



AUSTRALIAN
AIRPORTS
ASSOCIATION

PLANNING AROUND AIRPORTS

SAFEGUARDING FOR THE FUTURE

AIRPORT PRACTICE NOTE 5



CONTENTS

ABOUT THE AUSTRALIAN AIRPORTS ASSOCIATION	1
PURPOSE OF THIS PRACTICE NOTE	2
WHAT IS AIRPORT SAFEGUARDING?	2
WHY IS AIRPORT SAFEGUARDING IMPORTANT?	2
AIRPORT SAFEGUARDING CHALLENGES	3
NATIONAL AIRPORTS SAFEGUARDING FRAMEWORK (NASF)	3
IMPLEMENTING NASF	5
WHAT TO CONSIDER	5
PLANNING SYSTEMS AND STRATEGIES	8
IMPLEMENTATION EXAMPLES	8
FURTHER INFORMATION	9

ABOUT THE AUSTRALIAN AIRPORTS ASSOCIATION

The Australian Airports Association (AAA) is the national industry voice for airports in Australia. The AAA represents the interests of more than 260 airports and aerodromes Australia wide – from local country community landing strips to major international gateway airports. The AAA's members include Adelaide, Brisbane, Cairns, Canberra, Darwin, Gold Coast, Hobart, Perth, Melbourne and Sydney airports.

The AAA serves airports across the entire national aviation infrastructure network. This includes:

- » Tier 1 Capital City Airports
- » Tier 2 Non-Capital International Gateway Airports
- » Tier 3 Major Regional Airports with direct interstate services
- » Tier 4 Major Regional RPT airports without direct interstate services (with more than 20,000 passengers)
- » Tier 5 Regional Airports without direct interstate services (with less than 20,000 passengers)
- » Tier 6 Regional Airports without Regular Passenger Transport services (general aviation operations only)
- » Tier 7 Remote Community Aerodromes (exist for community service aviation: medical, emergency flights).

There are a further 100 corporate partners representing aviation stakeholders and organisations that provide goods and services to the airport sector. The AAA facilitates co-operation among all member airports and their many and varied partners in Australian aviation, whilst contributing to an air transport system that is safe, secure, environmentally responsible and efficient for the benefit of all Australians and visitors.

If you have any questions regarding this document please contact the AAA on 02 6230 1110.

This Airport Practice Note has been prepared with the assistance of:



Trent Kneebush
Managing Director
Kneebush Planning Pty Ltd

PO Box 2326
Moorabbin VIC 3189
M: 0409 944 898
E: trent@kneebushplanning.com.au

PLANNING AROUND AIRPORTS

SAFEGUARDING FOR THE FUTURE

Purpose of this Practice Note

Airports are complex facilities and experience has shown that the town planning issues associated with protecting their ongoing operation are often not well understood by planning practitioners.

The purpose of this practice note is to raise awareness of airport safeguarding issues within the planning profession, and assist town planners and planning authorities in understanding airports and how to safeguard their ongoing operation.

What is Airport Safeguarding?

The word “safeguard” means, according to the Concise Oxford Dictionary, “a proviso, stipulation, quality or circumstance, that tends to prevent something undesirable”, while “airport” is a defined area where aircraft can land, take-off, taxi or park, and includes airfields and aerodromes.

Thus, the purpose of airport safeguarding is to take the measures necessary to ensure the safety of aircraft, and thereby the passengers and crews aboard them, while taking-off or landing, or while flying in the vicinity of an airport.

Airport safeguarding also aims to ensure that communities surrounding airports are made aware of the potential impacts of aircraft operations (particularly aircraft noise) and that these considerations then influence good planning decisions to minimise effects on people and airports.

Why is Airport Safeguarding Important?

Airports are essential public infrastructure assets. There are around 250 airports across Australia which have regular passenger services and hundreds of much smaller aerodromes and landing strips, with reports of 2,000 across Australia.

Aviation is a growth industry, and Australia’s network of airports, across major urban centres and regional areas, form an integral part of the national economic infrastructure and are critical to connecting communities and enhancing broader economic performance.

Connecting Australia: The economic and social contribution of Australia’s airports (Deloitte Access Economics, June 2012) provides detailed information regarding the significant role of Australia’s airports.

Airports need to be properly protected over the long term to realise these benefits and ensure their safe and efficient operation.

Poor land use planning around airports can lead to a range of issues and problems including aircraft safety hazards, operational restrictions, protracted litigation, amenity impacts for nearby residents and airport closures in the extreme case. Airport safeguarding aims to prevent or mitigate these issues for the benefit of the whole community.

