Chapter 2

Management of aircraft noise

Background

2.1 Aviation activity, both within and to and from Australia, has grown strongly in the past two decades and is projected to continue to grow over the next twenty years. Despite disruptions and the impact of world and local events, passenger movements have almost trebled over the last two decades, with 73.5 million people carried on domestic and international air services to and from Australia in 2008-09.

2.2 The Bureau of Infrastructure, Transport and Regional Economics forecasts the number of aircraft movements through Australia's capital city airports (Adelaide, Brisbane, Canberra, Darwin, Hobart, Melbourne, Perth and Sydney) will increase from around 1.1 million in 2008-09 to 1.7 million in 2029-30.[1] This represents an expected annual increase of 2.2 per cent to 2029-30. Noting this projected continued growth, aircraft noise will remain a persistent challenge for those responsible for managing the environmental impacts associated with the operation of aircraft.

Airservices Australia

2.3 Airservices Australia is a statutory authority established under the *Air Services Act 1995* and has responsibility for the provision of safe air traffic management services. Under the Act, Airservices Australia has responsibility, as far as is practicable, to ensure the environment is protected from the effects associated with the operation and use of aircraft (including noise impacts).[2] The Act specifies that in undertaking its role, Airservices Australia must regard the safety of air navigation as the most important consideration.[3]

2.4 In performing its duties, Airservices Australia is required to consult and cooperate with government, commercial, industrial, consumer and other relevant bodies and organisations.[4] The requirement to consult with communities is contained within a Ministerial Direction, which states that Airservices Australia is to initiate and participate in discussions, consultations, studies and research with the aviation

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1 Bureau of Infrastructure, Transport, Regional Development and Local Government, *Aviation: Aircraft movements through capital city airports to 2029-30, Research Report 117*, p. 54, http://www.btre.gov.au/info.aspx?NodeId=15 (accessed 7 June 2010).

2 *Air Services Act 1995*, ss. 9(2).

3 *Air Services Act 1995*, ss. 9(1).

4 *Air Services Act 1995*, s. 10.

industry and the community in relation to the environmental aspects of air traffic management (including noise impacts).[5]

2.5 Airservices Australia is also subject to the *Environment Protection and Biodiversity Conservation Act 1999*. Before adopting or implementing an airspace management plan involving aircraft operations which have, will have, or are likely to have, a significant impact on the environment, Airservices Australia must consider advice from the Minister for Environment Protection, Heritage and the Arts.[6]

Regulatory framework

2.6 Regardless of size, purpose or ownership, all civil aircraft operating in Australia are required to comply with the Air Navigation (Aircraft Noise) Regulations 1984 (Regulations) made pursuant to the *Air Navigation Act 1920* (Air Navigation Act).[7]

2.7 An aircraft may not operate in Australia unless:

- it has a noise certificate; or
- it has been issued with a permit to operate without a noise certificate; or
- it has been assessed as being in an exempt category.[8]

Noise certificate

2.8 A noise certificate is a document issued by Airservices Australia which attests that an aircraft of a type described on the certificate meets the noise level standards specified for its class.

2.9 The noise level standards required under the Regulations are those set down in the *International Civil Aviation Organisation's Annex 16 Volume 1 (Environmental Protection - Aircraft Noise) to the Chicago Convention*.

2.10 Compliance with noise standards is shown by noise certification testing of the aircraft.

Permission to operate without a noise certificate

2.11 There are three grounds on which permission to operate an aircraft without a noise certificate may be granted:

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5 *Ministerial Direction M37/99* of 3 May 1999.

6 *Environment Protection and Biodiversity Conservation Act 1999*, para. 160(2)(b).

7 Airservices Australia, *The Air Navigation (Aircraft Noise) Regulations – Information Paper*, http://www.airservicesaustralia.com/aviationenvironment/noise/docs/airnav_aircraftnoise_reg.pdf (accessed 22 December 2009).

8 Unless the aircraft has been continuously on the Australian Civil Aircraft Register since prior to 6 December 1990.

- the extent to which the aircraft exceeds the noise standard is not significant (this ground is not available to jet aircraft); or
- the historical significance of the aircraft justifies the permission; or
- the aircraft is to be used solely for a purpose that is in the public interest.[9]

Aircraft exempt from noise certificates

2.12 Some aircraft are exempt from the requirements of the Regulations. These are state aircraft, hot air balloons and propeller-driven aircraft that are specifically designed and exclusively used for aerobatics, fire fighting or agriculture.[10]

Non-chapter 3 jets

2.13 Australia has implemented the program agreed by the International Civil Aviation Organisation for the phasing out of subsonic jet aircraft not meeting the noise standards of *Annex 16 Volume I Chapter 3*.[11] The Regulations prohibit the operation of non-Chapter 3 jet aircraft in Australia.

Aircraft Noise Management

Noise abatement measures and noise sharing

2.14 Airservices Australia's website provides general information about curfews and noise abatement measures at major airports. Noise abatement measures vary between airports, however measures may typically include:

- preferred runways to be used at different times of the day,
- preferred flight paths, local restrictions and 'fly friendly' arrangements, and
- curfew restrictions.

