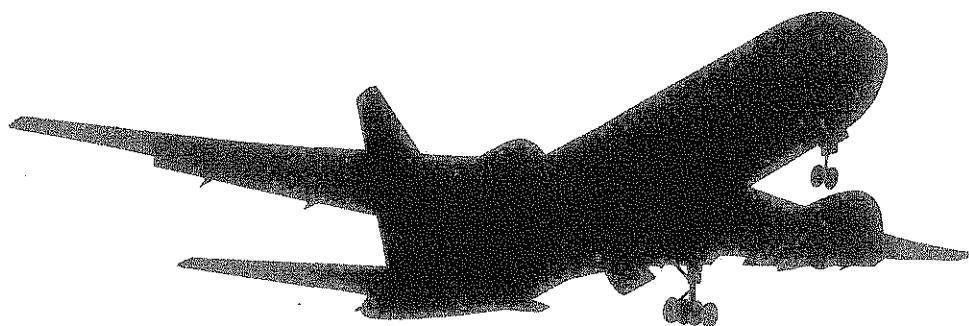




# Aircraft Operations and the Australian Community

A black silhouette of a city skyline, featuring various building shapes and several palm trees. This graphic serves as a background for the text at the bottom of the cover.

**REPORT OF THE HOUSE OF REPRESENTATIVES  
SELECT COMMITTEE ON AIRCRAFT NOISE**

**September 1985**



THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA

# AIRCRAFT OPERATIONS AND THE AUSTRALIAN COMMUNITY

REPORT OF THE HOUSE OF REPRESENTATIVES  
SELECT COMMITTEE ON AIRCRAFT NOISE

SEPTEMBER 1985

STOCK LIMITED  
PLEASE RETURN TO  
20 THE GILLES STREET  
SYDNEY NSW 2000  
222 96 07  
(Bills and Papers Office)

Australian Government Publishing Service  
Canberra 1985

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ISBN 0 644 04366 0

Printed by C. J. THOMPSON, Commonwealth Government Printer, Canberra



*Members of the Committee*

Standing: Mr J.R. Cummins (Secretary), Mr M.J. Maher, Mr G. Gear, Mr N.P. O'Keefe  
 Seated: Mr S.C. Dubois, Mr M.A. Burr (Deputy Chairman), Mr P. Milton (Chairman),  
 Mr T.A. Fischer, Mr. A.P. Webster.

**Members of the Committee in the 34th Parliament**

Chairman	Mr P. Milton, M.P.
Deputy Chairman	Mr M.A. Burr, M.P.
Members	Mr S.C. Dubois, M.P.
	Mr T.A. Fischer, M.P.
	Mr G. Gear, M.P.
	Mr M.J. Maher, M.P.
	Mr N.P. O'Keefe, M.P.
	Mr A.P. Webster, M.P.
Secretary to the Committee	Mr J.R. Cummins

**Members of the Standing Committee on Environment and Conservation in the 33rd Parliament**

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Deputy Chairman	Mr D.M. Connolly, M.P.
Members	Mr M.A. Burr, M.P.
	Mr R.L. Chynoweth, M.P.
	Mr R.F. Edwards, M.P.
	Mr G. Gear, M.P. <sup>1</sup>
	Mr A.A. Morris, M.P.
	Mr J.E. Reeves, M.P. <sup>1</sup>
	Hon. I.L. Robinson, M.P.
Secretary to the Committee	Mr J.R. Cummins

<sup>1</sup> Mr Gear appointed to the Committee in place of Mr Reeves on 7 March 1984.

**Members of the Standing Committee on Environment and Conservation (Aircraft Noise Inquiry) in the 32nd Parliament**

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Deputy Chairman	Dr H.A. Jenkins, M.P.
Members	Mr M.A. Burr, M.P.
	Mr E.C. Cameron, M.P.
	Mr P.H. Drummond, M.P.
	Mr B.L. Howe, M.P.
	Mr A.J. MacKenzie, M.P.
	Mr S.J. West, M.P.
Secretary to the Committee	Mr J.R. Cummins

<sup>2</sup> Hon. M.J.R. MacKellar replaced Hon. J.C. Hodges as Chairman on 19 August 1982.

