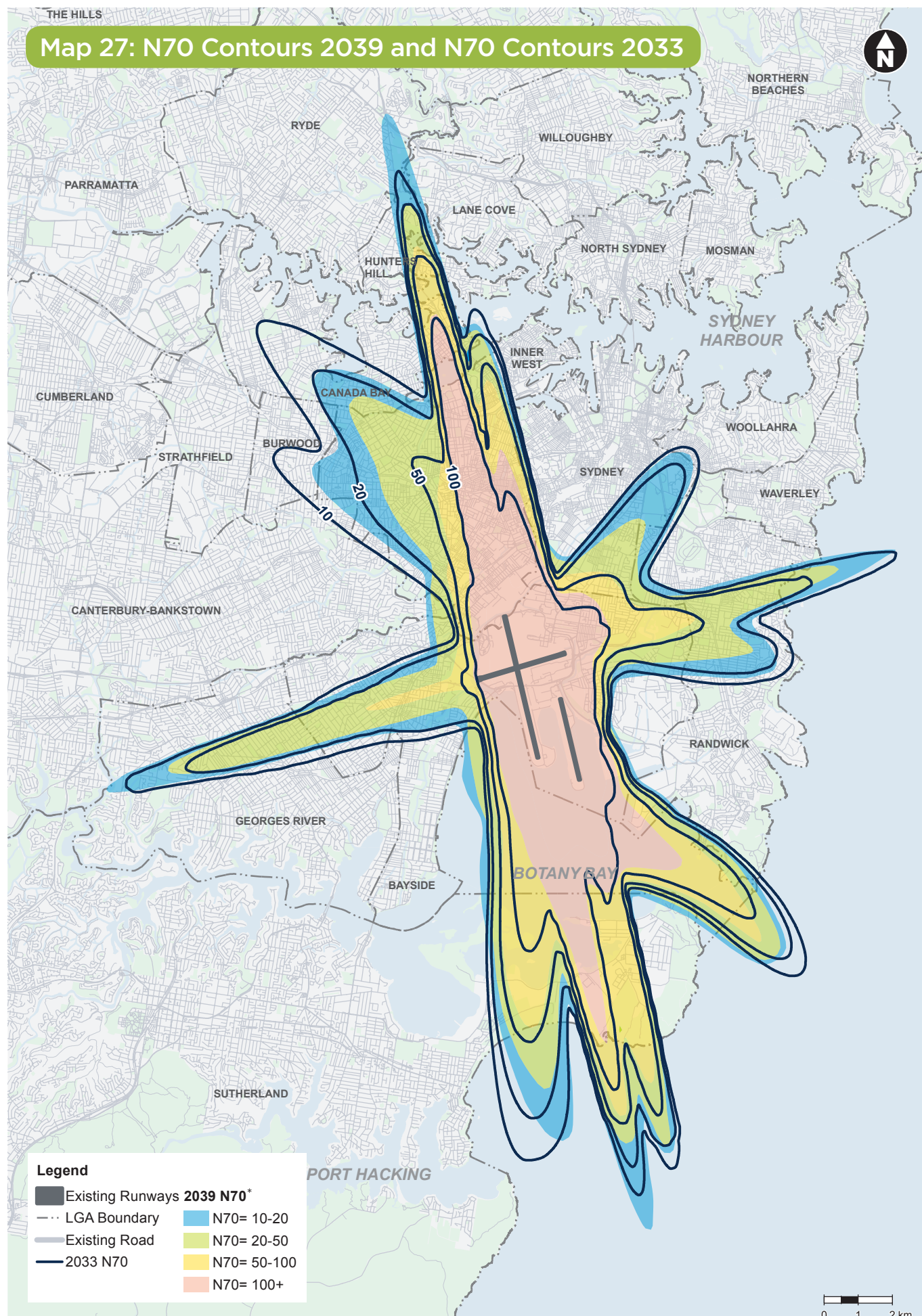
The curfew operates from 11pm until 6am. To mitigate noise impacts during this period, take-offs and landings at the airport are restricted to specific types of aircraft and operations. The principal categories of permitted operations are as follows:

- Small (less than 34,000kg) noise certificated propeller driven aircraft and low noise jets – mostly business and small freight jets (these are specified on a list which has been approved by the Minister) – are allowed to operate without a quota on the number of their movements
- Australian air Express, National Jet Systems and Toll Transport have specific approval to operate a limited number of freight movements per week in medium size freight aircraft

The Curfew Act and Regulations provide for international passenger aircraft movements between 11pm and midnight and between 5am and 6am (known as the curfew shoulder periods) subject to jet aircraft meeting the strictest ICAO noise standards (Chapter 3.0):

- While the Curfew Act would permit up to 35 aircraft movements per week (and no more than 7 on any one day), the Curfew Regulations prescribe lower limits, being no more than 24 movements per week (and no more than 5 on any one day) between 5am and 6am, which may only be landings
- While the Curfew Act would permit up to 14 aircraft movements per week (and no more than 4 on any one day), the Curfew Regulations prescribe zero movements between 11pm and midnight

Map 27: N70 Contours 2039 and N70 Contours 2033



*Noise events - movements per day

Map 28: N60 Contours 2026 (curfew hours only)



*Noise events - movements per night

15.8 Ground-Based Noise

During the curfew, aircraft must operate over Botany Bay, that is take-offs to the south and landings to the north:

- On Saturdays and Sundays aircraft must also operate over Botany Bay in the hour before and after the curfew, provided the weather and traffic conditions allow this to take place safely
- Aircraft are not permitted to take off over suburbs to the north of the airport after 10.45pm

The curfew restrictions do not apply in cases of emergency.

In exceptional circumstances, the minister may grant dispensations for aircraft to operate when they would not otherwise be allowed to do so. These must be issued in accordance with guidelines which define what exceptional circumstances are. When a dispensation is granted, a report giving the reasons for the dispensation must be tabled in both houses of the Australian Parliament. The Curfew Act provides for fines up to \$550,000 for a body corporate whose aircraft breaches the curfew.

Noise from ground-based activities at Sydney Airport is managed separately from noise generated by in-flight operations. Ground-based noise is addressed in [Chapter 14.0 – Environment](#) and in the [Environment Strategy 2019-2024](#).



Image 15-2: Surveying ground-based noise at Sydney Airport



16.0 Safeguarding Sydney Airport



16.1 Overview

Safeguarding operations at Sydney Airport and addressing internal safety and security is critical for the Airport's ongoing operations and growth.

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

Inappropriate development, obstacles and certain land uses in areas surrounding an airport can severely restrict the operations and growth of that airport. While Sydney Airport can control development and activities on the airport, off-airport development involves external agencies and authorities, and needs to be managed co-operatively.