Airport Safeguarding Challenges

Sites for airports are scarce and finding new land to replace or expand existing airports is difficult. Existing sites in many cases pre-date significant urban development. More recently, urban expansion and densification has increased tensions between residential and industrial development and airport operations.

The main challenge is to balance growing demand for aviation services with urban growth pressures and the continued amenity and safety of residents in surrounding areas. Population growth, urban development demands and increased aviation activity will necessitate more complementary planning nationwide.

The capacity of an airport to operate as an airport is fundamentally dependent on what occurs on the land surrounding it. The erection of structures that physically intrude into the flight paths of arriving and departing aircraft can clearly limit or prevent use of the airport. But so too can other developments that are less obvious. For example:

- » Insensitive residential developments under flight paths may lead to complaints about aircraft noise and eventually lead to the introduction of operational restrictions, curfews or even the closure of an airport
- » Industrial activities that generate smoke or similar hazards may constrain use of an airport
- » Other activities such as agriculture, animal husbandry or wetland developments may attract birds and pose a distinct hazard to aviation.

There is no uniform statutory regime that requires developments around airports to be subjected to scrutiny to assess their potential impact upon an airport. The Civil Aviation Safety Authority (CASA) has some limited capacity under regulations made under the Civil Aviation Act 1988 to approve or not approve buildings or structures in limited areas around airports, but only in respect of Sydney, Bankstown, Moorabbin, Adelaide, Melbourne and Essendon airports. The Secretary of the Commonwealth Department of Infrastructure and Regional Development has some capacity to act to protect airspace around leased Commonwealth airports under the Airports (Protection of Airspace) Regulations 1996. This legislation however, does not provide any comprehensive protection for Australia's airports. As a result, State, Territory and local town planning policies and controls are critical for effective airport safeguarding.

Australia's Regional Airports – Facts, Myths & Challenges (Australian Airports Association, November 2012) contains further information that may assist planners.

National Airports Safeguarding Framework (NASF)

The National Airports Safeguarding Framework (NASF) aims to address the lack of a uniform statutory regime for airport safeguarding in Australia.



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

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

NASF was developed by the National Airports Safeguarding Advisory Group (NASAG), comprising of Commonwealth, State and Territory Government planning and transport officials, the Australian Government Department of Defence, the Civil Aviation Safety Authority (CASA), Airservices Australia and the Australian Local Government Association (ALGA).

NASF was agreed to by Commonwealth, State and Territory Ministers at the Standing Council on Transport and Infrastructure (SCOTI) meeting on 18 May 2012 noting reservations from New South Wales on the format of the guideline on measures for managing impacts of aircraft noise. The agreement represents a collective commitment from Governments to ensure that an appropriate balance is maintained between the social, economic and environmental needs of the community and the effective use of airport sites.

NASF has raised the airport safeguarding bar in Australia but in some cases State, Territory and Local Government planning systems are lagging behind the guidelines. Pursuant to the SCOTI agreement, it is the responsibility of each jurisdiction to implement the Framework into their respective planning systems.

NASF is comprised of a set of principles and guidelines which are outlined below.

NASF Principles

The NASF principles are:

- » Principle 1: The safety, efficiency and operational integrity of airports should be protected by all governments, recognising their economic, defence and social significance
- » Principle 2: Airports, governments and local communities should share responsibility to ensure that airport planning is integrated with local and regional planning
- » Principle 3: Governments at all levels should align land use planning and building requirements in the vicinity of airports
- » Principle 4: Land use planning processes should balance and protect both airport and aviation operations as well as community safety and amenity expectations
- » Principle 5: Governments will protect operational airspace around airports in the interests of both aviation and community safety
- » Principle 6: Strategic and statutory planning frameworks should address aircraft noise by applying a comprehensive suite of noise measures
- » Principle 7: Airports should work with governments to provide comprehensive and understandable information to local communities on their operations concerning noise impacts and airspace requirements.

NASF Guidelines

The NASF guidelines provide comprehensive information and recommendations relating to six airport safeguarding matters.

The NASF guidelines are:

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

The full NASF principles and guidelines can be found on the Department of Infrastructure and Regional Development's website at www.infrastructure.gov.au/aviation/environmental/airport_safeguarding/nasf.

It is understood that additional guidelines for the protection of Public Safety Zones and Communication, Navigation and Surveillance infrastructure are proposed to be developed by NASAG in the near future.

