airservices

Guide to
our operations

connecting australian aviation

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Introduction

Airservices is Australia's air navigation service provider. We provide air traffic control and aviation rescue and fire fighting services at airports around the country.

Each year we manage domestic and international air traffic operations for more than 80 million passengers on more than four million flights in a region covering 11 per cent of the world's surface.

The safety and integrity of Australia's air navigation system is our primary consideration and we are committed to maintaining and enhancing our safety performance and systems through robust safety management and workplace health and safety systems.

Even to the most seasoned traveller, the world of air traffic control remains largely a mystery. This guide has been produced to assist our stakeholders and the broader public to understand how air traffic control works and to provide insights into everyday occurrences at airports.

Our governance

Airservices is wholly-owned by the Australian Government and governed by a Board of Directors appointed by the Minister for Infrastructure and Transport. Our services are funded through revenue from our airline customers under a five-year pricing agreement.

Our vision

Our vision is 'connecting the Australian aviation industry to deliver world best industry performance.' Our vision is about working with industry to meet the challenges of a predicted 60 per cent growth in air traffic over the next 20 years.

This level of growth means increased congestion at airports, and a range of other environmental and service efficiency issues. Airservices has a unique role at the heart of the aviation industry as we are well placed to bring the various players together to deal more cohesively with these challenges.

Contacting us

You can find more information on our activities at www.airservicesaustralia.com or by phoning 1300 301 120.

You can also follow Airservices on Twitter and YouTube.

@AirservicesNews

AirservicesTV

Who's responsible for what

A number of departments, agencies and organisations have responsibilities across the aviation industry.

Airservices provides air traffic control, aviation rescue and fire fighting services and related airside services to the aviation industry, including maintaining technology used by the industry for navigation and surveillance.

The **Civil Aviation Safety Authority (CASA)** is Australia's safety regulator for civil air operations and the operation of Australian aircraft overseas. CASA is responsible for licensing of aircraft and pilots, and has a role in delivering safety education and training programs. Through the **Office of Airspace Regulation**, CASA also has responsibility for airspace regulation.

The **Australian Transport Safety Bureau (ATSB)** is Australia's national transport safety investigator. When things go wrong in transport safety, the ATSB does not blame, but investigates to ensure that it doesn't happen again.

The **Australian Maritime Safety Authority** is responsible for search and rescue coordination, which is conducted from the Rescue Coordination Centre in Canberra.

The **Department of Defence** is responsible for military aviation operations and air traffic control at airports with a shared civil and military use. Airservices is also working closely with Defence to harmonise civil and military air traffic control systems.

The **Department of Infrastructure and Transport** oversees government legislation and policy relating to airports and aviation, including curfews and noise insulation programs.

The **Bureau of Meteorology** is Australia's national weather, climate and water agency. Through Airservices, it provides aviation users with meteorological information necessary for safe and efficient civil aviation operations, including the provision of observations, forecasts, warnings and advisories.

Airservices works closely with the independent office of the **Aircraft Noise Ombudsman** to improve the way in which we respond to community concern about the impact of air traffic.

Our operations at a glance

Air traffic control

- 29 major Australian airports (excluding Darwin and Townsville where the Royal Australian Air Force provides this service)
- includes all aircraft flying in upper level airspace and in controlled airspace in Australia. See page 10 for more detail.

Aviation communications, surveillance and navigation systems

- Satellite technology such as Automatic Dependent Surveillance-Broadcast
- installation and maintenance of radar, surface movement technology, instrument landing systems, non-directional beacons and satellite-based technology
- regular inspections of regional navigational aids.

Management of aircraft noise

- operation of the national aircraft noise and flight path monitoring system
- management of noise complaints.

Environmental initiatives to reduce aviation greenhouse gas emissions

- involvement in the Indian Ocean and Asia and South Pacific programs to reduce emissions
- technology being trialled at airports by Airservices (for example, Smart Tracking).

Aviation rescue and fire fighting services at major airports

- Cairns, Townsville, Hamilton Island, Mackay, Rockhampton, Sunshine Coast, Brisbane, Gold Coast, Sydney, Canberra, Melbourne, Avalon, Launceston, Hobart, Adelaide, Perth, Karratha, Broome, Darwin, Alice Springs and Ayers Rock.

