



:10

Noise Impacts

Noise impacts

Managing the impact of aircraft noise on local communities

Issues Paper Themes

- > Strategies and government policies for reducing the impact of aircraft noise on communities
- > Improving or supplementing the Australian Noise Exposure Forecasts (ANEF) system to better inform the public on the impact of noise
- > The role of airports and state and local governments in aircraft noise management
- > The role of locally-negotiated agreements between the airport and local community
- > Improving the availability and quality of the information being supplied to potential property purchasers and others affected by aircraft noise
- > The conditions under which certain airports remain curfew-free, and managing operations at those airports to ensure the community is protected, while providing night-time access for freight operations
- > Assessing the current noise enquiry and noise complaint services, and investigating more effective ways to deal with noise complaints

What the submissions said

Submissions were received from a cross-section of affected residents, members of the aviation industry, local councils, government agencies and academics. In general, these submissions testified to the sensitive nature of aircraft noise, acknowledging that it affects people differently: for some it is simply annoying, while for others it affects their health and may be a contributor to some stress-related diseases.

Submissions identified a number of issues for attention including calls for improved consultation, compensation, information, contribution to insulation programs, and land-use planning and airport management.

Submissions were also received suggesting the need for federal action to regulate planning decisions around airports and involving state and local governments in on-airport planning. Some submissions expressed the view that current approaches to land-use planning are not effective in preventing noise-sensitive development near airports and under flight paths.

Communities and many local councils called for more effective dialogue with airports and for airports to take greater responsibility for the management of aircraft noise.

Submissions highlighted the need for better aircraft noise information and complaint handling procedures to overcome the current lack of understanding of how noise minimisation measures like curfews and noise sharing work.

The policy context

Aviation and noise - overview of issues

According to the International Civil Aviation Organization (ICAO), aircraft noise is the most significant cause of adverse community reaction to the operation and expansion of airports²⁶.

The Government is committed to improving the dialogue between affected communities and airport operators to better manage the impact of aircraft noise. The Government is also looking for a more even-handed method for distributing the responsibility for managing different measures for minimising noise at Australian airports.

The Government believes that an important element in achieving better noise management is better education and information-sharing, enabling communities to become involved in decisions relating to airport operations. The Government is committed to working with communities, governments and the industry to improve the quality of, and access to, transparent aircraft noise information.

Aircraft noise management also requires an effective approach to land-use planning which supports adequate separation between noise sources and noise-sensitive areas. State and local governments, in cooperation with airports, share responsibilities for implementing appropriate zoning policies that ensure development near airports and under flight paths are compatible with the noise exposure of affected residents. The Government will work with state and local governments to implement more effective land-use management options around airports.

Roles and responsibilities

The Government believes the responsibility for aircraft noise management should be shared more equitably across the key industry stakeholders:

- Airlines and aircraft operators should be responsible for using noise-compliant aircraft; implementing noise-abatement principles for flight operations; and contributing to noise-reduction initiatives.
- Airservices Australia should be responsible for flight track, noise-sharing and traffic management components, and improved noise monitoring and complaint reporting.
- Airports need to expand their community engagement role; provide noise management plans; participate in managing noise-reduction programs and noise monitoring.
- Federal government agencies can assist in providing improved noise information to home owners, communities and councils; reviewing the current approach to noise measurement and assessment; identifying best practice noise management options, drawing on the best experience overseas; assisting with programs where necessary to address high levels of noise exposure; continuing regulatory responsibilities, including managing curfews and slots, and accelerating the phasing out of noisy aircraft.
- State and local governments will need to work in partnership with airports to ensure zoning is consistent with noise exposure information, in addition to introducing appropriate land-use planning around airports and under flight paths.
- Residents should be adequately informed of aircraft noise exposure near airports and under flight paths and able to contribute effectively to debate about management of noise issues affecting their locality.

²⁶ Aviation Green Paper Airport Planning: Aircraft Noise Management: Maunsell AECOM, August 2008



Information sharing as a noise management tool

Aircraft noise information is used to:

- underpin responsible environmental reporting;
- respond to complaints and legitimate questions raised by the public;
- dispel unrealistic or false expectations concerning noise levels;
- identify the noise impacts of major airport or airspace projects; and
- provide advice to planners, home buyers and prospective developers.