## CORRIGENDA

### List of Witnesses

Bigsworth, Mr W.R.	Superintendent of Airways Operations, NSW Region, Department of Aviation
Clarke, Mr B.N.	Member, Botany Bay Sub-Region Community Advisory Committee
Conroy, Mr M.M.	Specialist, Control Policy Division, Department of Environment and Planning (New South Wales)
Dean, Mr D.E.	Superintendent of Environment and Security, NSW Region, Department of Aviation
Hill, Mr C.	Regional Manager (Botany Bay Region), Department of Environment and Planning (New South Wales)
Hillier, Mrs N.	Member, Botany Bay Sub-Region Community Advisory Committee
Hood, Mr D.A.	Project Director, Planning and Development of Kingsford-Smith Airport, Central Office, Department of Aviation
McLachlan, Mr S.R.	Policy and Development Engineer, State Pollution Control Commission (New South Wales)
Punch, Mr G.F., MP	Private Citizen
Seaver, Mr S.R.K.	Examiner of Airmen, Department of Aviation
Spencer, Mr B.E.	Airport Director, Kingsford-Smith Airport, Department of Aviation
Thomson, Mrs J.I.	Head, Planning Division South, Department of Environment and Planning (New South Wales)
Westerman, Prof. H.L.	Chairman, Botany Bay Sub-Region Community Advisory Committee

### List of Submissions

#### MEMBERS AND SENATORS

McLeay, L.B., Campsie, NSW  
Punch, G.F., Kogarah, NSW  
Refshauge, A., South Murrumbidgee, NSW





## Terms of Reference of the Committee

That the Committee inquire into and report on the effects of aircraft operations on the environment surrounding airports including, but not limited to:

- (a) the extent of the impact of aircraft noise on —
  - (i) the health and welfare of persons, institutions and communities,
  - (ii) property and property values adjacent to major metropolitan airports;
- (b) the effectiveness of administrative procedures and regulations (including curfews), *designed to lessen noise, and the monitoring of such procedures and regulations*;
- (c) the extent to which aircraft noise should be taken into account in establishing priorities and programs for the development of existing airports and the building of new airports within and adjacent to major urban areas;
- (d) compensation schemes for aircraft noise operating in the United Kingdom and other countries and the effect of those schemes on airport planning and development;
- (e) the constitutional powers of the Commonwealth, State and local Governments to legislate for the adequate control of aircraft noise and how these powers could be used for that purpose;
- (f) the effects of aircraft operations — other than noise — on property;
- (g) the effect of aircraft engine emissions on people and property, and
- (h) such other matters which the Committee decides should be drawn to the attention of the House.

## Abbreviations

AMAC	Australian Mayoral Aviation Council
ANEF	Australian Noise Exposure Forecast
AVIAC	Aviation Industry Advisory Council
BAA	British Airports Authority
dB(A)	Decibels (with a special weighting)
EPNdB	Effective Perceived Noise Decibels
FAC	Federal Airports Corporation
GR	General Reaction
ICAO	International Civil Aviation Organisation
MANS	Major Airport Needs of Sydney
MLS	Microwave Landing System
NAL	National Acoustic Laboratories
NASA	National Aeronautics and Space Administration (United States)
NCDC	National Capital Development Commission
NEF	Noise Exposure Forecast
RAAF	Royal Australian Air Force
SID	Standard Instrument Departure
TAA	Trans Australia Airlines

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## Recommendations

The Committee recommends that:

1. the Commonwealth Department of Health in consultation with State and local governments undertake a study to determine the effects of aircraft noise on mortality and physical and mental health. *(paragraph 33)*
2. (i) the Department of Communications undertake a survey into the extent of interference to television reception caused by aircraft flyover; and  
(ii) investigate measures to alleviate the problem. *(paragraph 35)*
3. the Minister for Arts, Heritage and Environment request State Ministers responsible for environmental matters to include pollution from airports in any State monitoring programs. *(paragraph 43)*
4. the Department of Aviation commission studies and measurements of aircraft noise induced vibrations in buildings near selected major metropolitan airports. *(paragraph 50)*
5. in cases where it can be proven that damage to property from wake-vortices has occurred the Commonwealth Government pay for the cost of restoration. *(paragraph 56)*
6. the Commonwealth Government sponsor a research project to assess the effectiveness of various measures in achieving noise reduction in residences. *(paragraph 61)*
7. (i) the Commonwealth Government at the request of State and Northern Territory Governments provide assistance to the States, on a case by a case basis, to provide noise attenuation measures in schools and other institutions provided that it can be demonstrated that the major source of noise disturbance is from aircraft; and  
(ii) that such assistance be provided only for institutions built prior to 1970. *(paragraph 65)*
8. (i) the Queensland Government and the Department of Aviation continue their investigations into the effect of aircraft noise on property values, particularly the impact of the relocation of Brisbane Airport; and  
(ii) that the study be conducted with financial assistance from the Commonwealth Government. *(paragraph 78)*
9. compensation be paid to property owners who, because of acquisition of property for a new airport or the redevelopment of an existing airport, suffer a reduction in value of land not acquired for those purposes, provided that valuations are based on existing land uses. *(paragraph 86)*
10. (i) the Department of Aviation review arrival and departure routes for noise sensitive airports and devise procedures based on noise considerations and modified only to the extent to make them operationally acceptable;  
(ii) the review should include but not be restricted to —  
departures from Canberra on runway 35 for Melbourne,  
increased use of runway 05 for approaches at Adelaide,  
arrival and departure routes on all runways at Perth,  
Standard Instrument Departure cancellation procedures on runway 34 at Sydney,  
departures from runway 16 at Sydney flying over La Perouse,