Fast facts

- We employ more than 4000 people, including approximately 1000 air traffic controllers, more than 700 aviation fire fighters and 280 technical officers.
- We maintain an asset base valued at more than $1 billion at 710 sites across the country.
- Air traffic controllers manage air traffic operations for more than 80 million passengers and more than four million flights each year.
- Our air navigation service availability in 2011–12 was 99.99 per cent.
- Our fire fighters are called out around 150 times each week across Australia's regional, domestic and international airports.
- The Federal Government is our owner. Our activities are mostly funded by our customers, the airlines, which use the vast range of services and facilities we provide.

Air traffic control

Air traffic control is used to manage the safe and orderly flow of aircraft into, out of, and across Australian airspace.

Our air traffic controllers keep aircraft at safe distances from each other in the air and on the ground, while arranging them in an order for landing or take-off along organised flight paths.

We use systems and processes to minimise the risk of collisions, while allowing the maximum number of aircraft to fly safely in our skies.

As airspace gets busier, and at peak times, this becomes increasingly challenging.

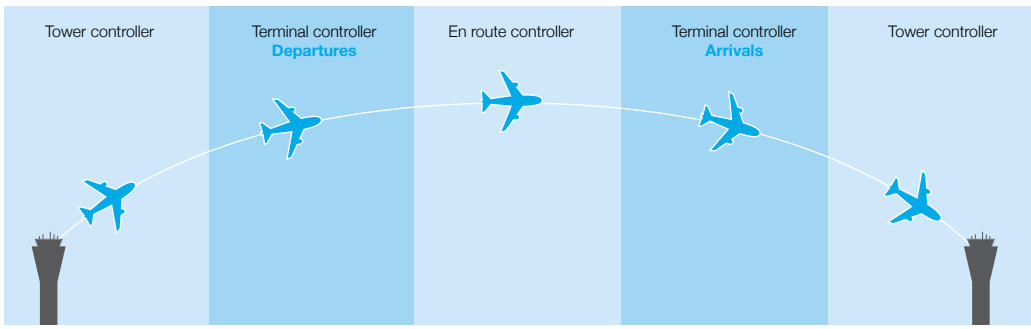
Air traffic control services at joint civil/military airports, such as Darwin, Townsville and Williamtown, are provided by the Royal Australian Air Force. Airservices aviation fire fighters may still have a role at these airports.

Types of air traffic controllers

There are three main types of air traffic controllers:

- **Tower controllers** are located at an airport's control tower and are responsible for all aircraft and vehicle movements on taxiways, runways and in the immediate vicinity of the airport. Control towers separate aircraft visually but use a range of technology to assist with this. Tower controllers are generally responsible for separating aircraft on the manoeuvring areas (runways and taxiways) as well as in the air and within close proximity to the airport.
- **Terminal controllers** use radar and other surveillance technology to manage the flow of aircraft arriving and departing from major city airports. Airservices provides control services in an extended area around capital city airports, and these controllers are instrumental in maximising the safe use of this busy airspace. Airservices terminal control units are located at Cairns, Brisbane, Sydney, Melbourne, Adelaide and Perth.
- **En route controllers** located in Brisbane and Melbourne are responsible for all aircraft at upper levels (above 25 000 ft or 7620 m). These controllers are therefore responsible for the majority of air traffic over the Australian mainland and on oceanic routes within Australia's flight information region.

Who's in control



Separation standards

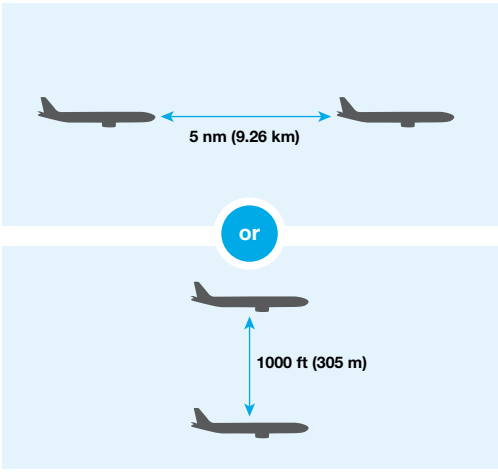
Air traffic controllers apply separation standards to keep aircraft operating in controlled airspace and at airports with an operational control tower a minimum distance apart.