The ANEF contained within this chapter is a land use planning tool to manage noise sensitive land uses around the airport. It provides guidance for the NSW Government and local councils to make informed planning and development decisions.

16.2 Key Points

- We proactively manage safety, security and protection of the on-going operations of the Airport
- All development at Sydney Airport is subject to an internal safety and security review to ensure compliance with legislative obligations
- Expenditure on enhanced infrastructure and technology is vital to Sydney Airport's role of providing a safe and secure transport hub
- The capacity of Sydney Airport to operate and respond to the growth in aviation operations is impacted by what occurs on the land surrounding it. Safeguarding Sydney Airport is an ongoing and shared responsibility between all levels of government and the airport
- The NASF, which applies to Sydney Airport and the surrounding area, provides a national land use planning framework to:
 - Minimise aircraft noise-sensitive developments near Sydney Airport and communicate noise metrics
 - Improve safety outcomes by ensuring aviation safety requirements are recognised in land use planning decisions



Image 16-1: The A350-1000 at Sydney Airport on the Airbus world demonstration tour

16.3 Airport Security

16.3.1 Introduction

Sydney Airport proactively manages safety and security. Significant investment has been made to enhance infrastructure, design and technology to support safety and security in our operational environment.

A well-established safety and security framework is in place. This involves collaboration between Sydney Airport, the AFP, government agencies, airlines and tenants of the airport.

In addition, comprehensive governance mechanisms ensure that safety and security policies and procedures are followed at all times.

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.

16.3.2 Infrastructure and technology

Like other publicly accessible facilities around the world, the nature and type of security threats facing Sydney Airport continues to evolve. This necessitates the ongoing protection of passengers, equipment and infrastructure, all of which increasingly require higher levels of:

- Integration and automation in access control
- Intrusion and perimeter detection
- Screening equipment

We continue to work closely with the Department of Home Affairs to introduce improved screening technologies, such as the introduction of remote screening and video analytics, in response to the evolving threat environment.

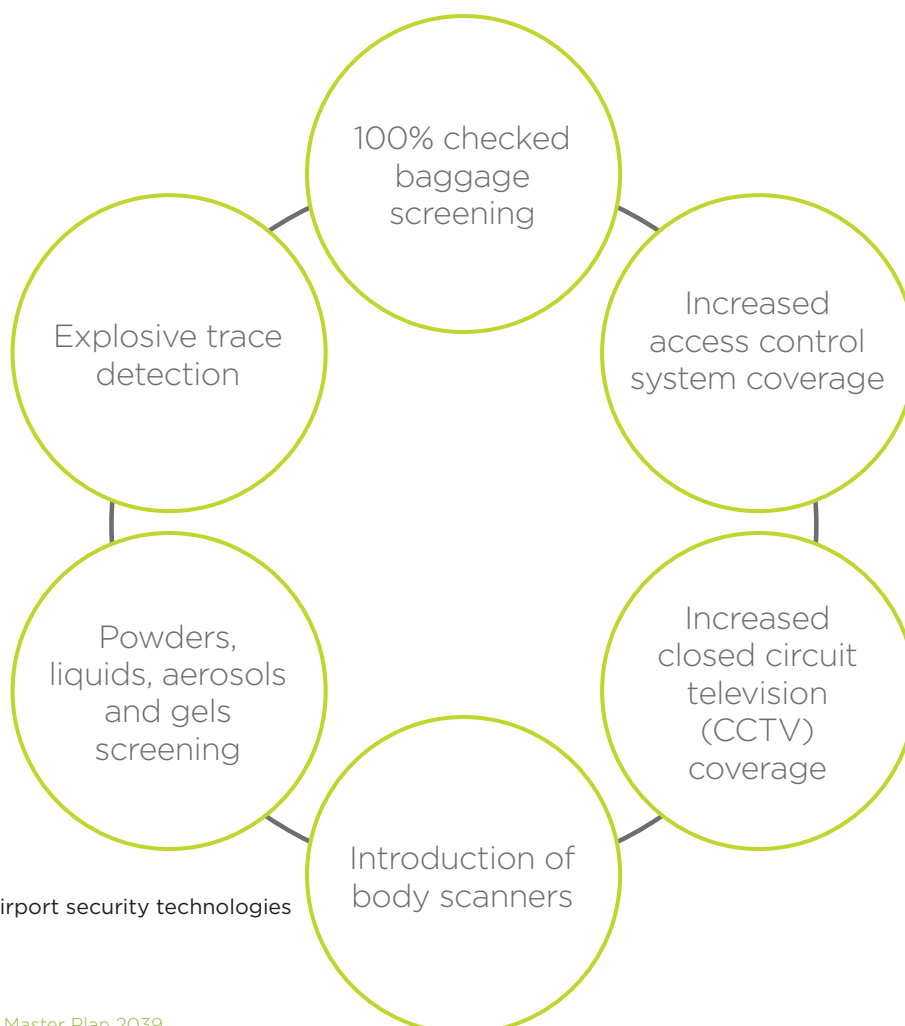


Figure 16-1: Sydney Airport security technologies

We are moving towards integration and automation of our security technologies to improve efficiencies, lower personnel cost and improve the passenger experience.

Ongoing expenditure on enhanced infrastructure and technology is vital to Sydney Airport's role in providing a safe and secure transport hub.

Over recent years, our security regime has been enhanced by several new or upgraded security technologies, as shown in [Figure 16-1](#).

Recent legislative changes, including the new *Aviation Transport Security Amendment (Airside Security) Regulations 2017* and changes associated with Security Restricted Areas (SRA), to be introduced in 2019, require aviation industry participants to:

- Ensure that a person or vehicle can only enter the SRA if the person and their vehicle are authorised to do so
- Implement random and unpredictable screening of people, vehicles and accompanying goods entering the SRA in accordance with an Aviation Screening Notice
- Introduce security awareness training about the new measures for airport and airline workers who regularly work within an SRA

A summary of the key changes and how we will meet these new requirements is shown in [Table 16-1](#).

Table 16-1: New airside security regulation changes

Regulation requirement	Description	Our approach to meet requirement
Access Control	Requirement to conduct access checks for persons and vehicles entering the SRA	Conducting physical face to ASIC checks
Screening Measures	Requirement to conduct random and unpredictable screening of non-exempt persons, vehicles and goods transiting into the SRA	Introducing new screening technology at pedestrian and vehicle entry points into the SRA
Training	Requirement to conduct security awareness training on the new regulations for all airport and airline workers, contractors and others who work regularly in the SRA	Updating and use of the Sydney Airport Security Awareness Guide and completion of a Security Awareness Test (prior to issue of an ASIC card)

16.3.3 Framework to manage safety and security

We are committed to maintaining a safe, secure and reliable airport operating environment through robust management frameworks, involving the preparation of:

- Safety management systems (SMS)
- Road traffic management plans
- Security management systems

We continue to review and implement our SMS. The SMS outlines the processes for effectively managing safety and is audited annually by CASA.

