AIRSERVICES AUSTRALIA

Environmental Standards & Recommended Practices

Environmental Principles for Minimising the Impact of Aircraft Operations (including Noise)

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Note:

- This document forms part of the "AA-NOS-ENV-2.000" series of documents that form the Standard: Environment Assessment Process for ATM Changes

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1. Purpose

To establish the fundamental principles to be used as a basis for:

- Design and redesign of Airservices air traffic management practices that may affect aircraft operations, including new air routes and selecting preferred noise abatement procedures;
- ATM practices; and
- Environmental Assessments.

2. Environmental Objective

To ensure that:

- As far as is practicable, the environment is protected from the effects of the operation and use of aircraft; and the effects associated with the operation and use of aircraft; and
- Appropriate formal assessment is implemented for all proposals with potentially significant impacts in accordance with the Environment Protection and Biodiversity Conservation Act

3. Environmental Principles for Minimising Impact of Aircraft Emissions

The environmental principles for minimising the impact of aircraft emissions are to, as far as is practicable, facilitate:

- Use of optimal (fuel efficient) ascent regime
- Use of optimal (fuel efficient) cruising regime
- Use of optimal (fuel efficient) descent regime
- Use of the most direct route
- Minimal holding time
- Minimal taxiing delays

4. Environmental Principles for Minimising Impact of Aircraft Noise

Part A: Fundamental Principles

The following fundamental principles are to be used in environmental assessments (of proposals for new air routes and for changes to existing arrangements) and as the basis for selecting preferred noise abatement procedures.

TOTAL NOISE DOSE

Principle 1: Noise abatement procedures should be optimized to achieve the lowest possible overall impact on the community.

SPATIAL DISTRIBUTION OF THE NOISE DOSE

Principle 2: Noise should be concentrated as much as possible over non-residential areas.

Principle 3: Noise exposure should be fairly shared whenever possible.

Principle 4: No suburb, group or individual can demand or expect to be exempt from aircraft noise exposure.

UPPER AND LOWER LIMITS OF NOISE EXPOSURE

Principle 5: Noise is not considered significant when selecting noise preferred options if exposure amounts to less than 40 Leq 24 and there are less than 50 overflights per day.

Principle 6: No residential area should receive more than 60 Leq 24, i.e., no residential area should receive more noise exposure than that which is considered "unacceptable" for residential housing under Australian Standard AS2021.

Principle 7: There should be a current agreed aircraft noise exposure level above which no person should be exposed, and agreement that this level should be progressively reduced. In the short term the goal should be a level of 105 dB(A) maximum and in the longer term (Year 2002) the goal should be 95 dB(A).

TIMING / HISTORICAL ISSUES

Principle 8: When comparing options, operations that are conducted at night or on weekends should be treated as being more sensitive than those which occur during the daytime or on weekdays.

Principle 9: Both short-term and long-term noise exposure should be taken into account in deciding between options.

Principle 10: Options which allow for a gradual change from the current to planned procedures should be given preference.

Principle 11: In deciding between mutually exclusive, but otherwise equivalent options, involving

(i) the overflight of an area which has previously been exposed to aircraft noise for a considerable period of time (and which a large proportion of residents would therefore have been aware of the noise before moving in); or

(ii) a newly exposed area,

option (i) should be chosen.

Part B Strategy for Working through a Hierarchical Set of Environmental Standards

The following strategy for working through a hierarchical set of environmental standards shall be followed so that the highest order standard is met 'as far as is practicable'.

To the extent that higher order principles have been satisfied and there remains a need to decide on operational arrangements, the following operational standards and procedures are to be considered. These are presented as a hierarchical set, the most preferred environmental condition being presented first. **In all cases, aviation safety, including system safety through simplified operating arrangements, will be given priority over noise abatement considerations.** However, assuming safety conditions have been satisfied, the sole test for moving to a lower level standard is that the higher standard is "not operationally practicable". If lower rather than higher standards are chosen, then well documented reasons for the decision are required. The noise standard chosen should be achievable for at least 90% of movements.

ASSESSMENT PROCESS

Standards have been developed for five operational categories:

A. Jet aircraft operations

B. Propeller aircraft entering/departing terminal area

C. Helicopter operations

D. Flights within terminal area

E. Airwork activities

For each category, the highest practicable standard is to be selected.

A. JET AIRCRAFT

1. No overflight of residential areas

Standard departure and arrival procedures should be designed so that jet aircraft do not overfly residential areas. Radar headings and procedural tracks (in any form) should be assigned to ensure jets do not overfly residential areas.

If this cannot be achieved, then;

2. No overflight of residential areas below 5,000 ft AGL.

A height of 5,000 ft AGL is considered to be the minimum acceptable altitude for the avoidance of significant noise impact on residential populations by jet aircraft. (For reference, the noise at ground level from a climbing B747 at 5,000 ft is about 75 dB(A)s maximum).

In all instances standard departure and arrival procedures should be designed to ensure that jet aircraft do not overfly residential areas at altitudes below 5,000 ft AGL. Radar headings and procedural tracks (in any form) that are assigned to jet aircraft should whenever possible ensure the aircraft do not overfly residential areas at altitudes below 5,000 ft AGL.