A **loss of separation assurance (LOSA)** is when there is no loss of separation but there has not been a clear application of a separation standard.

When two aircraft experience an actual loss of the minimum separation distance (which varies depending on the airspace classification), it is referred to as a **loss of separation (LOS)**. A LOS does not mean that the aircraft were at immediate risk of colliding or that the incident was a 'near miss', it simply means that separation standards were not maintained.

Different separation standards apply depending on whether aircraft are operating under instrument flight rules (IFR—all large passenger aircraft) or visual flight rules (VFR—most light aircraft and helicopters).

Example of separation standards in airspace with radar surveillance (up to 29,000 ft or 8800 m)



Note: different separation standards apply in different areas of airspace

How close can they go—IFR aircraft

Vertical separation

In Australia, aircraft flying in controlled airspace up to 29 000 ft (8800 m) should not come closer than 1000 ft (305 m) vertically to another aircraft unless they are separated horizontally. Above 29 000 ft, the vertical separation increases to 2000 ft (610 m), except in airspace where Reduced Vertical Separation Minima is applied.

Reduced Vertical Separation Minima (RVSM)

RVSM allows aircraft equipped with modern altimeters and autopilot systems and flying between 29 000 and 41 000ft (8800–12 400 m) to be vertically separated by a minimum of 1000 ft (305 m) rather than the standard 2000 ft (610 m).

Horizontal separation

In controlled en route airspace, the horizontal separation standard between aircraft flying at the same altitude is 5 nm (9260 m). If aircraft are separated vertically, horizontal separation can be reduced. Horizontal separation prevents aircraft flying into another's wake turbulence.

In terminal airspace, the minimum separation is 3 nm (5500 m). Within the confines of an airport control zone, the separation can be closer as long as the aircraft remain separated.

How far is five nautical miles?

- 5 nm is 9.26 km or 9260 m
- In Sydney 5 nm is the approximate distance from Sydney Airport terminal to Hyde Park (as the crow flies).
- In Melbourne, it is approximately Flinders St Station to Williamstown.
- In Brisbane, it is approximately Queen St Mall to Mount Gravatt.

In areas outside of radar coverage or other satellite-based navigation services, separation of aircraft is achieved by the application of various procedural rules, for example, based on time and their estimated position.

How close can they go—VFR aircraft

The minimum separation in visual flight conditions is less than that in an instrument flight. At or in the vicinity of an airport with a control tower, controllers may reduce the vertical separation to as little as 500 ft (152 m), depending on the aircraft's size and type.

In the air, visual flying separation depends on where aircraft are flying. For example, over Sydney Harbour sightseeing helicopters use the 'see and avoid' principles where pilots maintain their own separation. For general aviation aircraft (non-commercial aircraft), outside of controlled airspace, separation can be as close as 500 ft (152 m) vertically and horizontally. Some aircraft (for example, during formation display flying) may operate closer with dispensations from the Civil Aviation Safety Authority (CASA).

How low can they go?

Aircraft can fly no lower than 1000 ft (305 m) above the ground/terrain in built-up areas or 500 ft (152 m) in non-residential areas. Helicopters can fly no lower than 500 ft above the ground/terrain in built-up areas. This is dependent on visibility and aircraft size.

In some circumstances, a 'low flying permit' may be required which is issued by CASA. Additionally, pilots may be required to have a special 'low flying' endorsement attached to their pilots licence.

Service disruptions

Equipment failure

Air traffic control services may sometimes be adversely affected by the failure of radar or other facilities or equipment. This can result in a reduction in the normal level of service, or a suspension of air traffic control in a certain piece of airspace.

In these cases, back-up processes and procedures, and specific contingency plans, are always available and activated as required.

What happens during an outage?

Where air traffic control services are unavailable, a Notice to Airmen (NOTAM) is issued and all stakeholders are directly informed. Assistance is provided to allow services to operate clear of the affected airspace or under modified procedures to allow the safe passage of aircraft through the airspace. This information is reported by Airservices regularly and is available on our website.