To manage the flow of traffic around airport operations and airport infrastructure, the Sydney Airport Traffic Management Plan has been prepared. The plan covers the interaction between vehicles and the immediate environment and the processes undertaken to eliminate and/or reduce risks.

The security management system at Sydney Airport is described in the Transport Security Program. The program sets out in broad terms Sydney Airport's security risk context, mitigation measures, and emergency and contingency plans.

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*.

We undertake security risk assessments at regular intervals based on the threat level established by the Australian Government. How we achieve certain security outcomes is shaped by legislative requirements, the local security risk context and our operational environment.

The Australian 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.

16.3.4 Safety and security culture

We are focused on fostering a strong safety and security culture among airport staff as individuals play a critical role in delivering security outcomes. Airport employees are well placed to identify and report suspicious, unusual or changed behaviours by members of the public or fellow staff.

We invest in regular staff security awareness campaigns as well as simulated scenarios, which allow procedures to be practised and lessons to be learned and built upon.

16.3.5 Governance mechanisms

We have implemented a centralised and integrated quality management system (Q-Pulse) to support the safety and security framework at Sydney Airport.

CASA, as regulator, conducts an annual safety audit of Sydney Airport to assess compliance with approved operational procedures and to ensure airport facilities meet the requirements under the CASA Manual of Standards. Annual aerodrome technical inspections are also undertaken which complement the CASA audit.

Sydney Airport engages a government licensed and professionally qualified security service provider. Along with passenger and checked baggage screening, the main security functions that are undertaken at Sydney Airport are illustrated in **Figure 16-1**.

Sydney Airport has an internal audit program to ensure contractors engaged by the Airport are also complying with the CASA Manual of Standards and WHS legislation.

The Department of Home Affairs conducts at least two audits of Sydney Airport each year to ensure compliance with government-mandated airport security requirements. Sydney Airport is also audited by both international and domestic airlines as well as other international government and regulatory agencies.

We actively seek to minimise any time or activity-based impacts on passengers and staff caused by security measures, without compromising safety and security or compliance with the legislation.

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

We have implemented a collaborative approach with Sydney Airport’s security service provider to deliver ‘professional security with service and integrity’. This 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.

16.3.6 Security by design

‘Security by design’ considerations have been incorporated into the Airport Development Plan (see [Chapter 7.0](#)). Incorporating measures during detailed design such as structural design, blast mitigation, roadway design, vehicle access 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.

The Airport Development Plan maintains a focus on front of house areas, which are most densely populated with passengers and vehicles. In this context, increased separation distances are a priority for future works at Sydney Airport.

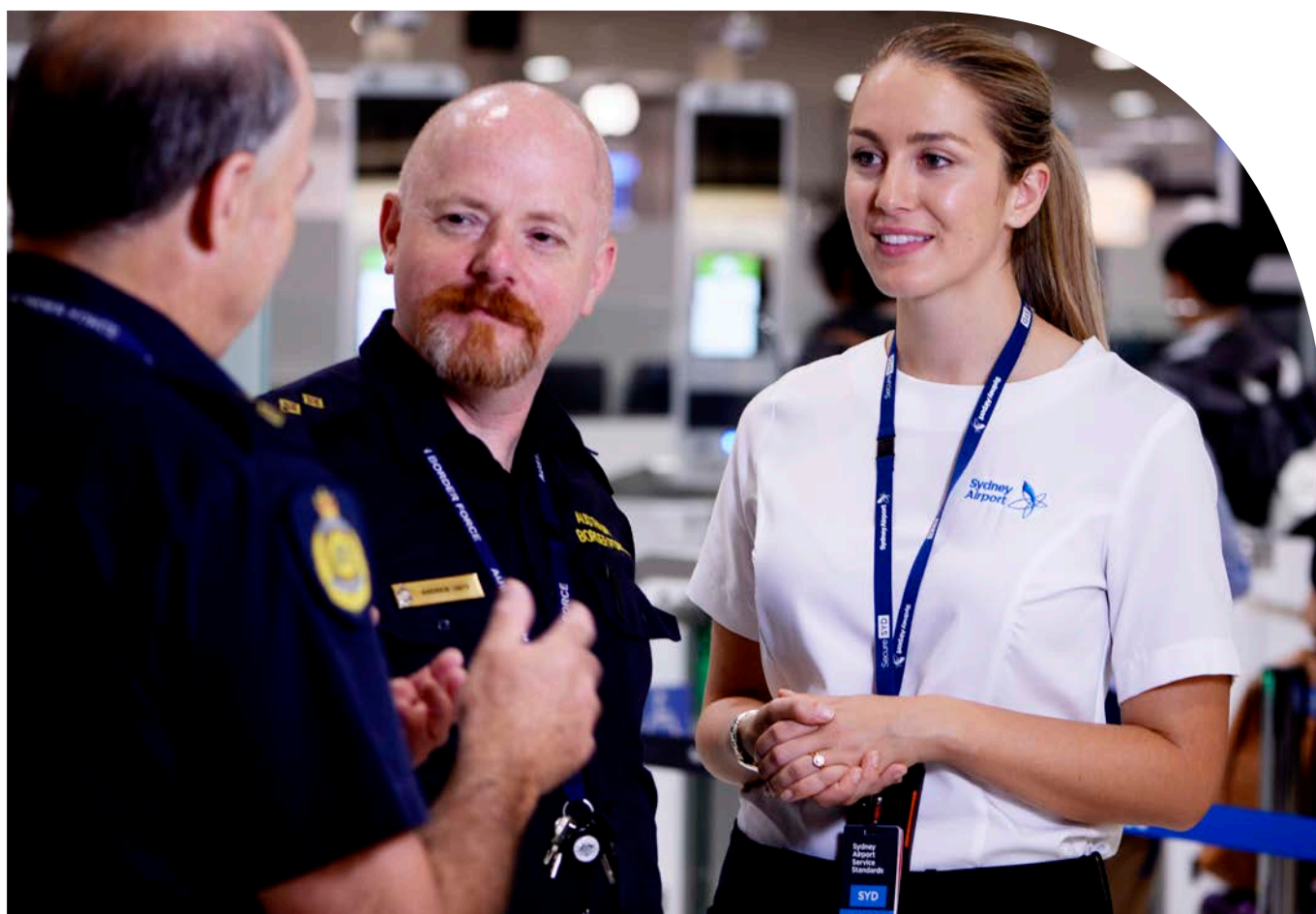


Image 16-2: Our airport terminal services team working with Australian Border Force

16.4 Airport Safeguarding

16.4.1 Introduction

The capacity of an airport to operate and its ability to respond to growing demand for aviation services can be directly impacted by what occurs on the land surrounding it. For example, the construction of buildings or other structures that physically intrude into the airspace around existing flight paths can clearly limit or prevent use of a particular runway at the airport.