If this cannot be achieved, then;

3. Minimisation of incidence of jet aircraft flying below 5,000 ft AGL.

Where jet aircraft flight below 5,000 ft AGL is unavoidable, procedures are to be designed with due consideration for the preferences of the affected community, as determined through a process of consultation with community representatives, in determining which areas will receive greater noise exposure where there are mutually exclusive options for the flight tracks.

The occurrences where departing or arriving aircraft are required to maintain level flight, when below 5,000 ft AGL, are to be kept to a minimum.

If this cannot be achieved, then;

4. Minimisation of noise impact on residential areas by Jet Aircraft below 5,000 ft AGL.

In choosing climb and descent procedures into and out of airports, options that produce the minimum impact on the community which is overflown are to be selected (within the operational capabilities of the aircraft in terms of performance and safety).

B. NON-JET AIRCRAFT ENTERING/DEPARTING TERMINAL AREA

1. No overflight of residential areas

Standard departure and arrival procedures should be designed so that these aircraft do not overfly residential areas. Radar headings and procedural tracks (in any form) should be assigned to ensure they do not overfly residential areas.

If this cannot be achieved, then;

2. No overflight of residential areas below 3,000 ft AGL.

A height of 3,000 ft AGL is considered to be the minimum acceptable altitude for the avoidance of significant noise impact on residential populations by non-jet aircraft with a maximum take-off weight greater than 5700kg. (For reference, the noise at ground level from a climbing SAAB-340 at 3,000 ft AGL is about 70 dB(A)s maximum). In the case of multi-engine piston aircraft with a maximum take-off weight equal to or less than 5700kg a height of 1,500 ft AGL is to be considered the minimum acceptable altitude.

In all instances, standard departure and arrival procedures should be designed to ensure that non-jet aircraft do not overfly residential areas at altitudes below 3,000 ft AGL (or 1,500 ft AGL for multi-engine piston aircraft equal to or less than 5700kg). Radar headings and procedural tracks (in any form) that are assigned to non-jet aircraft should whenever possible ensure the aircraft do not overfly built up areas at altitudes below 3,000 ft AGL (or 1,500 ft AGL for multi-engine piston aircraft equal to or less than 5700kg).

If this cannot be achieved, then;

3. Minimisation of Incidence of Non-jet Aircraft flying below 3,000ft AGL.

Where aircraft flight below 3,000 ft AGL (or 1,500 ft AGL for multi-engine piston aircraft equal to or less than 5700kg) is unavoidable, procedures are to be designed with due consideration for the preferences of the affected community, as determined through a process of consultation with community representatives, in determining which areas will receive greater noise exposure where there are mutually exclusive options for the flight tracks.

The occurrences where departing or arriving aircraft are required to maintain level flight, when below 3,000 ft AGL (or 1,500 ft AGL for multi-engine piston aircraft equal to or less than 5700kg), are to be kept to a minimum.

If this cannot be achieved, then;

4. Minimisation of Noise Impact on residential areas by Non-jet Aircraft below 3,000 ft AGL.

In choosing climb and descent procedures into and out of airports, those options that produce the minimal impact on the community which is overflown are to be selected (within the operational capabilities of the aircraft in terms of performance and safety).

C. HELICOPTER OPERATIONS

The issue of helicopter operations is currently the subject of discussions between the Department of Transport and Regional Services and Airservices Australia. The development of environmental standards for helicopter operations will be considered following the completion of discussions.

D. FLIGHTS WITHIN TERMINAL AREA

Circuit Training

1. Minimum height for level flight over residential areas.

A minimum circuit height of 1,000ft AGL is to apply for aircraft involved in circuit training.

2. Limit the number of circuits and the number of aircraft permitted to overfly identified areas.

In conjunction with operators, operations are to be designed to spread noise over different areas where practical options are available.

3. Limit the hours that circuit training is permitted.

At locations where a noise problem exists circuit training may be limited. During week days, it is proposed that circuit training be limited to 7:00 am - 8:00 pm except for 1 night per week where circuits to may be conducted to 10:00 pm. At weekends and on declared public holidays these operations would be contained within the period 9:00 am - 8:00 pm. Consideration may need to be given to extending the times beyond those proposed to account for daylight saving periods.

The actual times for circuit operations should be determined through consultation with community representatives, industry representatives and airport operators.

E. AIRWORK AIRCRAFT

1. Built-up Areas

Operators are to avoid residential areas.

If this cannot be achieved, then;

2. Sensitive Areas

Operators are to avoid areas identified as particularly sensitive (with advice from representative community groups).

3. Minimum Limits

If it is not practicable to avoid operations over residential areas, operators are to conduct their operations above 3,000ft AGL for propeller driven aircraft or helicopters and above 5,000ft AGL for jet aircraft.

4. Practice Instrument Approaches

Aircraft engaged in practice instrument approach training are permitted, irrespective of the runway, provided there are no more than 4 approaches per hour between 7:00 am - 8:00 pm on weekdays and between 9:00am - 8:00pm on weekends and on declared public holidays. The actual number of approaches per hour should be determined through consultation with community representatives, industry representatives and airport operators.

5. Community Input

If heights below 3,000 ft AGL (propeller aircraft and helicopters) and 5,000 ft AGL (jet aircraft) are required for airwork on a continuing basis, the number of operations per week permitted is to be the subject of agreement with community representatives.

5. Amendment Record Sheet

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