How airspace works

Airspace is classified into 'categories' which determine the level of service provided. In Australia these range from Class A (typically en route, high level airspace), through to Class G (uncontrolled airspace predominantly used by light aircraft).

The service provided by air traffic controllers varies depending on the class of airspace:

- **separation service:** air traffic controllers keep aircraft a minimum distance apart to reduce the risk of collision and prevent accidents due to wake turbulence
- **flight information service:** the provision of advice and information which may be valuable for the safe and efficient conduct of flight
- **traffic information service:** information issued by controllers to alert the pilot of an aircraft that another may be close to his or her position or intended route.

Controlled versus uncontrolled airspace

Airspace is designated as 'controlled' or 'uncontrolled'. Controlled airspace in Australia is actively monitored by air traffic controllers and is broken up into a number of different classes, or classifications.

To enter controlled airspace, an aircraft must first gain a clearance from an air traffic controller. In contrast, no clearance (or supervision by air traffic control) is required to operate in uncontrolled airspace. The large majority of light aircraft and helicopters operate outside or underneath controlled airspace (for example, aircraft that operate at low levels over Sydney Harbour).

Different areas of controlled airspace are also managed by different air traffic controllers.

Terminal airspace

Terminal airspace is the airspace surrounding a major airport, generally within 30–50 nm (55–90 km). In the case of some major airports, this airspace extends from ground level up to 18 000 ft (approximately 6000 m) close to the airport.

As the distance from the airport increases, the lower boundary of the control zone rises in steps (see diagram page 11), enabling other airspace users (such as gliders and balloons) to operate outside terminal airspace without requiring an air traffic clearance.

Restricted airspace

In restricted airspace, aircraft movements are restricted in accordance with certain specified permissions. Examples of restricted airspace include airspace around military installations and high density flying operations at an air show or other large public event. Restricted airspace may be imposed by police for safety/security reasons in the vicinity of bushfires or major crime scenes. Decisions on restricted airspace are made by the Office of Airspace Regulation (see page 4).

No-fly zones

No-fly zones are similar to restricted airspace but are imposed and enforced by the military (usually the Royal Australian Air Force). No-fly zones will often be established around military exercises, heads of government meetings and the Olympic/Commonwealth Games. Airservices has no authority or control over no-fly zones.

Australian airspace architecture

There are two types of airspace—controlled and uncontrolled. Controlled airspace is broken down into a number of different classes. Depending on how far and how high an aircraft wants to fly, it will pass through different classes of airspace, in which different rules will apply.

The diagram (opposite) represents the classes of airspace in Australia and how they connect and overlap. The level of service an aircraft receives from air traffic control and the classes of airspace in which it can fly, are determined by whether it is operating under visual flight rules (VFR) or instrument flight rules (IFR).

CLASS A

This high-level en route controlled airspace is used predominantly by commercial and passenger jets. Only IFR flights are permitted and they require ATC clearance.

CLASS C

This is the controlled airspace surrounding major airports. Both IFR and VFR flights are permitted and both require ATC clearance.

CLASS E

This mid-level en route controlled airspace is open to both IFR and VFR aircraft. IFR flights are required to communicate with ATC and must request ATC clearance.

