



HEGGIES

REPORT 10-4631-NMP-R1
Revision 1

**Sydney Metropolitan Airport - Bankstown
Noise Management Plan**



PREPARED FOR
Bankstown Airport Limited
Management Centre
Airport Avenue
Bankstown Airport NSW 2220

1 SEPTEMBER 2007



NOISE MANAGEMENT PLAN (NMP)

This Plan documents the noise management initiatives that are currently being undertaken by and the future initiatives proposed by Bankstown Airport Limited (BAL) in relation to planning and operations at Sydney Metropolitan Airport – Bankstown. This document should be read in conjunction with the Sydney Metropolitan Airport - *'Bankstown Noise Management Plan Overview and Supporting Information'* document which explains how noise is generated, measured, depicted and managed generally within the aviation environment, and provides an overview of the noise environment and how it is managed at Sydney Metropolitan Airport - Bankstown.

Planning

The Airport uses ANEF and N60 contours in the preparation of its Airport Master Plan. The ANEF contour maps form a basis for all planning at the Airport subject to the requirements of Australian Standard AS 2021-2000 "Acoustics – Aircraft Noise Intrusion – Building Siting and Construction". In relation to future planning for the development of the Airport, BAL will:

- Review the NMP for the Airport every 5 years;
- Remodel the ANEF contour maps every 5 years for comparison with previous forecasts, consistent with the requirement of the Airport Master Plan;
 - Upon completion of the revised ANEF, advise BCC, LCC and FCC of the land affected by aircraft noise and advise Council of the need to ensure that any new developments in these areas are undertaken in compliance with AS 2021-2000 having regard for the ANEF contour and the type of development;
- Consider modelling N70 and N60 contours for inclusion in the next review of the Airport Master Plan in 2010;
- Ensure that all future developments within the Airport precinct are undertaken in accordance with the requirements of AS 2021-2000 having regard for the ANEF contour and the type of development; and
- Work with Council to have future developments in the vicinity of the Airport designed in accordance with the requirements of AS 2021-2000 having regard for the ANEF contour and the type of development.

Operations

Flight Track Monitoring

Due to operational and economic considerations, no general aviation airport in Australia including Sydney Metropolitan Airport - Bankstown, undertakes Flight Track monitoring and analysis. BAL will reconsider application of this technology at the Airport,

- If the development of transponder technology is such that it becomes more economically viable for use with small general aviation operators;
- When regular public transport (RPT) operations commence at the Airport; and



- Lobby the Commonwealth Government to implement legislation to make the use of transponders in all aircraft mandatory.

Ground Running

Sydney Metropolitan Airport - Bankstown has promulgated ground running rules to minimise the impact of noise associated with ground based aircraft operations – refer Attachment A. These rules have been distributed to all operators at the airport and are available on the airport's web site. BAL will:

- Review ground running rules within the next 12 months;
- Consider development of a purpose built run-up bay ; and
- Develop guidelines for a minimum standard for ground running equipment.

Aircraft Noise Management

Management of noise in relation to aircraft operating into and out of the Airport is governed by CASA's Visual Pilot Guide for the Sydney Basin which applies to fixed wing aircraft only and ERSA (En Route Supplement Australia) which applies to both fixed and rotary wing aircraft.

To facilitate improved recognition of the relationship between the airport and the local community BAL will;

- Implement Fly Neighbourly procedures for both fixed and rotary wing aircraft at Sydney Metropolitan Airport - Bankstown within 12 months – refer Attachment B.
- Publish the Fly Neighbourly Procedures in a variety of airport media, include a message in the Automatic Terminal Information Service recording, and liaise with Flight Training Schools on the Airport within 12 months; and
- Develop a pilot training program to support implementation of the Fly Neighbourly Procedures within 18 months.

Complaints Procedure

Airservices Australia is the Commonwealth Government body responsible for addressing aircraft "in flight" noise complaints at Australian Airports.

BAL handles noise complaints associated with ground based activities, such as ground running of aircraft and aircraft servicing and other on site noise such as from alarms, road traffic and construction activities. To improve the ground based noise complaint mechanism, BAL will:

- Develop a procedure whereby operators notify BAL of particularly noisy ground based activities prior to commencement and BAL to notify local residents; and
- Provide better advice to the community on issues to note when making noise complaint; and
- Monitor BAL and Airservices Australia noise complaints and report routinely to BACCF as a means of identifying problem areas and investigating solutions in consultation with the community.