Implementing NASF

Land use and development proposals around airports should be assessed having regard to NASF. To facilitate this, in each jurisdiction appropriate planning policies and controls should be put in place in accordance with the NASF principles and guidelines.

NASF covers safeguarding for the larger civilian airports subject to the Commonwealth Airports Act 1996 as well as military airports and smaller regional and general aviation airports. The Framework also accommodates differences in size, use and local circumstances of individual airports in its application.

The methods for implementing NASF into planning systems will vary in each State and Territory and potentially in each Local Government area. The key issues and requirements to be covered however, are generally the same.

What to Consider

The information below provides a summary of the key issues and requirements to consider for a comprehensive airport safeguarding strategy.

Protection of Operational Airspace Surfaces NASF Reference: Guideline F.

International standards have been adopted which define two sets of invisible surfaces above the ground around an airport. The airspace above these surfaces forms the airport's protected airspace. These two sets of surfaces are the:

- » Obstacle Limitation Surfaces (OLS)
- » Procedures for Air Navigational Services—Aircraft Operations (PANS-OPS) surfaces.

The OLS are generally the lowest surfaces and are designed to provide protection for aircraft flying into or out of the airport when the pilot is flying by sight. The PANS-OPS surfaces are generally above the OLS and are designed to safeguard an aircraft from collision with obstacles when the aircraft's flight may be guided solely by instruments, in conditions of poor visibility.

Structures, trees or other activities that intrude into these surfaces are potential obstacles to aircraft, and therefore a potential safety hazard, and must be controlled.

Charts of the OLS and PANS-OPS surfaces are prepared by the airport operator. These charts should be considered when assessing development applications around airports. To facilitate this, appropriate provisions should be incorporated into planning schemes to control intrusions into protected airspace.

Further information regarding the protection of airspace can be found at www.infrastructure.gov.au/aviation/safety/protection/index.aspx.

Protection of Aircraft Noise Contours NASF Reference: Guideline A.

Aircraft noise contours depict, or map, the areas around an airport that are likely to be exposed to medium or high levels of noise caused by aircraft using the airport.

The purpose of aircraft noise contours is to ensure that:

- » Sensitive land uses are not located in areas of unacceptable aircraft noise
- » The amenity of surrounding developments is not adversely affected by aircraft noise
- » Airport operations are protected long term from conflicts due to the encroachment of inappropriate development into noise affected areas.

An Australian Noise Exposure Forecast (ANEF) is the most common type of aircraft noise contour map showing the forecast of aircraft noise levels that are expected to exist around an airport in the future. An ANEF must be endorsed by Airservices Australia for technical accuracy and the endorsement process includes consultation with the relevant Local and State Government authorities.

Recommendations relating to land use and development within the ANEF contours are contained in *Australian Standard AS2021-2000: Acoustics – Aircraft Noise Intrusion – Building Siting and Construction*. This includes recommendations relating to noise attenuation measures. Note, at the time of writing, AS2021 was being reviewed by Standards Australia and a revised standard will be released in due course. Standards Australia will also be producing a new information document about aircraft noise.

The ANEF and AS2021 recommendations, along with other noise metrics (discussed below), should be considered when assessing planning proposals for noise sensitive land uses around airports. To facilitate this, appropriate provisions should be incorporated into planning schemes to control sensitive land uses within the airport's noise contours. Town planners should also consider potential developments just outside the relevant ANEF contours, as noise levels are similar either side of the narrow ANEF lines.

The *Airport Environs Overlay* (AEO) in the Victoria Planning Provisions is an example of how the ANEF and AS2021 may be implemented in a State planning system.

NASF Guideline A contains further information and recommendations regarding aircraft noise contours which should be considered by town planners when assessing planning proposals near airports or developing airport safeguarding planning controls. This includes the consideration of "Number Above" noise contours (commonly referred to as N-contours) which some airports use to supplement the ANEF system.

The N-contour system is a complementary aircraft noise metric that shows the potential number of aircraft noise events above 60dB(A), 65dB(A) or 70dB(A) per day. It has advantages over the ANEF system because it shows noise in a way that a person perceives it, as a number of single events per day above a certain decibel level.

The N-contours system is not a new concept, but due to certain limitations of the ANEF system, and with the introduction of NASF Guideline A, it is increasingly being used by airports to assist in displaying and explaining the aircraft noise effects of aircraft operations. Whilst there has been some debate about the exact role of N-contours in land use planning, where such contours exist they should, based on the precautionary principle, at least be considered when assessing planning proposals near airports, in addition to the ANEF contours. Consideration should also be given to including N-contours in planning schemes.