While a lot of work has been done to produce aircraft noise information for the public, there is a greater role for all stakeholders in making sure communities affected by aircraft noise have easy access to clear, comprehensible noise information.

The Government has developed the Transparent Noise Information Package (TNIP), a computer software application, to enable non-experts to gain an understanding of the noise exposure patterns around airports over time. This tool lets the user rapidly break down aircraft noise exposure information to show for example the location of flight paths, the numbers and times of aircraft movements and the noise level of individual aircraft overflights. Very importantly it enables the user to gain information on how noise varies from hour to hour and day to day throughout the year giving details of noise exposure at sensitive times such as early mornings, evenings and weekends.

Another example of improved noise sharing technology is Airservices Australia's 'WebTrak', an internet-based information tool, which provides the public with near real time information of aircraft flight paths and noise profiles.

Provided by Australian based airport noise management company, Lochard, the tool features flight path information of incoming and outgoing aircraft and captures noise data at eight of Australia's busiest airports – Perth, Adelaide, Melbourne Canberra, Sydney, Gold Coast, Brisbane and Cairns.

Feeding data to the tool is the world's largest, nationwide, integrated, Noise and Flight Path System which is being upgraded.

It is the first time anywhere in the world that fingertip information has been provided on such a scale across an entire nation and represents an investment of more than \$20 million over the next five years by Airservices.


Land-use planning and noise sensitive development

Airports are critical economic and social assets. Noise is an inevitable consequence of aircraft operations and the impact of aircraft noise on residential areas or other sensitive developments will often give rise to complaints and calls for restrictions on airport operations. It does not make sense to allow new noise-sensitive developments to occur in areas where they will lead to public concerns that may affect the long-term viability of the airport. In particular, there is every reason to avoid noise sensitive development in green field sites near airport flight paths.

While Australian Standard 2021 provides guidance for construction standards and building zones in the vicinity of airports, there is no national mandate to prevent councils and state governments from locating noise-sensitive developments like schools, hospitals and residences near airports, or under flight paths.

The current measure of noise impacts used by airports in Master Plans is the Australian Noise Exposure Forecast (ANEF); a system that was established in the early 1980s to identify future noise impacts by looking at average daily noise levels.

However, a number of submissions argued this system is no longer able to provide the appropriate protections for airport operators or residents from the impacts of aircraft noise. Many noise



complaints come from areas outside the published noise contours, which means some argue the ANEF has limits in accurately describing aircraft noise exposure in these areas.

The policy framework

Key challenges

Information on aircraft noise exposure patterns is not readily available to affected residents, interested home buyers, planning decision-makers, or local councils. The current information is too technical and is often misunderstood by members of the local community who are seeking clear answers to their questions about how aircraft noise might affect them. The ANEF/ANEI system that has conventionally been used in Australia as the tool for describing aircraft noise effects is not of itself sufficient to give a clear practical understanding of the impact of aircraft noise at a particular location.

While Airservices Australia provides a national aircraft noise complaint service, what is not clear to the public is that many complaints come from the same person or organisation, not necessarily from the range of people affected by aircraft noise. Noise complaints details are not readily available, nor are they recorded in a consistent form for all airports. Many noise complaints come from residents living outside areas conventionally defined as noise-affected.

Flight training activities can have particular noise impacts on some communities. While mostly conducted in small aircraft with individually small noise footprints, the repetitious nature of training circuits can be intrusive on nearby residents. Where airports are seeking to grow pilot training activity, managing the noise impacts presents challenges, particularly in built-up areas.

In many cases, the growth of urban populations around airports has contributed to the problems associated with aircraft noise. This is largely due to planning decisions made by state and local government planning agencies with responsibility for the land around airports.

Some of the measures used to minimise the community's exposure to noise involve longer and less direct flight paths, which generate more aircraft emissions. For example, some flight paths direct aircraft around, rather than over, communities to minimise the level of noise from a given flight. This approach may conflict with the air traffic control procedures that focus on reducing fuel burn and emissions by using direct routes to the destination airport. These new procedures can also lead to the concentration of noise under flight paths, which may be counter to the principles of sharing noise across communities surrounding airports.


Future approaches to aircraft noise management will need to reflect a holistic approach which addresses noise and other environmental factors.