Community Consultation

BAL is actively involved in consultation with the community via the Bankstown Airport Community Consultative Forum (BACCF) and associated bodies on issues relating to noise and the Airport. To improve consultation with the community BAL will:

- Consult with the local community in relation to the Airport NMP;
- Communicate key aspects of the NMP via the BAL website. These will include hours of operation of activities, ground running rules, noise complaints procedure and fly neighbourly friendly procedures; and
- Use the Community Newsletter to advise the community on noise-related issues.

Change Management

The possibility of changes to aircraft operations in the future is foreshadowed in the Master Plan for Sydney Metropolitan Airport - Bankstown. Such changes may include the introduction of new aircraft types, or simply a growth in number of operations, which may, in turn, result in a change to the surrounding noise environment. The Airport's Noise Management Plan specifically recognises the potential for such future changes and, in response, BAL makes the following commitments:

- In the event that airport operations change to the extent that noise emissions from the Airport are likely to be affected, BAL will engage an independent Acoustical Consultant to carry out a risk assessment of the significance of the change.
- Should the noise risk assessment indicate that (a) the change in Airport noise emissions is likely to be noticeable to the surrounding community, and (b) resulting noise emissions are likely to alter current noise indicators used in the management of the Airport (eg a significance change to ANEF contours), BAL will:
 - Engage in further studies to more precisely quantify the potential change in noise emissions from the Airport (this may include the re-calculation of ANEF or N60/N70 contours, ambient noise logging within the surrounding community, etc);
 - Take into account the evolving nature of ICAO Noise Certification limits when considering the introduction of new aircraft types into the airport – for example, BAL will not allow the introduction of Chapter 1 or Chapter 2 aircraft in any future change to aircraft operations;
 - Review all noise-related management tools used by the Airport (eg this Plan) and revise where appropriate; and
 - Consult with the Local Community and Council to ensure they are fully briefed as to the nature of the above changes.



Contacts

Organisation	Address	Phone	Facsimile
Aerodrome Operator	Bankstown Airport Limited Management Centre Airport Avenue Bankstown Airport NSW 2220	02 9796 2300	02 9791 0230
Noise Complaints/Enquiry Line	Airservices Australia	1 800 802 584	
Airservices Australia	Alan Woods Building 5 Constitution Avenue Canberra ACT 2601	02 6268 4111	02 6268 5683
CASA	CASA Building Corner Northbourne Avenue & Barry Drive Canberra ACT 2600	131 757	02 6217 1209



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Attachment A - AIRCRAFT ENGINE GROUND RUNNING GUIDELINES



AIRCRAFT ENGINE GROUND RUNNING GUIDELINES

Introduction

In accordance with the *Airports Act 1996*, Sydney Metropolitan Airport - Bankstown is responsible for noise generated from ground-based aircraft operations, excluding aircraft taxiing, taking off and landing. As outlined in the BAL Environment Strategy, BAL is adopting a number of management actions to reduce and monitor the impacts of airport ground-based noise on neighbouring residents, the formalisation of engine ground running guidelines is one example

Non Compliance with this Guideline

All tenants operating at Sydney Metropolitan Airport - Bankstown have a general duty to prevent offensive noise from occurring, as required by section 4.06 of the *Airports (Environmental Protection) Regulations 1997*. Non-compliance with the Aircraft Engine Ground Running Guideline may result in the application of enforcement measures by the Airport Environment Officer (AEO), Sydney Metropolitan Airport - Bankstown external regulator.

Engine Ground Running Curfews

- Maintenance run-ups for fixed wing and rotary aircraft must only be conducted:

Monday – Friday 7.00am to 8.00pm (local time)

Saturday – Sunday 8.00am to 6.00pm (local time)

Engine Ground Running Locations

Fixed Wing Aircraft

- Maintenance run-ups at low power settings (“idling”) can be undertaken on airside aprons adjacent to hangers for a maximum of 15 minutes.
- Maintenance run-ups must be undertaken in a designated run-up bay, under the following circumstances:
 - Maintenance run-ups for longer than 15 minutes;
 - Maintenance run-ups at high power settings of any duration.

Rotary Aircraft

- Maintenance run-ups can be undertaken on airside aprons adjacent to hangers for a maximum of 15 minutes.
- Maintenance run-ups must be undertaken in a designated run-up bay for tests longer than 15 minutes.



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Attachment B - FLY NEIGHBOURLY PROCEDURES



FLY NEIGHBOURLY PROCEDURES

Aircraft operating at Sydney Metropolitan Airport - Bankstown must comply with the direction of Airservices Australia, and CASA procedures which include the Visual Pilot Guide and ERSA. In order to further reduce operational noise, it is recommended that **voluntary procedures** are identified and adopted by Sydney Metropolitan Airport - Bankstown that assist pilots to reduce aircraft noise impacts on local communities. The Fly Neighbourly program should address noise abatement and public acceptance objectives in the following areas:

- Pilot and operator awareness;
- Pilot training;
- Flight operations planning;
- Public acceptance and safety; and
- Sensitivity to the concerns of the community.