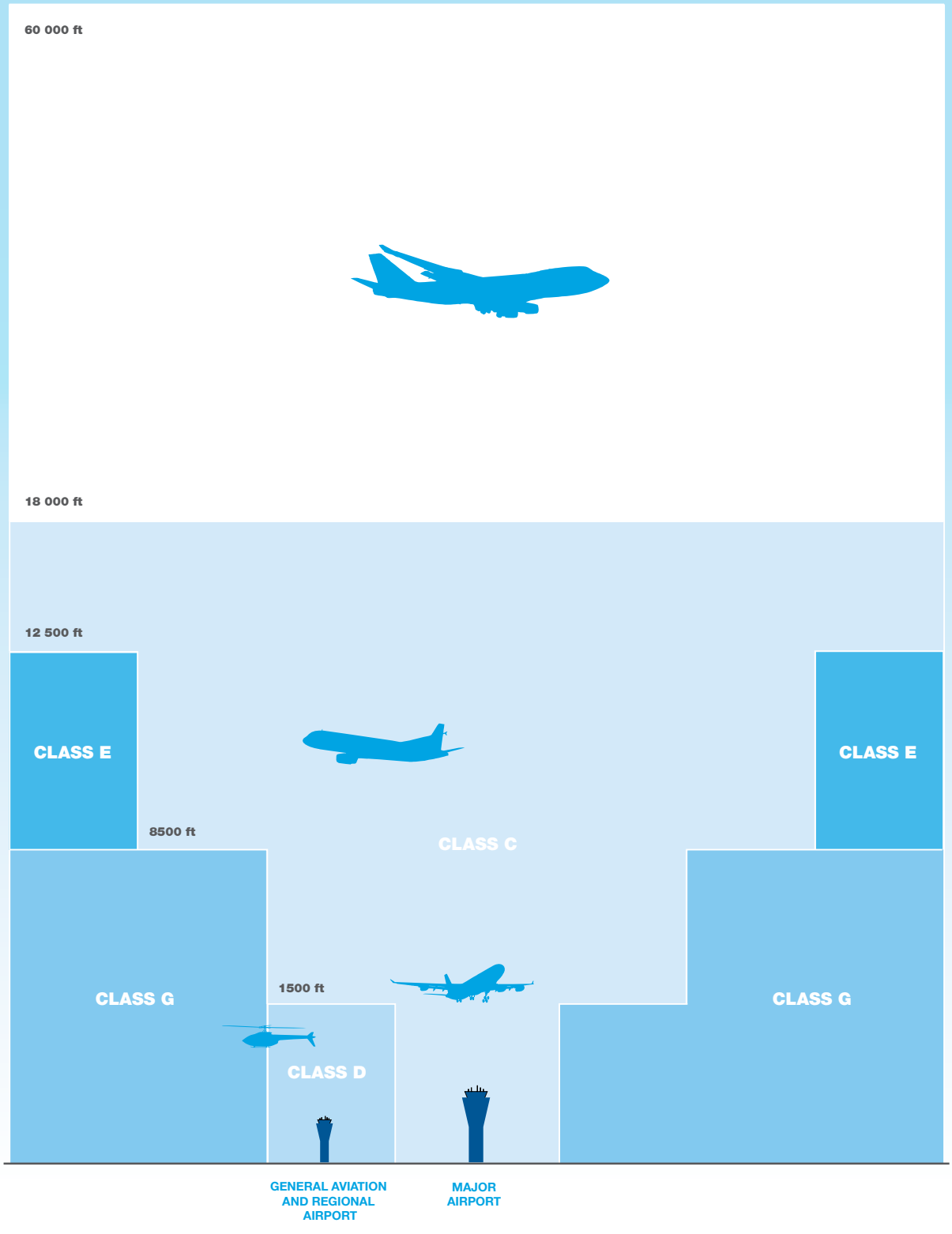
CLASS D

This is the controlled airspace that surrounds general aviation and regional airports equipped with a control tower. All flights require ATC clearance.

CLASS G

This airspace is uncontrolled. Both IFR and VFR aircraft are permitted and neither require ATC clearance.

Note: At towered airports the class of airspace may change subject to the time of day.


60 000 ft
18 000 ft
12 500 ft
CLASS E
CLASS E
8500 ft
CLASS C
CLASS G
1500 ft
CLASS G
CLASS D
GENERAL AVIATION AND REGIONAL AIRPORT
MAJOR AIRPORT

Our technology

Australia's aviation industry relies on Airservices for the provision and maintenance of air navigation technology and equipment critical to aviation safety at regional and major airports, aerodromes and airstrips.

Automatic Dependant Surveillance-Broadcast (ADS-B)

ADS-B is satellite-based technology which requires aircraft to be fitted with an ADS-B capable transponder. Ground stations comprise of an antenna that receives data transmitted from an aircraft via satellite and provides accurate surveillance. The aircraft's data is displayed on a controller's screen.

Radar

Airservices uses terminal area radar (TAR) and en route radar to assist with separation of aircraft in controlled airspace. At major airports it is common to have both radars in use.

TAR, or primary radar, relies on radio waves reflecting off metallic objects and is effective within a short range from the radar head. Regardless of whether an aircraft has a transponder, primary radar (usually used in conjunction with a secondary surveillance radar) will detect an aircraft's position, height and approximate airspeed. TARs are useful for detecting aircraft in controlled airspace close to the airports.