- Standard Instrument Departure cancellation procedures on runway 22 at Brisbane,  
approaches on runway 04 at Brisbane, and  
arrival and departure routes at Launceston;
- (iii) the Department of Aviation develop procedures to ensure that as far as practical Standard Instrument Departure cancellations occur in a manner which would result in no greater noise impacts on surrounding communities; and
  - (iv) all Standard Instrument Departure cancellations with noise implications be recorded with an explanation as to why the cancellation was necessary.  
*(paragraph 104)*
11. (i) the National Airways Plan be amended to include consideration of environmental matters; and
  - (ii) the Department of Aviation investigate fully the feasibility of installing additional navigational equipment at noise sensitive areas which would enable flight paths to be designed to lessen noise impacts.  
*(paragraph 117)*
  12. (i) the Department of Aviation and the Department of Defence investigate the suppression devices operating at overseas airports to establish the efficiency of such devices;
  - (ii) if it is shown that such devices are effective they be established at major maintenance airports in Australia; and
  - (iii) should alternative aircraft be available, requests by airline operators to ground test engines during nighttime hours be refused.  
*(paragraph 124)*
  13. general aviation training circuit procedures be reviewed to ensure that repetitive overflying of residential areas is minimised.  
*(paragraph 128)*
  14. repetitive circuit training over urban areas be prohibited after 10.00pm or one hour after last light, whichever is the later, during daylight saving periods.  
*(paragraph 129)*
  15. the Minister for Aviation in consultation with State Ministers with environment and planning responsibility review all environmental aspects of helicopter operations over urban areas and develop procedures for regulating such operations.  
*(paragraph 131)*
  16. the Department of Aviation incorporate information on costs and benefits into its planning.  
*(paragraph 137)*
  17. a revised curfew policy based on that recommended by the Aviation Industry Advisory Council be implemented subject to the following conditions:
    - propeller driven aircraft at Brisbane and Sydney Airports be restricted to Moreton Bay and Botany Bay by 1988;
    - conditions applying to Chapter 3, 5 and 6 aircraft should apply to all aircraft by 1990;
    - a specific quota on landings of delayed international aircraft be determined after further examination by the Department of Aviation;
    - special flight paths be devised for noise abatement reasons irrespective of economic consequences;
    - the impact of the revised curfew be monitored at noise monitoring stations and be reviewed in 12 months;
    - a curfew on all operations between 11.00pm and 6.00am be introduced at Essendon Airport;
    - flight paths based on noise considerations be devised at Perth Airport for operations between 11.00pm and 6.00am;