The implementation of Fly Neighbourly Procedures is **subject to safety considerations**, however their use would help to minimise impacts and the public perception of airport noise. **It is noted many pilots** of both fixed-wing and rotary aircraft already implement flying procedures as part of their technique to minimise noise impacts on residential areas. Similar procedures have been adopted by other airports in Australia (eg Jandakot in Western Australia which is similar to Bankstown in operations).

Sydney Metropolitan Airport - Bankstown Fly Neighbourly Initiatives

The following initiatives are being promoted by BAL for adoption by airport users and pilots operating fixed wing and rotary aircraft.

Fixed-Wing Aircraft Procedures

To minimize noise impacts on the surrounding community, it is recommended pilots **endeavour to comply** with the principles of the Fly Neighbourly program which follow:

- Climb as soon as possible within the airport perimeter as instructed;
- Use rates of climb and descent that minimise noise over residential areas;
- Maintain correct tracks after take-off, in line with CASA regulations;
- Reduce engine revs as soon as possible;
- Follow designated flight paths;
- Avoid flying over residential areas, hospitals and schools when possible. Endeavour to be above 1,000 ft when flying over residential areas, hospitals and schools;
- Keep circuits as compact as possible - do not fly wide circuits;
- Conduct circuit training between 6:00am and 10:30pm Monday to Friday and 8:00am to last light Saturday and Sunday. (Note: in the event this is not practicable ASA specified requirements apply); and
- Repetitive formation circuits are not permitted.



Helicopter Procedures

To minimize noise impacts on the surrounding community, it is recommended pilots **endeavour to comply** with the principles of the Fly Neighbourly program which follow:

- Climb as soon as possible within the airport perimeter as instructed;
- Use rates of climb and descent that minimise noise over residential areas;
- Avoid blade slap. Blade slap usually occurs during shallow high speed descents, especially during turns. It can be avoided using slower, steeper descents. With the right door removed, the pilot can easily determine those flight conditions which produce slap, and develop techniques which will reduce or eliminate this source of noise;
- Maintain correct tracks after take-off, in line with CASA regulations;
- Try to avoid flying over residential areas, hospitals and schools when departing from or approaching a landing site (or conducting circuit training). Always fly above 500 ft, and endeavour to be above 1,000 ft when flying over noise sensitive areas;
- Look ahead and select the least noise sensitive route when flying over populated areas; and
- Vary the flight path so the same buildings are not overflowed each time when it is necessary to fly over the same area more than once (to access visual landmarks and during circuit training). Noting repetitive noise is far more irritating than a single occurrence.

Implementation of Fly Neighbourly Procedures at Sydney Metropolitan Airport - Bankstown

Implementation of **voluntary procedures** to the Airport staff and pilots requires appropriate promotion and communication.

- Publish Fly Neighbourly Procedures in the Metropolitan Airport Flyer (issued to all airport users) and the Bankstown Airport Flyer (issued to community adjacent to Sydney Metropolitan Airport - Bankstown);
- Include a message to “Fly Friendly” in the Automatic Terminal Information Service recording (Frequency 120.9 MHz);
- Issue the Fly Neighbourly Procedures to all flight training schools at the Airport and provide sufficient copies that can be issued to all students;
- Develop a video that can be used by training schools to help their students understand the meaning of Flying Friendly; and
- Develop a pilot training program for implementation of the Fly Neighbourly Procedures across all airport users, and consider the use of incentives to engage pilots in the training.



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Attachment C - AIRCRAFT NOISE AND ACOUSTIC TERMINOLOGY



AIRCRAFT NOISE AND ACOUSTIC TERMINOLOGY

Sound is a normal part of every day life. It provides a vast array of functions in our life and is often not given a second thought – that is, until the sound becomes annoying, unpleasant or unwanted, at which point it becomes an annoyance and is referred to as "noise".

In urban areas nuisance noise can be attributed to a wide range of sources including construction works, emergency sirens, barking dogs as well as road, rail and air transport.