En route radar, or secondary surveillance radar, relies on an aircraft having a transponder which transmits a data signal. The signal is received and interrogated by a ground station. En route radar covers larger volumes of airspace ranging from 250 nm (463 km) in radius and up to 100 000 ft (30 km) vertically.

Instrument Landing System (ILS)

An ILS allows aircraft to land at an airport when there is poor or low visibility. An ILS is comprised of two transmitters—the localiser and glide slope. This ensures the aircraft is within the lateral and vertical parameters for the runway being used.

Advanced Surface Movement Guidance and Control System (A-SMGCS)

A-SMGCS works in a similar way to ADS-B but on the ground. Aircraft and ground vehicles are fitted with a transponder which transmits a signal to a receiver at the airport. Used at major airports, A-SMGCS shows the position of aircraft and ground vehicles on a screen in front of the surface movement controller in the tower.

Ground Based Augmentation System (GBAS)

In the future, conventional ILSs may be replaced by a satellite-based landing system called GBAS. Using just one array of four short transmitter/receiver towers on an airport, GBAS can guide up to 26 highly precise and smooth approaches simultaneously.

Smart Tracking

Smart Tracking is a form of performance-based navigation (referred to in the industry as PBN) which uses satellite-based technology to allow an aircraft to fly through a specific three-dimensional path in the sky with precise accuracy. This can reduce flying time for passengers as well as reducing the amount of fuel used and CO_2 generated.

Radar

A-SMGCS

GBAS

ADS-B

ILS

Aircraft noise

Airservices works to minimise the effects of aircraft noise on communities. This includes working with the aviation industry on flight paths to minimise noise, the maintenance of curfews, and an extensive noise and flight path monitoring system at eight major airports around the country.

Airservices is responsible for responding to complaints in relation to aircraft noise through the dedicated Noise Complaints and Information Service. The role of this unit is to report community concerns about aircraft operations to stakeholders including airlines, airports and government.

More information about Airservices Noise Complaints and Information Service is available at www.airservicesaustralia.com or by phoning 1800 802 584.

Noise reports

Airservices produces monthly noise reports which are available on our website.

Aircraft Noise Ombudsman (ANO)

Airservices works closely with the independent office of the ANO to improve the way in which we respond to community concern about the impact of air traffic on communities. The ANO's website is www.ano.gov.au

Flight paths

The term 'flight path' is used to refer to the corridor where the aircraft fly most of the time. Flight paths can be a number of kilometres wide, rather than the straight lines depicted on flight charts.

Aircraft may be required to deviate from these routes by air traffic controllers, or pilots may also fly different routes for a range of reasons.

Weather

Weather can significantly affect aircraft operations. Low cloud, fog and rain may disrupt visibility at or around an airport.

Thunderstorms and lightning strikes will also see aircraft re-routed around a storm cell or diverted. Ground operations at airports may also be stopped when thunderstorms are in the area.

Minimising disruptions

Airservices National Operations Centre in Canberra works closely with the Bureau of Meteorology and air traffic controllers nationally to minimise disruptions caused by weather. Air traffic controllers will adjust the number of aircraft movements per hour to match the operating conditions at each airport.

Airport closure

Airservices does not have the authority or ability to close an airport. This decision can only be made by the airport operator, but would only occur in extreme circumstances. For example, the Queensland floods in 2011 closed Rockhampton Airport for several weeks.

Impact on runway selection

Weather, in particular wind speed and direction, is generally the main factor in determining which runways are in use at an airport, in which direction aircraft will take off and land and which flight paths are used.

Aircraft take off and land into the wind, or with minimal tail wind. As a result, the wind direction (both current and forecast) dictates the selection of runway/s in use at any time. This in turn determines which flight paths are used and can change at short notice.

Wind blowing across the runway is called a cross wind. Aircraft can take off or land generally with only a low cross wind, usually up to a strength of about 15 knots (28 km/h). Above that strength of wind, an aircraft may have to use another runway or divert to an alternative airport.

Windshear

Windshear is a sudden change in wind direction or speed and is usually associated with thunderstorm activity. Windshear can be either vertical or horizontal and can have a significant impact on the control of aircraft during take-off and landing.