Impacts on the airport can also occur as a result of other off-airport development activities that are less obvious. These include:

- Residential developments in inappropriate areas adjacent to airports or under flight paths, which are likely to result in future complaints about aircraft noise and calls to further restrict airport operations (e.g. through curfews or other noise management strategies)
- Large structures/buildings and industrial activities, chimneys and ventilation outlets that generate wind turbulence or wind shear, smoke or intrusions, which may constitute a hazard to aircraft in flight or further constrain airport operations
- Land uses or activities that may attract wildlife (e.g. birds, bats or flying foxes) which may constitute a hazard to aircraft in flight

The long term and effective safeguarding of Sydney Airport is critical to maintaining existing and future aviation operations and the social and economic benefits the Airport contributes to the wider community.

While Sydney Airport can control development and activities on the airport, off-airport development involves external agencies and authorities, and needs to be managed cooperatively.

Sydney Airport has been actively working with the NSW Government and local councils to ensure planning decisions made in areas outside the boundary of Sydney Airport have regard to and, where applicable, comply with the existing National Airport Safeguarding Framework (NASF) Guidelines.

16.4.2 National Airport Safeguarding Framework

NASF is a national land use planning framework which aims to:

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

It applies to all airports in Australia and affects planning and development around airports, including development activity that might penetrate operational airspace and/or affect navigational procedures for aircraft.

It is the responsibility of the NSW Government to implement NASF into its planning system. The NSW Government's *Greater Sydney Region Plan 2018* supports the implementation of NASF, stating:

"Manage the interfaces of industrial areas, trade gateways and intermodal facilities by... recognising and giving effect to the National Airports Safeguarding Framework, incorporating noise, turbulence and wildlife safety measures."

The Greater Sydney Commission has indicated in the *Greater Sydney Region Plan 2018* that a state-wide approach to implementing NASF is being developed by the NSW Department of Planning and Environment. Appropriately integrating NASF guidelines with relevant state and local planning instruments is expected to occur as part of this process.

All local councils are required to review their Local Environmental Plans as soon as practicable to give effect to the relevant *Greater Sydney Region Plan 2018*.

As the growth in aviation activity outlined in Master Plan 2039 occurs throughout the planning period, a sufficient supply of appropriately zoned land near the airport must be maintained (and where necessary created) to allow airport and aviation support-related land uses to be developed on land near the airport.

This is particularly important for freight-related activities at the airport, including freight centres, the need for cold storage facilities, logistics centres and warehousing, along with appropriate vehicle storage/processing and road access. Not all of these uses can be accommodated on the airport site itself.

The GSC has recognised the importance of ensuring industrially-zoned employment lands are protected in areas around Greater Sydney's two nationally significant trade gateways, being Sydney Airport and Port Botany.

NASF is comprised of eight guidelines (refer to **Figure 16-2**). An additional guideline relating to Public Safety Zones (PSZs) is proposed to be finalised in the near future.

Copies of the full set of current guidelines can be found on the DIRDC website:

www.infrastructure.gov.au/aviation/environmental/airport_safeguarding/nasf/

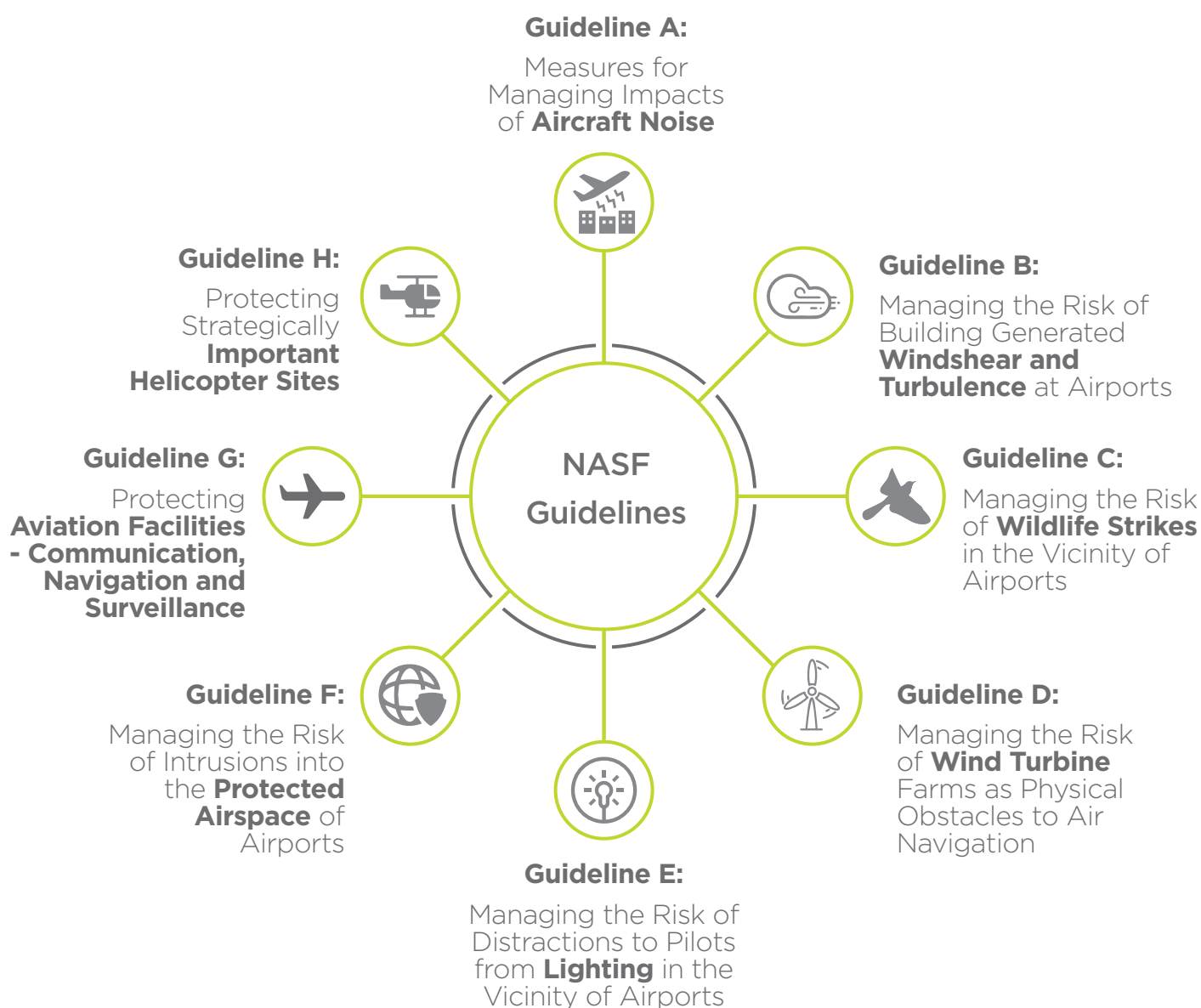


Figure 16-2: NASF Guidelines

Guideline A – Aircraft Noise

The Airports Act requires Master Plan 2039 to specify the following noise-related matters:

- An ANEF for the areas surrounding Sydney Airport
- Flight paths at Sydney Airport
- Sydney Airport's plans – developed following consultation with the airlines that use the airport and local government bodies in the vicinity of the airport – for managing aircraft noise intrusion in areas forecast to be subject to exposure above the significant ANEF levels (i.e. 30 ANEF levels)

This section addresses these compliance issues. Other measures to ensure the community is fully informed about noise management issues are described in **Chapter 15.0 – Aircraft Noise**. These include Sydney Airport's role in facilitating the use of quieter next generation aircraft, active participation in Sydney Airport Community Forum and our commitment to community engagement. Sydney Airport also supports ICAO's balance approach for noise reduction at the source, land use planning and development controls, noise abatement operating procedures and operating restrictions.

The most effective way to manage aircraft noise intrusion in areas forecast to be exposed to high levels of aircraft noise is to implement effective and appropriate land use and planning controls and acoustic standards for such areas.

The ANEF, which was developed as a land use planning tool to manage noise sensitive land uses around the airport, provides guidance for the NSW Government and local councils to make informed planning and development decisions. Preparation of the ANEF requires consultation with planning authorities within the NSW Government and local government authorities in areas around the airport. The system underpins the Australian Standard AS2021:2015.

A balanced and transparent method is needed to ensure inappropriate development around airports does not impose unnecessary constraints on airport operations and create negative impacts on community amenity.

The updated Sydney Airport ANEF 2039, endorsed for technical accuracy by Airservices Australia, considers:

- Aircraft movement forecasts to 2039 including fleet mix and origins/destinations
- Airfield layout, RMOs, associated arrival and departure flight paths and ATC allocations to runways and flights paths for each RMO/route
- Terrain elevation
- Meteorology as affecting runway direction, aircraft performance and atmospheric noise dispersion
- Opportunities to use noise sharing modes based on runway demand/capacity and meteorology

The Sydney Airport ANEF 2039 will assist the NSW Government and surrounding local government planning agencies in land use zoning and consideration of development proposals to minimise impacts from aircraft operations at the airport.

Over the 20-year planning horizon for this Master Plan, the Australian Government is planning to have Western Sydney Airport (WSA) commissioned by 2026. Up until that time Sydney Airport (KSA) will continue to be the only airport in the Sydney Basin handling International, Domestic and Regional traffic. Forecasting scenarios prepared for Sydney Airport account for an additional airport in the Sydney Basin beyond 2026 and were translated into the future design day schedules on which the noise contours are based.

To handle the potential changes in air traffic movements into Sydney Airport pre- and post-commissioning of WSA, a composite ANEF was prepared. It is a combination of noise contours from future operational scenarios (referred to as Australian Noise Exposure Concepts or ANECs). Composite ANEFs are common, having been prepared for other airports such as Melbourne, Brisbane and Perth to account for future anticipated changes to their operating scenarios.

A Sydney Airport Composite 2039 ANEF was prepared based on two ANECs:

- 2026 design day
- 2039 design day

The endorsed ANEF 2039 is shown in **Map 29** and **Appendix G**.

Map 30 compares the updated ANEF 2039 with the ANEF 2033.

As is always the case when a new ANEF is prepared, the contours will be different to those in the previous ANEF. This is the case for the ANEF 2039 and ANEF 2033 as it was for the ANEF 2033 and ANEF 2029 before it.

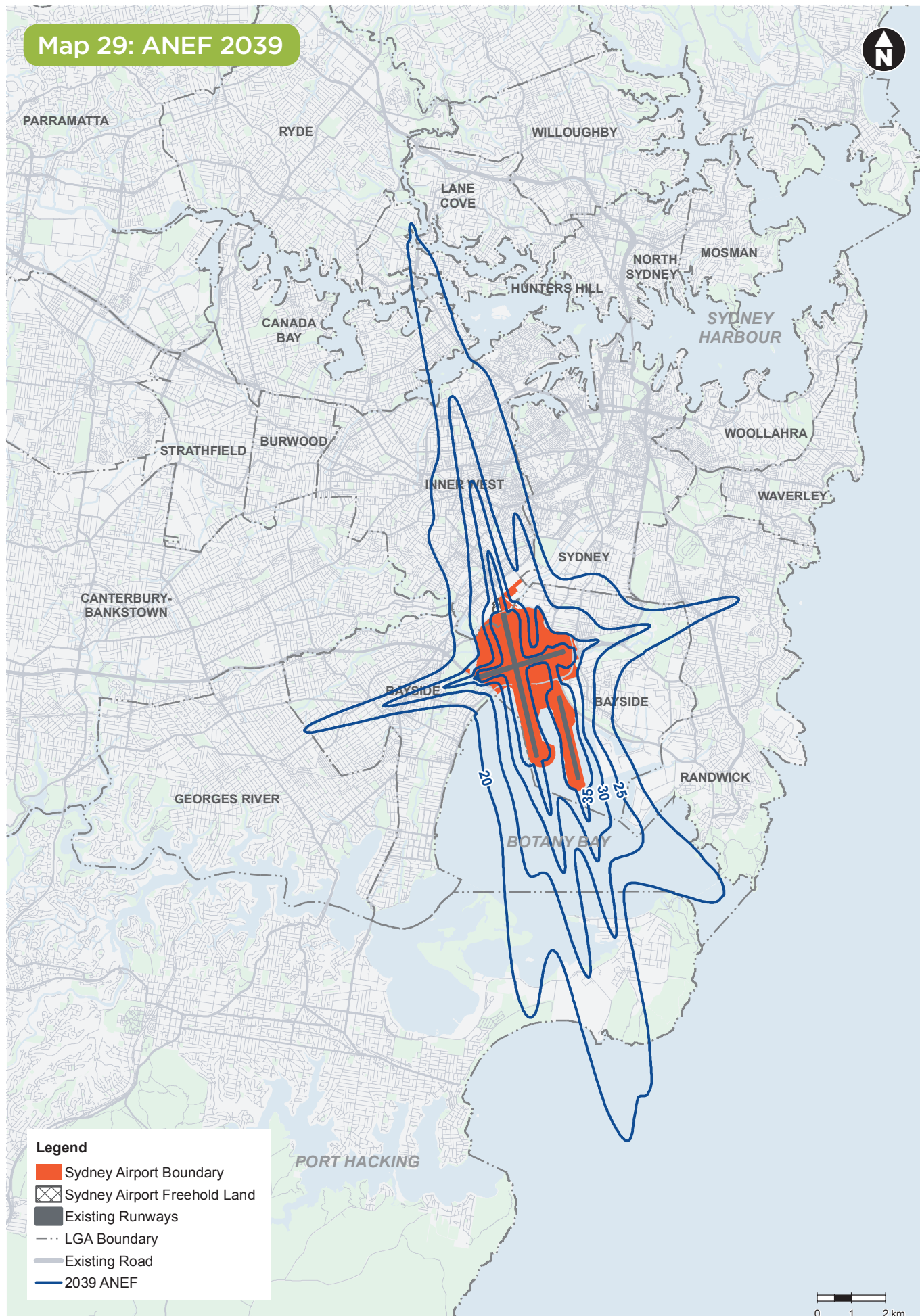
In some areas, the contours move further away from the airport (thus increasing the area affected by the ANEF) and in other areas the contours move closer to the airport (thus reducing the area affected by the ANEF). This is apparent for some sections of the ANEF 20 and 25 contours shown in ANEF 2039.