Sound or Noise Measurement

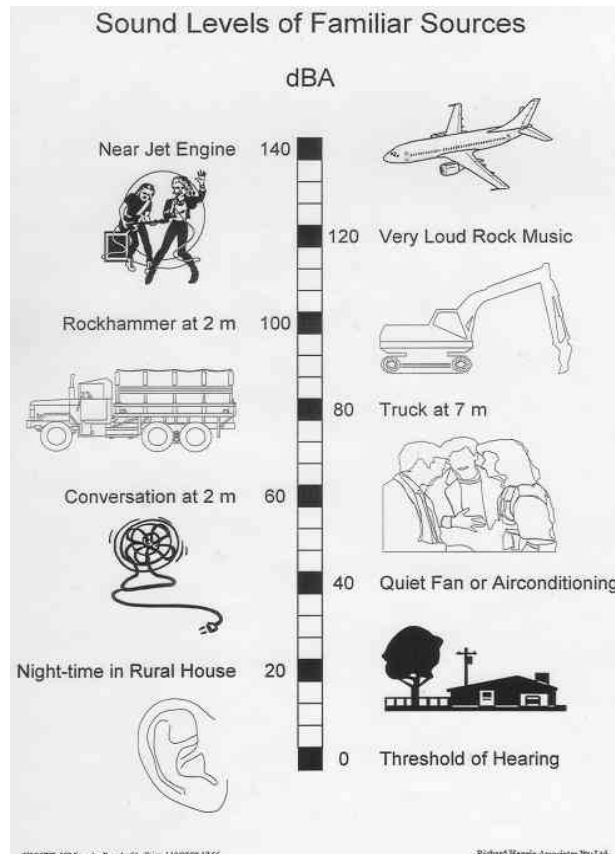
Sound (or noise) is generated by rapid fluctuations (or vibrations) in the air. The ear drum converts these pressure waves into a signal which the brain can recognise. The human ear responds to changes in sound pressure over a relatively very wide frequency and pressure range. The loudest sound pressure to which the human ear responds is ten million times greater than the softest. The decibel (abbreviated as dB) scale reduces this range to a more manageable size by the use of a logarithmic scale.

The overall level of a sound is usually expressed in terms of dBA, which is measured using a sound level meter with an "A-weighting" filter. This is an electronic filter having a frequency response corresponding to a typical human ear.

People's hearing is most sensitive to sounds at mid frequencies (500 Hz to 4000 Hz), and less sensitive at lower and higher frequencies. Thus, the level of a sound in dBA is a good measure of the loudness of that sound.

Different sources having the same dBA level generally sound about equally loud. A change of 1 dBA or 2 dBA in the level of a sound is difficult for most people to detect, whilst a 3 dBA to 5 dBA change corresponds to a small but noticeable change in loudness. A 10 dBA change corresponds to an approximate doubling or halving in loudness.

The Figure to the right lists examples of typical noise levels





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Attachment D - ABBREVIATIONS



ABBREVIATIONS

The following abbreviations are used in this Plan or are in common use in airport nomenclature and other reporting environments at Bankstown Airport.

ABC	Airport Building Controller
AEO	Airport Environment Officer
AES	Airport Environmental Strategy - The BAL AES was prepared in February 2005 in accordance with the Airports Act 1996 and the Airports (Environment Protection) Regulations 1997.
AHD	Australian Height Datum
Airservices Australia	Airservices Australia is a government-owned corporation providing air traffic control management and related airside services to the aviation industry.
ANEF	Australian Noise Exposure Forecasts - A scientific measure of aircraft noise exposure around aerodromes for a particular future year that is used to assess average community response to aircraft noise. Computation of the ANEF includes aircraft noise measurements, estimates of type of aircraft and flight paths, and time of operation(day or night)
ANEI	Australian Noise Exposure Index - As per ANEF, however based on actual aircraft movements - nominally for the previous year.
AS 2021-2000	Australian Standard - "Acoustics - Aircraft Noise Intrusion - Building Siting and Construction".
Australian Government Aviation Bodies	Airservices Australia, DOTARS and CASA constitute a tripartite structure for providing safe aviation in Australia, each with separate and distinct functions, working together as an integrated system.
BCC	Bankstown City Council
Ambient Noise	The all-encompassing noise associated with a given environment. It is the composite of sounds from many sources, both near and far.
Attenuation	The reduction of noise levels means.
A-weighting	Adjustment carried out to the measured noise spectra via use of an electronic filter, to approximate the response of the human ear.
Background	The underlying level of noise present in the ambient noise, excluding the noise source under investigation, and with extraneous noise removed. This is described using the LA90 descriptor.
CASA	The Civil Aviation Safety Authority was established on 6 July 1995 as an independent statutory authority. CASA's primary function is to conduct the safety regulation of civil air operations in Australia and the operation of Australian aircraft overseas.
Compliance	Where noise levels meet noise level goals, noise criteria, or noise requirements.
Concept Design	Initial functional layout of a concept, such as a road or road system, providing a level of understanding leading to later establishment of detailed design parameters.
Daytime	For aircraft operational purposes, and the calculation of ANEF contours, it is the period from 7:00 am to 7:00 pm (Monday to Sunday).
DEC	NSW Department of Environment and Conservation, now known as the Department of Environment and Climate Change.
DECC	NSW Department of Environment and Climate Change.