Condensation trails

A condensation trail, or contrail, is a thin trail of condensed water vapour sometimes seen trailing behind aircraft flying at high altitudes. Due to their unusual behaviour, they can sometimes be mistaken for a UFO.

Volcanic ash

Airservices works closely with the Bureau of Meteorology's Darwin-based Volcanic Ash Advisory Centre to monitor volcanic ash in the Asia-Pacific region.

Airservices does not close or restrict airspace as a result of volcanic ash but provides advice to airlines on the likelihood of encountering ash. Airlines will make individual decisions on whether or not to fly in or around ash-affected airspace or to suspend operations.

Accidents and emergencies

While air traffic controllers play a key role in assisting aircraft in distress, many light aircraft operate outside of controlled airspace and radar coverage. Airservices may not have information relating to these aircraft or be the first-response agency in the event of an accident.

Airservices provides aviation rescue and fire fighting (ARFF) services at 22 of Australia's busiest regional, domestic and international airports. The service operates the largest fire fighting vehicles in Australia—high visibility Mk8 ultra-large fire vehicles.

Aviation fire fighters respond to a host of different incidents every day ranging from medical emergencies to fire alarms.

In-flight emergencies

When a pilot declares an emergency to air traffic control, they will alert the controller to the severity by broadcasting either 'mayday' or 'pan'.

A **'mayday'** call indicates an aircraft is in grave and imminent danger and requires immediate assistance.

A **'pan'** call is used to describe a less urgent situation but when the pilot still requires attention from air traffic control.

Air traffic controllers provide information and assistance to pilots in the event of an in-flight emergency. As with normal operations, the pilot remains in command of his aircraft at all times and is responsible for determining the safest course of action, such as where and when to land.

A **priority landing** occurs when controllers are notified by an aircraft that it might have a problem, usually where there is a possible concern about the aircraft or its passengers. This can include onboard medical emergencies. A priority landing in itself is not an 'emergency landing' or evidence of an actual problem with the aircraft.

An **emergency** is declared when an aircraft is experiencing problems and there is a reasonable certainty of a threat to the safety of the aircraft or its passengers, and where emergency assistance is required. Airservices aviation fire fighters will also be alerted.

However, the presence of aviation fire fighters is often a precautionary measure and does not necessarily indicate an actual emergency.

The *Manual of Air Traffic Services*, available on our website, provides more detail on the different emergency situations that may be declared by the pilot of an aircraft.

Accident response

Aviation fire fighters will respond within minutes to an aircraft accident or incident at or within 1500 m of an airport. In this circumstance they will take command as first responders. Local emergency services will also be called out to assist if required.

At airports without a dedicated aviation fire and rescue service, or where an accident occurs more than 1500 m from an airport perimeter, local emergency services will take the lead.

Airservices also operates a water rescue capability (including boats and life rafts) at airports located close to water.

Accident investigation

Investigation into the cause of an aircraft accident is the responsibility of the Australian Transport Safety Bureau (ATSB). Airservices works cooperatively with the ATSB during all investigations relating to our operations.

Following an incident or accident, Airservices will not speculate on the cause or provide detailed information on the actions of air traffic controllers or aviation fire fighters.

Airservices is also unable to provide media with recordings of conversations between air traffic controllers and pilots, or confirm if audio obtained from third party websites is accurate.

Search and rescue

The Australian Maritime Safety Authority (AMSA) is responsible for search and rescue coordination. On receiving a distress signal or notification of an aircraft accident, AMSA's Rescue Coordination Centre in Canberra will coordinate search and rescue efforts, generally with the assistance of local emergency services.

Airservices also advises AMSA when pilots fail to cancel their search and rescue time (SARTIME). Pilots lodge a SARTIME with Airservices based on the expected duration of their flight.

If a SARTIME expires without being cancelled by the pilot, Airservices attempts to contact the pilot. If pilots cannot be reached within 15 minutes, the information is passed to AMSA for further investigation.

Training exercise at Sydney Airport.

Unusual activity on the ground and in the air

Airservices regularly receives calls relating to what is perceived as 'irregular' aircraft activity or other activity at an airport. It can be difficult for passengers or those on the ground to have an accurate picture or understanding of an incident or activity. Examples of activity that the public may consider unusual or cause concern, but are part of normal operations, are listed here.