NASF Guideline A is part of a wider suite of aircraft noise management measures being implemented by the Australian aviation industry in accordance with the International Civil Aviation Organisation's Balanced Approach to Aircraft Noise Management.

Further information regarding aircraft noise issues can be found at www.aircraftnoise.com.au and www.airservicesaustralia.com/aircraftnoise.

Prevention of Hazards to Aircraft Operations

NASF Reference: Guidelines B, C, D and E.

There are a number of specific land use or development issues which can cause hazards to aircraft. These issues tend to be less regulated, and are perhaps less well understood by land use planning decision makers, but they are nevertheless very important for the safe operation of any airport.

Hazards to aircraft operations can be caused by:

- » Buildings sited near the runway ends which can sometimes generate windshear causing a safety risk for aircraft
- » Land uses such as landfills sited in the vicinity of airports which attract wildlife, particularly birds, causing an increased risk of wildlife strikes
- » Wind turbine farms which can create obstacles to aircraft in flight (infringements of the protected airspace surfaces)
- » Lighting around an airport which can cause glare, distraction or confusion to pilots in the air causing a safety risk.

Regulation 94 of the Civil Aviation Safety Regulations 1988 (CASR) specifies particular requirements for lighting in the vicinity of airports. Consultation with CASA is recommended regarding these requirements.

The potential for land use and development proposals to cause a hazard to aircraft operations should be considered when assessing planning applications around airports. To facilitate this, appropriate planning controls should be in place to minimise the potential for these hazards to arise around an airport. The relevant NASF guidelines contain detailed information which will assist in this regard.

Protection of Public Safety Zones

NASF Reference: Proposed future guideline.

Public Safety Zones (PSZs) have been defined as areas of land at the ends of runways, within which development controls might be considered in order to control the number of people on the ground at risk of injury or death in the event of an aircraft accident on take-off or landing. While Australia has an excellent aviation safety record and the likelihood of an accident is very low, there is an inherent risk associated with flying and the operation of aircraft at or around airports.

The aim of PSZs is to further reduce the already low risk of an air transport accident affecting people who live or work near an airport. When an accident occurs during either the take-off or landing phase of a flight, International Civil Aviation Organization (ICAO) data indicates that they mostly occur within 1,000m before the runway on landing or within 500m beyond the runway end on take-off.

While there is no current ICAO standard for PSZs, the United Kingdom and the Netherlands governments among others have implemented PSZs in their jurisdictions. In Australia, the Queensland Government applies planning controls to selected airport runways which reach a certain threshold of passenger jet services.

PSZs can provide an objective basis for precautionary planning decisions in those areas of highest risk. They can be used as the basis to limit new development activity that would increase the risk to people in such areas beyond acceptable levels.

While NASAG has not yet finalised an agreed national approach towards identification and protection of PSZs, planning authorities should consider existing approaches to PSZs, and associated safety principles, and how they might be applied in taking a precautionary approach to the treatment of development and public risk around airport sites.

Protection of Airways Facilities

NASF Reference: Proposed future guideline.

The safe and efficient operation of aircraft requires various communication, navigation and surveillance (CNS) facilities to enable:

- » pilots to navigate while en-route between airports
- » pilots to utilise terminal area navigation aids to conduct instrument approach procedures

- » dialogue between pilots and air traffic control (ATC)
- » ATC to monitor and confirm an aircraft location.

There are various types of CNS facilities that may be sited on or around an airport and each have specific standards for siting and clearance areas. These standards should be considered when assessing development applications around airports. To facilitate this, appropriate planning controls should be in place to ensure that the operation of any CNS facilities is not impacted by nearby development.

The Civil Aviation Safety Regulations 1998 (CASR), particularly the Manual of Standards (MOS) Part 139, specifies detailed protection standards for CNS facilities. Consultation with Airservices Australia is recommended regarding these requirements.

It is expected that the proposed NASF guideline relating to CNS infrastructure will provide guidance for planners relating to the implementation of this specific airport safeguarding matter.

Surface Access to Airports

NASF Reference: Not Applicable.

While not the subject of a NASF guideline, protecting and facilitating access to airports by ground transport is another critical issue that planners should consider.

As airports grow, getting passengers, visitors, staff and freight to and from the airport site in a timely and efficient way is becoming increasingly important. Planning around airports should protect existing ground transport routes to airports and should facilitate access enhancements where required. This is consistent with the findings of the Council of Australian Governments (COAG) Reform Council's report "Review of Capital City Strategic Planning Systems" (December 2011).