DOTARS	Department of Transport and Regional Services - advises the Australian Government on the policy and regulatory framework for Australian airports and the aviation industry. The department manages the continuing relationship between the Australian Government, CASA, Airservices Australia and Australia's airlines.
dB	Abbreviation for decibel - a unit of sound measurement. It is equivalent to 10 times the (base 10) logarithm of the ratio of a given sound pressure to a reference pressure.
dBA	A-weighted decibel: A single number measurement of the sound pressure based on the decibel but weighted to approximate the response of the human ear with respect to frequencies.
ECRTN	Environmental Criteria for Road Traffic Noise NSW Government's policy in relation to the assessment of road traffic noise impacts.
EIS	Environmental Impact Statement - A study that assesses potential environmental and social impacts associated with the construction and operation of a project.
EPA	Environment Protection Authority, now known as the Department of Environment and Climate Change.
ERSA	En Route Supplement Australia.
Feasible and Reasonable	Terms used in relation to noise mitigation measures: Feasibility relates to engineering considerations and what is practical to build. Reasonableness relates to the application of judgement in arriving at a decision.
FCC	Fairfield City Council
Fixed Wing Aircraft	Conventional Aircraft
GA	General Aviation - usually refers to the type of airport.
Guideline	Information intended to advise what the noise level should be. Guidelines are non-mandatory.
INP	Industrial Noise Policy - the NSW Government's INP is administered by the DEC. The policy provides a framework and process for deriving noise limit conditions for consents and licenses that will enable the DEC to regulate premises.
L _{Amax}	Maximum noise level measured at a given location over a specified time interval.
LAN	The A-weighted sound pressure level exceeded for N% of a given measurement period.
LA ₁	The A-weighted sound pressure level that is exceeded for 1% of the time for which the given sound is measured.
LA ₁₀	The A-weighted sound pressure level that is exceeded for 10% of the time for which the given sound is measured. During a 15 minute survey, it would represent the loudest 90 seconds.
LA ₉₀	The A-weighted sound pressure level that is exceeded for 90% of the time over which a given sound is measured. This is considered to represent the background noise. During a 15 minute survey, it would represent the quietest 90 seconds.
LA _{eq}	Equivalent A-weighted sound pressure level – it is the steady sound level that, over a specified period of time, would produce the same energy equivalence as the fluctuating sound level actually occurring.
LA _{eq} (15minute)	The LA _{eq} noise level for the 15 minute period. In accordance with the NSW INP intrusive criteria, LA _{eq} (15minute) from industry is assessed against the RBL + 5 dBA.



L _{Aeq} (period)	The L _{Aeq} noise level for the assessment period. For the NSW INP, “day” is 7:00 am to 6.00 pm, “evening” 6.00 pm to 10:00 pm and “night” 10.00 pm to 7.00 am. In accordance with the INP amenity criteria, L _{Aeq} (period) from industry is assessed against the respective day/evening/night amenity goal.
Level	The level of noise, usually expressed in dBA, as measured by a standard sound level meter with a pressure microphone. The sound pressure level in dBA gives a close indication of the subjective loudness of the noise.
LCC	Liverpool City Council
Mitigation	Measure to manage and minimise noise impacts.
N60 Contour	Contours showing the number of (aircraft-related) events above 60 dBA. For example the BAL Masterplan produced N60 contours for 50 daily average events and 100 daily average events. These are also referred to as “noise metrics” and are useful to assist members of the public to better understand aircraft noise.
N70 Contour	Contours showing the number of (aircraft-related) events above 70 dBA. Also see the N60 contour description above.
Night	For aircraft operational purposes, and the calculation of ANEF contours, it is the period from 07.00 pm to 7.00 am (Monday to Sunday).
Noise Level Goal or Noise Level Objective	A noise level that should be adopted for planning purposes as the highest acceptable noise level for the specific area, land use and time of day.
Notams	A term derived from the old term “Notices to Airmen”. Notams are issued by Airservices Australia.
RPT	Regular Passenger Transport - usually with reference to the type of airport operation.
RBL	The Rated Background Level for a DEC assessment period is obtained by calculating the median value of the “day” / “evening” / “night” assessment background levels (ABLs). For example, following a week’s worth of monitoring, the night-time RBL would be the median of the seven night-time ABLs.
Rotary Wing Aircraft	Helicopter.