Go-arounds or missed approaches

A go-around, or missed approach (also sometimes referred to as an aborted landing), is a safe and well-practised manoeuvre that sees an aircraft discontinue its approach to the runway when landing. This standard manoeuvre does not constitute any sort of emergency or threat to safety, but may cause passengers or witnesses to become anxious.

During a go-around, the pilot will apply full take-off power to the engine(s), adopt a nose-up take-off attitude, retract the landing gear and flaps and climb into the traffic pattern to circle around for another approach.

A go-around may be initiated by the pilot, or the pilot may be directed to go-around by an air traffic controller.

The causes are usually adverse weather conditions including strong winds experienced by the aircraft on final approach. Other causes include debris on the runway (for example, tyre fragments from the aircraft in front), an aircraft that has been slow to take-off or an aircraft (or vehicle) that has not yet cleared the runway. In these circumstances, a go-around is the safest approach.

Pilots may also deliberately conduct a missed approach as part of training, although this is not usually done with passengers on board.

Aborted take-off

Similar to a go-around or missed approach, an aborted take-off is a procedure which sees an aircraft discontinue the take-off. Usually, it will be a pilot's decision to abort a take-off. Causes include an engine malfunction or a bird strike.

Activity involving fire trucks

Airservices provides aviation rescue and fire fighting services at 22 airports. Aviation fire fighters are often called upon to provide first aid and medical response services around the airport precinct.

When an aviation fire truck responds to a medical emergency, it will leave the fire station with its red flashing lights and occasionally its siren activated. Responding fire trucks may drive across runways and taxiways under control of the tower controller. The sight of a fire truck driving quickly at an airport does not mean there has been a plane crash or concern for aircraft safety.

Smoke and flames at an airport

Airservices regularly conducts training exercises around the country for aviation fire fighters which involve the creation of large amounts of smoke and flames. There may also be an unusually high number of emergency vehicle movements.

The appearance of smoke and flames at an airport does not mean there has been a plane crash or that there is any concern for aircraft safety.

Circuit training

At major general aviation airports around the country including Bankstown (NSW), Moorabbin (Vic), Parafield (SA) and Jandakot (WA), flight training schools regularly conduct circuit training. Circuit training sees aircraft, usually small single-engine propeller trainers, fly over the surrounding suburbs at a height of 1000 ft (305 m).

Low level flights

Occasionally, aircraft and helicopters fly at low level for law enforcement, rescue and military operations as well as for aerobatic/air show displays. Low level flying requires the aircraft operator and pilot to have a special endorsement and permission from the Civil Aviation Safety Authority (CASA). Further information on low level flying is available on page 8.

In some areas, helicopters are required to fly at low level while arriving and departing an airport, sometimes as low as 500 ft (152 m). Low level flight procedures are also used to navigate around controlled airspace and can see aircraft fly at low altitude through special flight corridors no higher than 1000 ft (305 m).

Laser attacks

Shining a laser at an aircraft is a criminal offence. Airservices encourages anyone who witnesses the shining of a laser at an aircraft to contact police immediately. Airservices does not investigate reports of laser attacks, but will pass on information provided by pilots to police. Air traffic controllers will also broadcast a warning to other pilots in the area.

Bird strikes

Striking a bird while an aircraft is travelling at speed can cause damage to the airframe or engines. Depending on the size of the bird and where on the aircraft it comes into contact, a pilot may declare an emergency or request a priority landing as a precaution (see page 16).

Calibration of equipment

Airservices is responsible for conducting regular flight calibration inspections on around 500 navigational aids nationwide. This can involve a specially-equipped aircraft conducting numerous 'missed approaches' to test and calibrate equipment.

Ultimately, the pilot in command of an aircraft is responsible for ensuring the safe conduct of the flight and can decide not to land or take off from a runway at any point during the flight. The pilot will make this decision based on factors such as:

- aircraft safety, operation, navigation and communications
- weather, including wind shear and reduced visibility (see page 15)
- compliance with air traffic control clearances and instructions.

airservices

www.airservicesaustralia.com

12-058MAY Corporate Communication