The reasons why some contours in ANEF 2039 are, in some areas, different to those in the previous ANEF 2033 can be summarised as follows:

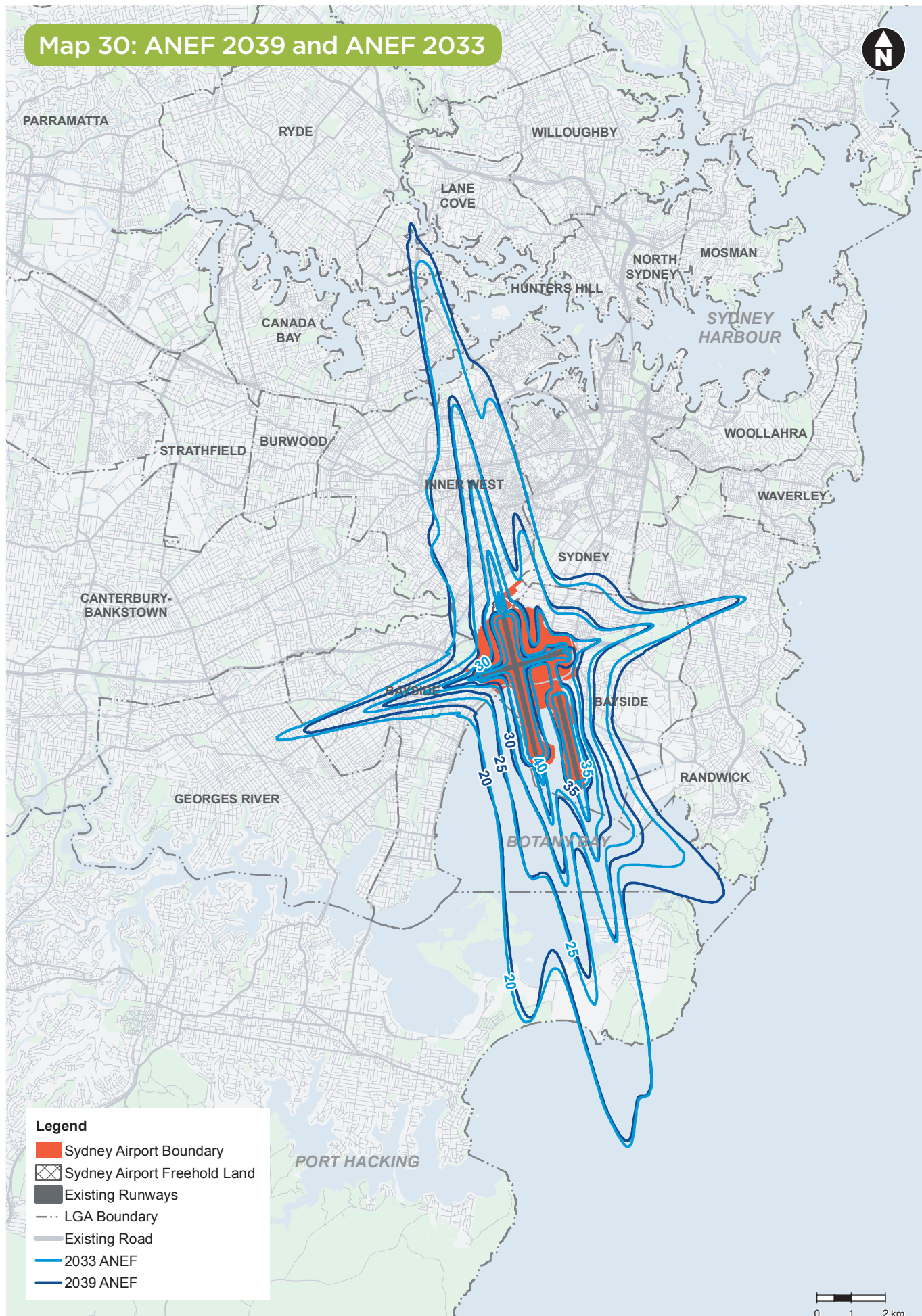
- Forecast increased aviation activity over the planning period, which will see flights increase to just over 408,000 per annum
- International passengers are expected to be the main driver of growth, increasing as a proportion of overall passengers (and therefore international flights) over the period to 2039. Aircraft flying to or from international destinations tend to be larger than those flying to or from domestic or regional destinations
- To ensure balanced operations between the airport's two north-south runways, it has been assumed that some of this growth in international flights will be accommodated on Sydney Airport's parallel north-south runway, noting that such international flights operate from that runway now
- The new ANEF 2039 assumes Western Sydney Airport opens in late 2026 and the aviation activity forecasts that underpin the ANEF reflect that
- Updated meteorological data

There are currently 38,157 residential dwellings and 229 public buildings within the ANEF 20 contour. Of those, 1,132 residential dwellings and five public buildings are currently located within the ANEF 30 contour. There has been a net increase of 593 residential dwellings and a net reduction of three public buildings within the ANEF 20 contour, compared to the previous ANEF 2033.