Maintaining existing curfews

Under Commonwealth legislation, night-time curfews are in place at Sydney, Gold Coast, Adelaide and Essendon Airports between 11:00pm and 6:00 am. The purpose of these curfews is to restrict certain aircraft operations during this time, to provide the communities surrounding these airports with some respite from aircraft noise.

It is a legal requirement to meet the conditions of these curfews. Heavy fines apply for organisations that land or take-off during the curfew hours. While airlines can apply to land during curfew hours, they must be able to prove that they could not make alternative arrangements and the need to land during curfew hours could not be avoided. Such dispensations are only given in exceptional circumstances.

Curfews do not stop all night-time aircraft movements at these airports. Emergency aircraft operations and some freight movements are still permitted, providing the airport operator takes appropriate steps to manage the noise impact from these operations.



The Government remains firmly committed to maintaining the night-time curfews at Sydney, Gold Coast, Adelaide and Essendon airports.

Curfew Dispensations for Sydney Airport are required by law to be tabled in Parliament. This requirement does not apply to the other curfewed airports. For greater transparency, the Government proposes in future to publish curfew dispensations approved for Adelaide, Essendon and Gold Coast to bring them into line with Sydney.

The Government's intention is that options to address noise impacts such as: by limiting the operation of noisy aircraft – particularly at night, improving insulation and implementing other noise amelioration programs, will enable the maintenance of a north-south and east-west network of non-curfew airports. This is crucial to maintaining access for airlines and air freight services to major airports such as Brisbane, Cairns, Canberra, Melbourne and Perth. At these and other airports it will be important to examine a wide range of options for limiting the impacts of aircraft noise, particularly at night.

Other measures for reducing noise impacts

There are a number of factors that contribute to aircraft noise in and around airports such as type of aircraft, number of movements, weather conditions, topography, runways used, the time of day and flight paths used.

Measures used to minimise the impact of aircraft noise on surrounding communities include insulation programs, acquisition of land near airports and the relocation of communities to areas that are not so affected by aircraft noise, building codes that specify the materials to be used to minimise noise, and information-sharing processes such as providing information to purchasers of real estate.

Operational procedures that help reduce aircraft noise exposure include:

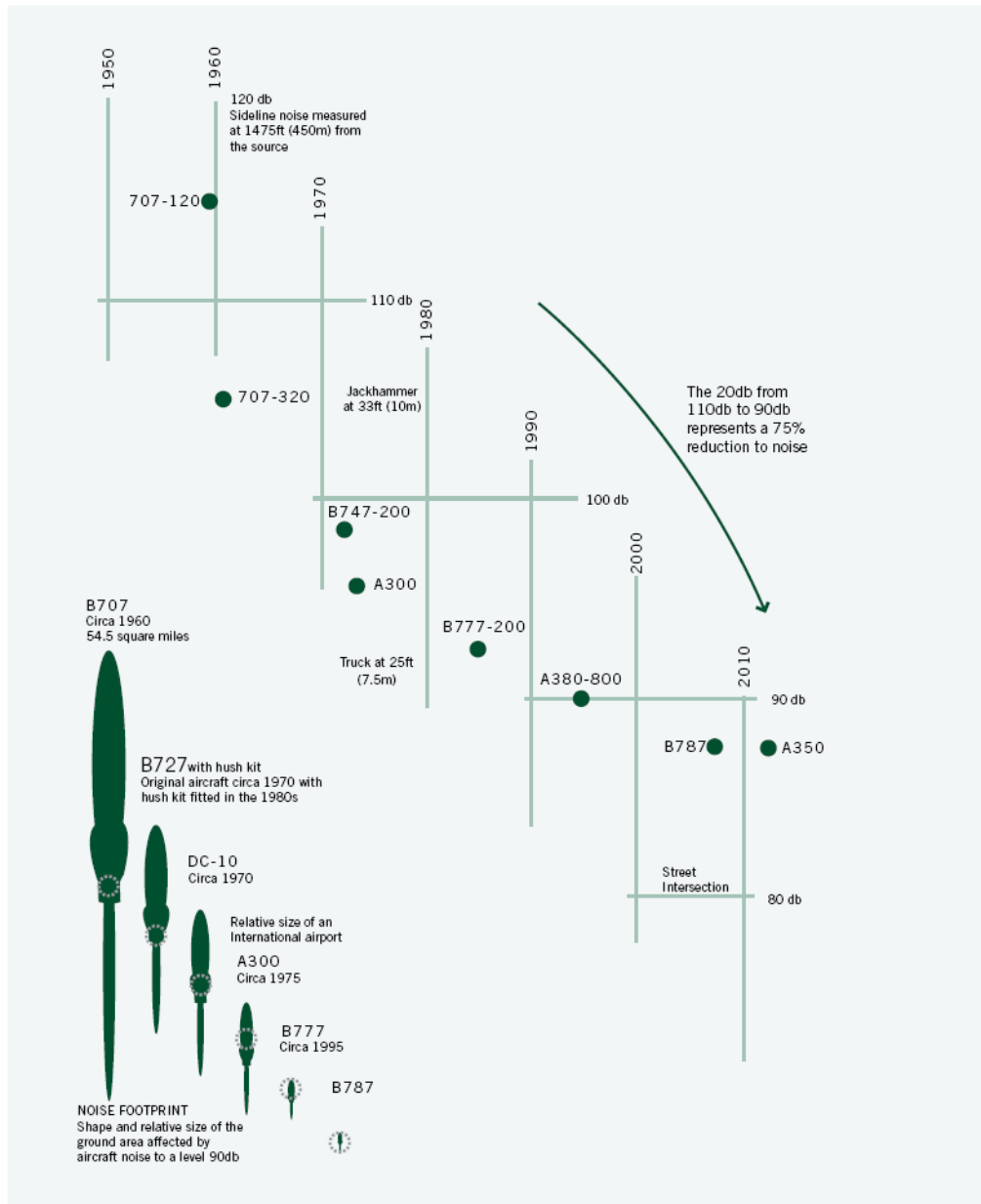
- using runways to minimise directing flights over noise-sensitive areas as far as possible;
- flying over water and using approach and departure routes that avoid built-up areas;
- dispersing airplanes across a number of flight paths to distribute the noise across a wider area rather than concentrating the noise in a narrow area;
- operating restrictions like caps and quotas; and
- using automated arrival and departure procedures and continuous descent approaches.

Airlines and air navigation service providers have made considerable progress in reducing noise exposure through technology, improved navigation initiatives and the introduction of more modern, quieter aircraft.

Upgrading of airline fleets to more modern aircraft has a large part to play in improving the industry's noise impacts on communities. Figure 10.1 illustrates historic improvements in noise performance of passenger aircraft. Major aircraft manufacturers continue to pursue aircraft noise reduction as an important selling point of modern aircraft.


Figure 10.1 The reduction of aircraft noise over time

Source: 'Plane Simple Truth' (ISBN: 978-0-97522341-6-7), Geoffrey Thomas, Christine Forbes Smith, Guy Norris, Steve Creedy, and Rachel Pepper
 Source: NASA, Airbus



Standards for noise certification of aircraft are set out in ICAO Annex 16. In 2004, Chapter 4 standards were adopted, replacing the previous, less stringent standards of Chapter 3 established in 1977. Noisier and marginally-compliant Chapter 3 aircraft continue to operate, often for freight and night-time movements.

Phasing out of these marginally compliant aircraft types would assist in reducing the impact of noise. The approach to phasing out of noisy aircraft could be tailored to the particular



circumstances of an individual airport and the concerns of the surrounding community. For example, more stringent restrictions might be placed on the operation of noisy aircraft at night, or noisy aircraft might only be permitted to operate on specified approach or departure paths which minimise noise impacts on residential areas. The Government will develop more detailed options for regulatory changes to support the accelerated phase-out of noisy aircraft as a basis for consultation with industry early in 2009.

Modern acoustic insulation techniques like those used in the Sydney and Adelaide Noise Insulation Programs have also done much to reduce the impact of aircraft noise in the most affected areas.

Using the ANEF as a land-use planning tool does not always meet the needs of airports, planners, developers or the community. The ANEF system is a 'one size fits all' approach that makes no allowance for local conditions or smaller airports.

Long-range forecasts provided by airports, as part of their Master Plan process, can be challenged by residents concerned about the future increases in noise, by state and local government planners with competing priorities, and by developers.