- non-curfewed airports at which night operations may have an impact on the community be examined with a view to applying restrictions;
  - the use of reverse thrust be restricted; and
  - the revised curfew be embodied in Regulations under the Air Navigation Act with exemptions also specified in the Regulations. *(paragraph 173)*
18. (i) noise and flight path monitoring systems be installed at major Australian airports;
  - (ii) public displays be established at the airports; and
  - (iii) a facility be devised to assess and analyse complaint data. *(paragraph 194)*
  19. the Minister for Local Government and Administrative Services in consultation with the Minister for Aviation discuss with State and Northern Territory local government ministers the adoption of, in State legislation, the land use compatibility advice of the Department of Aviation and the Department of Defence. *(paragraph 246)*
  20. (i) the Commonwealth Government adopt as policy the land use compatibility advice of the Department of Aviation and the Department of Defence; and
  - (ii) actions by the Commonwealth Government, including grants under State Grants Acts, be in accordance with the land use compatibility advice. *(paragraph 248)*
  21. the Commonwealth Government make it clear to State and Northern Territory Governments that if relevant State and local government authorities do not prohibit inappropriate land use in areas surrounding Commonwealth airports the Commonwealth Government will legislate to do so. *(paragraph 254)*
  22. the Commonwealth Government exercise all necessary powers to prevent residential development occurring on land within the 25 ANEF contour. *(paragraph 255)*
  23. the Commonwealth Government when acquiring land for new airports purchase all land within the 35 ANEF contour to provide noise buffer zones. *(paragraph 257)*
  24. the Commonwealth Government in consultation with State and local governments introduce a scheme for the acquisition of residences within high noise zones surrounding military and civil airports. *(paragraph 258)*
  25. the terms and conditions of the Aerodrome Local Ownership Plan be amended to provide that —
    - (i) non developed land be zoned in a manner which does not conflict with the land use compatibility advice before ownership is transferred; and
    - (ii) provision of maintenance and development grants be restricted to those authorities which comply with the land use compatibility advice. *(paragraph 263)*
  26. the Minister for Local Government and Administrative Services advise State and Northern Territory local government ministers of the need for documents relating to property transfer for all properties located within the 20 ANEF noise contour to specify that inquiries be made concerning aircraft noise. *(paragraph 267)*
  27. (i) a national airports development program be developed by the Commonwealth Government in consultation with State and local governments which takes account of aircraft noise nuisance; and
  - (ii) if a capital works program is developed based primarily on noise considerations highest priority should be given to those airports worst affected by aircraft noise as measured by the noise exposure forecast system. *(paragraph 294)*

28. the Department of Aviation review general aviation operations, particularly discretionary operations, at major metropolitan airports. *(paragraph 295)*
29. airport committees be established at all major military and civil airports to undertake discussions and make recommendations on all matters relating to airports and aircraft operations. *(paragraph 331)*
30. (i) an environment policy and assessment branch be established within the Department of Aviation, within the Department's approved average operative staffing level, to —
  - develop and monitor noise abatement procedures at airports,
  - assess capital works programs,
  - develop environmental policy guidelines, and
  - assess complaints relating to aircraft operations;(ii) the Air Navigation Act be amended to include environmental matters; and  
(iii) legislation establishing the Federal Airports Corporation specify consideration of environmental matters in the functioning of the Corporation. *(paragraph 337)*
31. the House of Representatives Standing Committee on Environment and Conservation monitor the consideration of the Report by the Government. *(paragraph 338)*



# Chapter 1 Aircraft Noise

'It is generally accepted that the limits have been reached for reducing by current technology the noise from aircraft engines.'

*Department of Arts, Heritage and Environment*

## BACKGROUND

1. Complaints concerning aircraft noise date from the early 1950s when turbo-prop aircraft such as the Vickers Viscount, and subsequently the Lockheed Electra and Fokker Friendship, began to operate. The first turbo-jet aircraft operating regular services in Australia was the Boeing 707 operated by Qantas which commenced service in 1959. Turbo-jet aircraft were introduced by TAA and Ansett in 1964. The Boeing 727-100 was the first jet aircraft introduced on domestic services and was followed by the McDonnell Douglas DC9 some time later. These new types of aircraft, combined with the growth in traffic, caused concern about the rise in aircraft noise both overseas and in Australia.
2. The noisier first generation turbo-jet aircraft are gradually being replaced by newer and quieter aircraft and according to the Department of Aviation noise exposure around most airports is tending to decrease.

## ENGINE NOISE REDUCTION

3. Technological advances in engine design since the introduction of turbo-jet aircraft in Australia in 1959 have resulted in significant reductions in engine noise. Compared on a common basis of size and performance engine noise has been progressively reduced over the past twenty years.
4. A simple measure of noise reduction can be provided by comparing the area within a single event noise contour, for example 100 EPNdB.<sup>1</sup> Airport communities have experienced reductions in the 100 EPNdB contour area of the order of 80 per cent during take-off and approach operations compared with the early long range commercial jets. Noise impact area reductions of medium range aircraft are in the order of 90 per cent and new type aircraft expected to enter the short range market will provide noise impact area reductions of the order of 60 per cent.

## FURTHER TECHNOLOGICAL DEVELOPMENTS

5. Evidence given to the Committee suggests that the large improvements in aircraft noise technology in this decade cannot be repeated. Improvements in engine technology has meant that airframe noise has become a significant component of landing noise so that now it is not greatly below that of a modern jet engine. In the short term no great reductions in airframe noise are likely.