The Airports Act 1996 requires Master Plans for the Commonwealth-leased airports to include a Ground Transport Plan. These plans should be considered when undertaking planning around Commonwealth-leased airports.

Planning Systems and Strategies

While the methods for implementing airport safeguarding into planning systems will vary in each State and Territory and potentially in each Local Government area, there are some generic measures that can and should be undertaken or at least considered.

Implementation systems and strategies for airport safeguarding may include:

- » Reflecting airport safeguarding interests in State and Territory planning policies and strategies, such as Queensland's State Planning Policy relating to "Strategic airports and aviation facilities"
- » Reflecting airport safeguarding interests in local planning policies and strategies, such as urban growth or economic development strategies for a municipality
- » Achieving safeguarding outcomes via making or amending a local planning scheme or instrument, such as to introduce overlay controls to protect the airspace surfaces and noise contours
- » Achieving the safeguarding outcomes via development assessment, such as by refusing development applications for inappropriate development or placing conditions on development where required, such as noise attenuation
- » Introducing notification or referral processes to ensure that interested parties, such as the airport operator, are made aware of development proposals which may affect the airport, and are provided with the opportunity to comment on such proposals
- » Incorporating or referencing airport Master Plans in the planning framework. Airport Master Plans often contain important information relating to an airport's growth plans and airport safeguarding
- » Education of planning and development professionals through training or the publication of guidance information.

There is no single planning measure that will address all of the key airport safeguarding issues and requirements. A comprehensive suite of measures is likely to be required in order to properly and fully protect airports and support their ongoing operation and development.

Without such protection, the safety of aircraft using our airports will be placed at risk, surrounding communities may be adversely affected and the contribution airports make to our economic and social well-being will be compromised.

Most Commonwealth-leased airports have a Planning Coordination Forum (PCF). PCFs are a mechanism to foster high level strategic discussions between the airport, and Commonwealth, state/territory and local government representatives to improve the coordination of planning for the airport site and surrounding areas. PCFs will be able to assist planning authorities in developing and implementing airport safeguarding measures for their airports.

Implementation Examples

The Queensland Government's State Planning Policy (and associated guidelines) relating to "Strategic airports and aviation facilities" is a good example of how a comprehensive airport safeguarding strategy, consistent with NASF, may be addressed in the context of a State planning system.

Other States also have planning policies and controls relating to their airports. This includes Victoria's State Planning Policy relating to airports, and its associated Airport Environs Overlay, and Western Australia's policies relating to land use planning in the vicinity of Perth and Jandakot Airports. However many of these policies were developed prior to the introduction of NASF and therefore do not address the full suite of matters as recommended by the framework.

The Department of Infrastructure and Regional Development's website (www.infrastructure.gov.au/aviation/environmental/airport_safeguarding/landuse.aspx) provides links to information regarding airport safeguarding policies in each State and Territory planning system. This website also provides links to copies of various submissions the Department has made on planning proposals around airports that may have had an impact on or be impacted by airport operations. The AAA's website contains copies of similar planning submissions. These submissions provide interesting case studies for planning authorities considering the introduction of new, or enhancement of existing, planning measures for airport safeguarding.



Further Information

Further information regarding airport safeguarding can be obtained by contacting the Australian Airports Association (AAA) or visiting www.airports.asn.au. The AAA is available to provide planners and planning authorities with airport safeguarding information, agency contacts and expert consultants who can assist with these matters.

Further information is also available from:

- » Commonwealth Department of Infrastructure and Regional Development: www.infrastructure.gov.au/aviation/environmental/airport_safeguarding/
- » Airservices Australia: www.airservicesaustralia.com
- » Civil Aviation Safety Authority: www.casa.gov.au
- » Aircraft Noise: www.aircraftnoise.com.au
- » Your State or Territory planning department
- » Airport operators.

This practice note was prepared for the Australian Airports Association (AAA) by Kneebush Planning Pty Ltd with the assistance of the AAA Planning Working Group.

This publication is for general information only and should not be seen as a definitive set of rules for airport safeguarding. It is not intended to be prescriptive, nor provide an exhaustive list of information on matters that should be taken into account, or dictate the types of investigations that should be undertaken.

The Australian Airports Association and Kneebush Planning, and their employees, do not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for any error, loss or other consequence which may arise from you relying on any information in this publication.

Australian Airports Association

Unit 9/23 Brindabella Circuit | Brindabella Park ACT 2609

P: 02 6230 1110 **F:** 02 6230 1367

E: info@airports.asn.au

www.airports.asn.au