The Government considers it possible to improve the general understanding of the impact of airport noise by revising the quality and clarity of information provided to the public, and the framework under which this information is provided. Some of the information that could be provided under this framework might include:

- the timing of flights and aircraft numbers;
- how noise is measured;
- the extent of curfews;
- the impact of weather conditions on take-offs and landing;
- the role of pilots in the selection of runways; and
- the challenges associated with noise-sharing.

A consistent approach to reporting noise complaints would provide more useful and accurate information to users and observers.

Requiring specific information to be disclosed to home buyers and sellers would assist them with understanding the level of noise exposure for different properties, to enable them to make informed purchase decisions.


The Government believes airports should produce and make available accurate and comprehensive information on their noise exposure patterns to help local communities and others affected by noise to understand that aircraft noise exposure does not stop at a given contour, and the level of noise exposure changes at different times of the day and night.

Improved consultation with communities

Community engagement is an important aspect of noise management. The Government is looking at options for greater community involvement in airport planning through greater consultation with airport operators, as well as improving the availability and quality of information provided on aircraft noise.

The Government believes effective community engagement creates greater understanding of aviation noise issues, situations and solutions; builds relationships and trust to strengthen decision-making; and bridges the gap between airports and their communities and stakeholders. This engagement activity would keep interested parties up-to-date with changes to noise forecasts, development plans and steps airports are taking to minimise the impact of noise on the community.

Where airports have set up active community consultation committees, or employ neighbourly flying policies, they generally have better relations with their communities.



Airports that do not engage in effective dialogue with their communities, councils or state government representatives, are more likely to receive noise complaints and calls to reduce, or shut down airport operations.

The Sydney Airport Community Forum has been established by the Government to provide local residents and others affected by aircraft noise with the opportunity to put forward their views, and gain a greater understanding of the noise reduction processes in place at the airport. It is important for the operators of Sydney Airport to support this forum.

To counter issues of noise from a national perspective, the Government believes that airports need to take a strategic and proactive approach to alleviating issues, developing relationships and building on specific opportunities for each airport with their respective communities and stakeholders.


Aviation noise impacts – options for the way forward

The Government is proposing a number of initiatives to ensure the growth of Australia's aviation industry incorporates planning for the impact aircraft noise can have on those living near airports and under flight paths.

The Government proposes:

- maintaining the existing curfew arrangements at Sydney, Gold Coast, Adelaide and Essendon Airports. Communities have grown around the current curfew arrangements and it is important they remain in place.
- for increased transparency, publish curfew dispensations for Adelaide, Essendon and Gold Coast airports to bring into line with Sydney;
- to work with state governments to ensure land-use planning and operational restrictions on noisy aircraft are consistent with maintaining curfew-free access;
- to limit the operation of noisy aircraft and to phase out marginally-compliant Chapter 3 aircraft, such as hush-kitted Boeing 727s, on an airport-by-airport basis, consistent with ICAO's Balanced Approach;
- noting the work that has already been done to insulate homes in Sydney and Adelaide from aircraft noise; to finalise existing noise minimisation projects, based on the current criteria. Any future insulation projects will be assessed against world's best practice noise attenuation and abatement initiatives, including those for night-time noise.
- to consider industry-funded noise amelioration programs where airport operations and air traffic changes place residences into existing high-noise exposure zones;
- to investigate more appropriate roles for airlines, airport operators, governments, planning agencies and the community in aircraft noise management and mitigation;
- to continue to develop a new noise information framework to ensure information on noise exposure patterns is readily available in a form that is easily understood by a broad audience, building on initiatives such as the Transparent Noise Information Package (TNIP) and Airservices new online flight path information tool, WebTrak; and
- to work through the Council of Australian Governments and other appropriate forums to ensure a national land-use planning regime is put in place near airports and under flight paths to avoid noise-sensitive developments being located in these areas and to protect communities from excessive levels of aircraft noise.

The Government's intention is that options to address noise impacts such as: by limiting the operation of noisy aircraft – particularly at night, improving insulation and implementing other noise amelioration programs, will enable the maintenance of a north-south and east-west network of non-curfew airports. This is crucial to maintaining access for airlines and air freight services to major



airports such as Brisbane, Cairns, Canberra, Melbourne and Perth. At these and other airports it will be important to examine a wide range of options for limiting the impacts of aircraft noise, particularly at night.