Map 29: ANEF 2039



Map 30: ANEF 2039 and ANEF 2033



Comparison with Master Plan 2033

With each new master plan the ANEF is updated. This master plan's ANEF reflects the latest information available including technological changes to aircraft, meteorological data and revised passenger and freight air traffic forecasts for the 20 year planning period. As a result of this new information the ANEF contours change.

Map 30 shows that:

- In some areas to the north, north-east and south-east of the airport, the noise contours move further away from the airport
- In some areas to the east, south and west of the airport, the contours move closer to the airport

The above changes are a result of a number of factors, including the:

- Number of aircraft flying to or from Sydney Airport is forecast to increase from 348,500 in 2017 to 408,260 in 2039
- Proportion of international flights, which typically use larger aircraft and require use of the main runway, is forecast to grow from 21 percent in 2017 to 28 percent in 2039
- Updated ANEF reflects the more balanced use of Sydney Airport's two parallel north-south runways

Guideline B – Windshear and Turbulence

Windshear and turbulence from buildings and objects situated close to airport runways have the potential to impact aviation operations.

Sydney Airport's development approval process requires consideration of NASF Guideline B, building-generated windshear and turbulence issues when considering all on-airport development.

NASF Guideline B presents a layered risk approach to the siting and design of buildings near airport runways.

The Airport's windshear assessment envelopes, based on Guideline B, are shown in Map 31.

Air turbulence relating to emission stacks or events that will affect the normal flight of aircraft operating in prescribed airspace is defined as a 'controlled activity' under the Airports Act. However, there are currently no specific off-airport planning controls requiring consideration of building generated windshear and turbulence for off-airport developments. Presently, such assessments are undertaken on a case-by-case basis with input from the Commonwealth Government, including agencies such as CASA, Airservices Australia and DIRDC.

Guideline C – Wildlife Strikes

Sydney Airport monitors and controls the presence of birds and other wildlife on or in the vicinity of the airport in accordance with CASA regulations. Sydney Airport's Wildlife Management Plan describes the practices and procedures for managing wildlife hazards caused by the presence of birds or animals on or near the airport.

The plan has been developed based on knowledge of local wildlife populations and the hazards various species pose to aircraft. Sydney Airport's Wildlife Management Plan has been developed in conjunction with the surrounding local councils. Sydney Airport works with local councils to determine the most appropriate strategies to manage bird hazards, including development of planting guidelines to reduce attraction of birds.

While there are currently no specific off-airport planning controls relating to Guideline C, when Sydney Airport is notified of off-airport permit applications, it assesses them for wildlife strike implications and requests conditions where appropriate. However, this may not capture all potentially important land use proposals, particularly given that the wildlife hazards risk zones outlined in Guideline C extend 13 kilometres from the Airport.

Guideline D – Wind Turbines

The location of wind turbines close to Sydney Airport is controlled through airspace protection guidelines (see NASF Guideline F).

Guideline E – Lighting

CASA has the authority, 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 six kilometre radius of an airport.

Within the six kilometre radius, there is a primary area that is divided into four lighting zones, as shown in **Map 32**. These zones reflect the degree of interference ground lights can cause as the pilot approaches landing.

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.

Map 32 illustrates the lighting restriction zones associated with each of the Sydney Airport runways.

Guideline F – Protected Airspace

Commonwealth Government regulations have long recognised the need to restrict the height of buildings and other structures (such as cranes) near airports or under flight paths. This protected airspace is formally known as ‘prescribed airspace’.

These regulations aim to ensure that:

- The airspace used by aircraft is obstacle-free
- Radar and other air navigation equipment can operate free from interference
- Airport safety lights are not obscured

Definition of prescribed airspace

Under the Airports Act, prescribed airspace is declared by the Australian Government as an area “... in the interest of the safety, efficiency or regularity of existing and future air transport operations into or out of an airport for the airspace to be protected.”

An airport’s prescribed airspace typically includes the following:

- **Obstacle Limitation Surface (OLS):** The OLS is defined by international specifications, as adopted by CASA. It defines the airspace surrounding an airport that must be protected from obstacles to ensure aircraft flying in good weather during the initial and final stages of flight, or in the vicinity of the airport, can do so safely
- **Procedures for Air Navigational Services – Aircraft Operations (PANS-OPS):** At major airports, radio and satellite navigation aids enable aircraft to fly safely in poor weather (known as ‘non-visual conditions’). In such conditions, visibility can be close to zero due to cloud or fog. To avoid collisions, pilots need to know that the airspace they are flying in is free of obstacles
- **Other surfaces:** Other surfaces are defined to ensure off-airport obstacles do not interfere with signals from ground-based air navigation equipment (such as radar) or obscure airport safety lights (such as high intensity approach lights, or HIAL).

If radar signals are interfered with, a pilot may receive inaccurate information about the location of the aircraft in relation to the airport. If the HIAL are obscured, particularly in low visibility conditions when they are most needed, a pilot may lose sight of the runway just before touch down. Both scenarios pose an obvious risk to safety.

Under section 182 of the Airports Act, activities that result in intrusions into an airport’s prescribed airspace are called ‘controlled activities’, and cannot be carried out without approval. The airport operator or DIRDC must assess applications to carry out controlled activities, and may impose conditions on approval.

Under the Airports Act, local councils with boundaries that fall within Sydney Airport’s protected airspace are required to review all building and development applications they receive for any infringements of prescribed airspace.

It is an offence to carry out a controlled activity without approval, or to breach a condition of a controlled activity approval.

Sydney Airport's prescribed airspace

Since Sydney Airport can control on-airport development activity, the primary focus of airspace protection is to ensure off-airport development activity does not compromise aviation safety.

Airspace protection therefore involves aspects of land use planning and development control, which need to be managed cooperatively with external responsible authorities, including the NSW and local governments. On 20 March 2015, DIRDC declared prescribed airspace for Sydney Airport.

Charts showing the current prescribed airspace can be downloaded at:

<https://www.sydneyairport.com.au/corporate/planning-and-projects/airspace-protection-tile>.

To protect these surfaces at Sydney Airport, we conduct annual obstacle monitoring surveys and publish the results on the Sydney Airport website. Daily obstacle monitoring is also conducted by airport operations staff, in conjunction with approved building activities within the airport vicinity, to maintain the safety, efficiency and regularity of aircraft operations into and out of Sydney Airport.