2.15 All major Australian airports have noise abatement measures in place. For example, one of the key noise mitigation measures at Sydney Airport is the curfew:

> The curfew at Sydney restricts both aircraft size and runway usage between the hours of 2300 and 0600 local time. Additional restrictions limit specific runway use between 2245 - 2300 daily and 0600 - 0700 and 2200 - 2300 on weekends.
>
> The [Sydney Airport Curfew Act] provides for a strict quota of international passenger jet aircraft to land during the 'curfew shoulder period' - 11.00pm and midnight, and 5.00am to 6.00am - if they meet

9 *Air Navigation (Aircraft Noise) Regulations 1984*, ss. 9A(2).

10 *Air Navigation (Aircraft Noise) Regulations 1984*, s. 2.

11 Airservices Australia, *Special Operational Information: Australian Prohibition of Chapter 2 Aircraft*. Available at: http://www.airservicesaustralia.com/flying/specopinfo/jetaircraftch2.asp.

> certain criteria, including the strictest International Civil Aviation Organisation noise standards.
>
> In order for a larger aircraft to have access to Sydney airport outside curfew hours it must apply to the [Department of Department of Infrastructure, Transport, Regional Development and Local Government] for an exemption.[12]

2.16 Some secondary and local airports also have noise abatement measures in place. For example, the following are the procedures in place at Cairns airport:

> Turbojets will be routed clear of populous areas until seawards of the coastline or established on their final approach course. To assist with noise reduction on final approach course, pilots are requested to delay flap deployment until as late as is operationally practicable.
>
> Circuit training by jet propelled aircraft…is not permitted between 2200 and 0700 local time.
>
> No aircraft is permitted to conduct engine runs (unless associated with the normal preparation of flight) between 2300 and 0600 local time without permission from the Cairns Port Authority.
>
> Operators and pilots of jet aircraft are requested to cooperate in limiting the use of reverse thrust when landing between the hours of 2300 and 0600 local time.[13]

2.17 Where noise abatement procedures exist for airports, these procedures are detailed in the Airservices Australia's publication 'Departure and Arrival Procedures' (DAP).[14]

2.18 Noise sharing is a principle that seeks to share the burden of aircraft noise over communities as equitably as possible, and to provide respite for noise affected communities in different areas. The principle of noise sharing has been formalised in Sydney through the Sydney Airport Long Term Operating Plan (LTOP). The LTOP seeks to place as many flights over water as possible (to the south), with the remaining flights shared between communities to the north, west and east of the airport.

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12 Airservices Australia website: http://www.airservicesaustralia.com/aviationenvironment/noise/sydney.asp. See also *Sydney Airport Curfew Act 1995* (Cth).

13 Airservices Australia website: http://www.airservicesaustralia.com/aviationenvironment/noise/cairns.asp.

14 Airservices Australia website: http://www.airservicesaustralia.com/publications/aip.asp?pg=30&vdate=19-Nov-2009&ver=1.

Monitoring Aircraft Noise

Australian Noise Exposure Forecast and the Australian Noise Exposure Index

2.19 The Australian Noise Exposure Forecast (ANEF) is a scientific measure of the aircraft noise exposure levels around aerodromes. ANEF takes into account:

- the intensity, duration, tonal content and spectrum of audible frequencies of the noise of aircraft take-offs, approaches to landing, flyover and reverse thrust after landing;
- the forecast frequency of aircraft types and movements on the various flight paths; and
- the average daily distribution of aircraft arrivals and departures in both day time and night time.

2.20 ANEF charts show the forecast of aircraft noise levels that are expected to exist in the future. ANEF charts are prepared for all the major and regional airports and most of the minor aerodromes that have a large number of annual movements throughout Australia.[15]

2.21 The Australian Noise Exposure Index (ANEI) charts are contour maps based on historical data from a previous year, where actual numbers and types of aircraft used at the airport are known. It shows the average daily aircraft noise exposure around the airport for that year. ANEI charts are used principally as benchmarks or indicators of change of aircraft noise exposure.[16]

Noise and Flight Path Monitoring System

2.22 A Noise and Flight Path Monitoring System (NFPMS) is used at Australia's major airports (Brisbane, Cairns, Canberra, Coolangatta, Sydney, Melbourne, Essendon, Adelaide and Perth) to collect noise and flight path data. NFPMS operates 24 hours a day, seven days a week and records the identity, flight path and altitude of each aircraft operating to and from the airport, the noise levels produced by individual aircraft, weather data and general background noise.

2.23 The NFPMS consists of a number of noise monitoring terminals (NMT), which are located around individual airports. The NMTs consist of a microphone on top of a six meter mast and an electronics box. The microphone on the NMTs continuously records and transmits data to the NFPMS central computer. The NFPMS also consists of secondary surveillance radar at the airports, which are used to acquire flight track information on aircraft operating into and out of an airport.

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15 Airservices Australia, *Aircraft Noise: ANEF and ANEI*. Available at: http://www.airservicesaustralia.com/aviationenvironment/noise/anef_anei.asp.