Guideline G – Protecting Communications, Navigation and Surveillance Facilities

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

To meet the performance requirements, airspace restrictions are established for each item of equipment and procedure. Sydney Airport's first preference is to ensure these are no infringements of airspace restrictions. 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.

NASF Guideline G also seeks to protect Communications, Navigation and Surveillance (CNS) facilities off-airport.

Guideline H – Protecting Strategically Important Helicopter Sites

National Airports Safeguarding Advisory Group Guideline H seeks to protect strategically important helicopter sites.

As the Guideline defines a helicopter landing site as an area 'not located on an aerodrome', the Guideline is not applicable to Sydney Airport.

Guideline I – Public Safety Areas

Public Safety Areas (PSA) (previously known as Public Safety Zones) are implemented at airports to protect the safety of the public from aviation activities and accidents.

The International Civil Aviation Organization (ICAO) data indicates that if an accident occurs, it will likely occur within 1,000 metres before the runway on approach or within 500 metres beyond the runway end on departure. A PSA covers this zone to protect public safety, limiting land uses, on- and off-airport, that increase the number of people living, working or congregating in the zone, and the storage of hazardous materials in the zone.

NASF Guideline I, Managing the Risk in Public Safety Areas at the Ends of Runways, has recently been finalised. The Guideline suggests two methods suitable for a planning-led approach to the assessment of the PSA:

- UK NATS Methodology
- Queensland State Planning Policy

As part of the master planning process, and the ongoing on-airport development approval process, Sydney Airport has regard to crash risk and public safety. Depending on the type of development being proposed, Sydney Airport undertakes a safety case.

Off-airport land use zoning falls within the jurisdiction of the surrounding local government areas. No legislation or guidelines presently exist with respect to permissible off-airport land uses with respect to aircraft crash risk. Sydney Airport will continue to work with the NSW Government and surrounding local government authorities on the implementation of NASF Guideline I.

16.5 Implementation

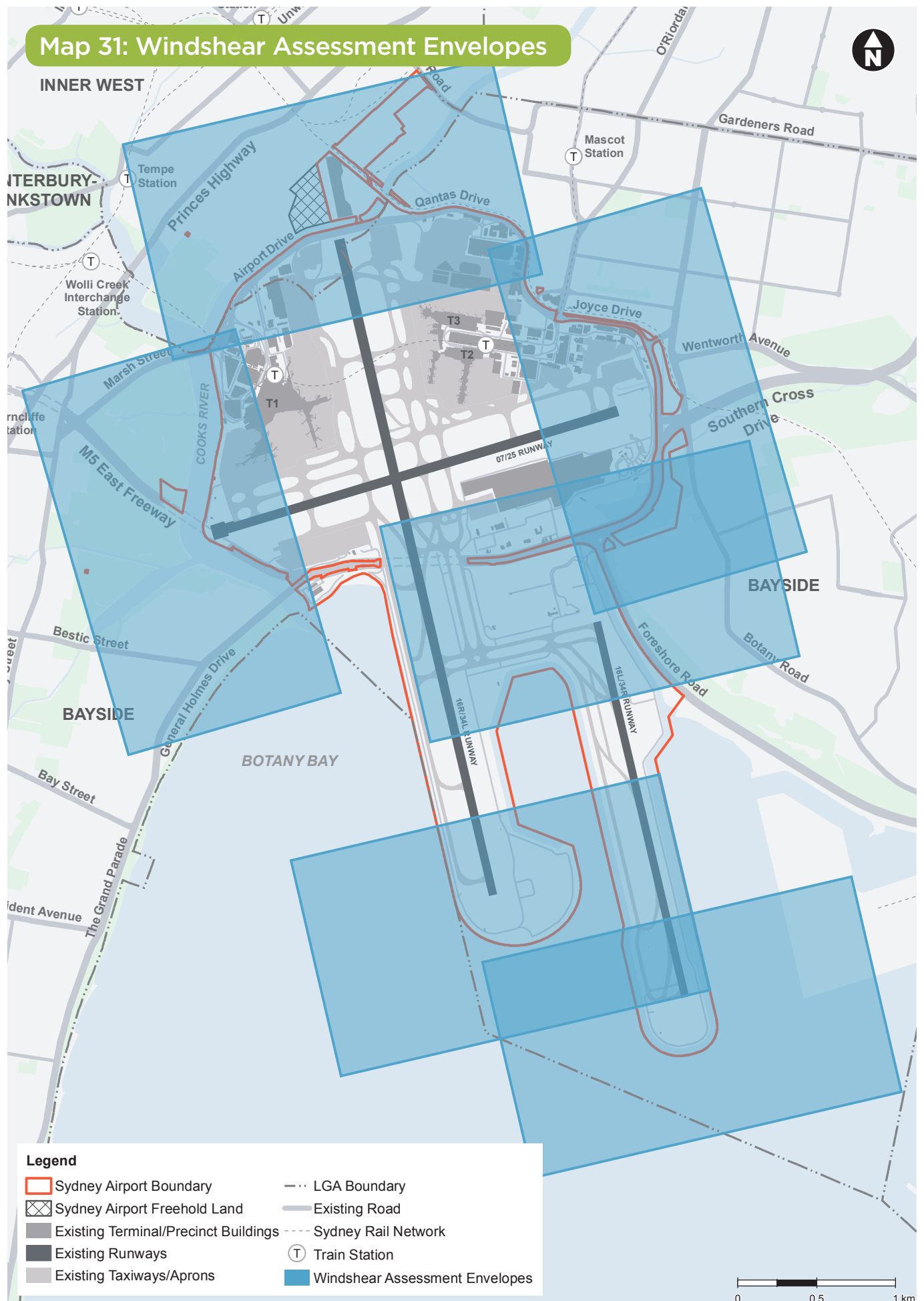
Security is an ongoing and critical factor in ensuring the safety of airport operations.

Safeguarding the airport is a shared responsibility among all levels of government and Sydney Airport. There is strong support from government for airport safeguarding, but it has become clear that improvements can be made to Sydney Airport's safeguarding framework. More broadly, NASAG has highlighted the need to improve airport safeguarding measures around Australia.

Sydney Airport supports the NASF guidelines and uses them to guide the consideration of on-airport developments and as the basis of responses to off-airport development proposals. For these guidelines to be fully effective, Sydney Airport believes they need to be translated into planning controls within the NSW planning system.

We are working with the Australian Government, NSW Government, local governments and industry to ensure that the airport's long-term operation is protected.

Map 31: Windshear Assessment Envelopes



Map 32: Restricted Lighting Plan