16 Airservices Australia, *Guidelines for the Production of Noise Contours for Australian Airports*, May 2003. Available at: http://www.cairnsport.com.au/files/pdf/Guidelines%20ANEF.pdf.

2.24 NMTs record 'noise events' – noises that are of a level and duration which exceed the threshold level set for the particular NMT site. The time and location of the noise event are checked against movement times and radar tracks of aircraft operating in the vicinity. If the time and the NMT location of the noise event match the movement and radar track of an aircraft, the noise event is attributed to that aircraft. Otherwise, it is regarded as part of the background noise.

2.25 The information collected from NFPMS is used to:

- determine the contribution of aircraft to overall noise exposure;
- detect occurrences of excessive noise levels from aircraft operations;
- assess the effects of operational and administrative procedures for noise control and compliance with these procedures;
- assist in planning of airspace usage;
- validate noise forecasts and forecasting techniques;
- assist relevant authorities in land use planning for developments on areas in the vicinity of an airport; and
- generate reports and provide responses to questions from government, industry organisations, community groups and individuals.

2.26 Quarterly reports are available for all the airports that are covered by the NFPMS.[17]

Webtrak

2.27 Webtrak is an online information service to provide the community with information about noise levels of aircraft.

2.28 WebTrak uses information from air traffic control secondary surveillance radars to monitor aircraft:

- within 55 km of the airport (Cairns, Brisbane, Sydney, Coolangatta, Canberra, Melbourne, Adelaide and Perth);
- up to a height of 3000m above ground level.

2.29 Aircraft noise data is downloaded daily from noise monitors strategically located about the communities close to the airport. The information is then displayed on a detailed map (road or aerial) which enables the user to zoom down to their street level.

17 Airservices Australia website: http://www.airservicesaustralia.com/aviationenvironment/noise/myairport.asp.

2.30 Information can be viewed of current operations (delayed by 40 minutes for aviation security reasons) around the airport, or in 'replay mode', which shows flight information and noise data for the previous two weeks.

A National Aviation Policy Statement – 2009 Aviation White Paper

2.31 On 16 December 2009, the Minister for Infrastructure, Transport, Regional Development and Local Government released the government's National Aviation Policy Statement (White Paper).

2.32 The media release accompanying the White Paper highlights three steps the government intends to take to address the impacts of aircraft noise:[18]

- establishing a new Aircraft Noise Ombudsman;
- regulating to stop older, noisier aircraft flying over residential areas; and
- maintaining curfews at Sydney, Adelaide, Gold Coast and Essendon Airports.

2.33 In terms of the Aircraft Noise Ombudsman, the White Paper states that the Ombudsman's office will be located within Airservices Australia and will have the following roles:

- independently review noise complaints handling procedures and make recommendations for improvements where necessary; and
- improve Airservices Australia's consultation arrangements and the presentation and distribution of aircraft noise–related information to the general public.[19]

2.34 The White Paper foreshadows a role for the Council of Australian Governments (COAG) to put in place a planning regime for land near airports:

> The Australian Government will continue to work with the aviation industry to ensure the impacts of aircraft noise are minimised and to find practical solutions for noise amelioration.
>
> To help all stakeholders understand their respective roles and responsibilities in relation to the management of aircraft noise impacts on the community, the Government will…ensure future airport operations and their economic viability are not constrained by incompatible development and protect existing and future communities from undue exposure to aircraft noise by working through COAG and other forums to put in place

18 The Hon. Anthony Albanese, Minister for Infrastructure, Transport, Regional Development and Local Government, Media Release, AA539/2009, 16 December 2009.

19 Australian Government, *Flight Path to the Future: National Aviation Policy White Paper* (White Paper), December 2009, p. 27.

an effective national land use planning regime for land near airports and flight paths. [20]

Partnership approach to the management of aircraft noise

2.35 The committee heard that the effective management of aircraft noise is a partnership between key industry stakeholders including:

- airlines and aircraft operators, who are responsible for using noise-compliant aircraft, implementing noise-abatement principles for flight operations, and contributing to noise-reduction initiatives;
- air navigation service providers, which are responsible for flight track, noise-sharing and traffic management components, and noise monitoring and complaint reporting;
- airports, with a responsibility for community engagement, development of noise management plans, and participation in noise-reduction programs and noise monitoring;
- federal government agencies, which 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, 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 which 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; and
- residents, who should be adequately informed of their aircraft noise exposure near airports and under flight paths and able to contribute effectively to debate about management of noise issues affecting their locality.[21]

2.36 The committee noted the inter-related responsibilities of aviation stakeholders and the partnership approach to noise management presents a challenge for Airservices Australia. For example, there are a range of matters over which, although they affect aircraft noise, Airservices Australia has no responsibility or control. These include:

- the location of airports and the configuration of airport runways; and
- the mix, density and scheduling of aircraft operations.

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20 White Paper, December 2009, p. 27.

21 White Paper, December 2009, p. 208. See also Sydney Airport, *Submission 77*, p. 5-8.

2.37 Accordingly close collaboration and cooperation between the key aviation stakeholders is essential to enabling Airservices Australia to fulfil its legislated responsibility for ensuring the environment is protected from the effects associated with the operation of aircraft.