## FLEET REPLACEMENT

6. In this decade, at least two and probably more types of the latest technology aircraft will be introduced into Australian domestic airline service to replace the older technology aircraft. This fleet replacement will provide a gradual but continuing improvement in the noise levels around airports over the next 15 years. However, following completion of the

fleet replacement of noisy types, no further substantial noise reductions can be anticipated. In the short and medium range aircraft categories, which represent the major portion of the current commercial airline fleet, only a limited number of aircraft now incorporate the latest engine technology. It is expected that most of the replacement fleet for this market will incorporate low noise engines.

7. A Department of Aviation study of the effect of the introduction of these types of aircraft on the extent of areas exposed to aircraft noise has been carried out for Sydney (Kingsford-Smith) Airport. The results of this study, in terms of the likely reductions in numbers of people annoyed by aircraft noise in the period between now and the year 2000, indicates that about 50 per cent of people now annoyed will be relieved by the year 2000.

## **NOISE CERTIFICATION**

8. Australia has been represented by the Department of Aviation (and its predecessors) on the International Civil Aviation Organisation (ICAO) Committee on Aircraft Noise since its inception in February 1970. The ICAO Standards and Recommended Practices for Aircraft Noise in the form of Annex 16 to the Convention on International Civil Aviation were first adopted in April 1971 and became effective from 6 January 1972. Annex 16 sets out standards for the noise certification limits of new aircraft and for the method for measuring aircraft noise. The noise is measured at three points, 'flyover', 'sideline' and 'approach', and specific noise level limits are set for various masses and types of aircraft. The Standards are regularly reviewed and updated by ICAO.

9. The Commonwealth Government has adopted a noise policy which requires that all aircraft imported into Australia meet the noise certification standards established by ICAO. In addition, foreign registered turbo-jet aircraft not meeting certain noise standards will be prohibited from operating to Australia after 1 January 1988. Air Navigation (Aircraft Noise) Regulations were Gazetted in August 1984 which will legislate for compliance with Annex 16. All airline jet aircraft currently on the Australian register are certified to the relevant Chapter of Annex 16.

## **ALLEVIATION OF NOISE**

10. Previous paragraphs of the Report briefly refer to technological means by which noise can be alleviated by a reduction at the source. Administrative and operational procedures are also used to reduce annoyance from aircraft noise. The Department of Aviation describes administrative procedures as including curfews, ground running restrictions and restrictions on training. Operational restrictions include all restrictions and procedures which involve changes to runways or flight paths used by an aircraft or specify a method of flying an aircraft. The effectiveness of these procedures will be discussed in later chapters of the Report.

## **MEASUREMENT OF NOISE**

11. A special scale for the measurement of aircraft noise has been developed. This is the effective perceived noise level measured in effective perceived noise decibels (EPNdB). It is a complex unit which includes a weighting for duration and frequency and requires computer equipment to measure and derive. It is primarily used for noise certification of turbo-jet aircraft. The decibel unit with a special weighting dB(A) is also used for aircraft noise measurement and for noise certification of the smaller propeller driven aircraft and the noise monitoring around airports. These noise units are used to measure the levels of individual events.

12. The noise exposure forecast (NEF), a composite exposure unit, is used for the noise exposure around airports where there is a large variety of aircraft operating at different times from different runways. A recent study by the National Acoustic Laboratories (NAL) found that the NEF system is amongst the best available.<sup>2</sup>

13. The NEF system provides contours around airports. The contour lines join points of equal noise exposure. The NEF is used for land use planning and for studying the effects of various developmental options. The NAL study and its findings will be discussed in greater detail in appropriate sections of the Report.

#### **Endnotes**

<sup>1</sup> EPNdB, Effective Perceived Noise Level in Decibels is a complex measure based on measurement of various octave bands which are combined taking account of the duration of the noise levels and of subjective noisiness.

<sup>2</sup> Hede, A. and Bullen, R. *Aircraft Noise in Australia: A Survey of Community Reaction*. National Acoustic Laboratories Report No. 88 AGPS Canberra 1982

## Chapter 2 Effects of Aircraft Operations

' . . . it is no longer reasonable to assume that aircraft disturbance has no impact on the health and welfare of individuals and communities.'

*Kingsford-Smith Airport Councils*

### INTRODUCTION

14. The 1970 House of Representatives Select Committee on Aircraft Noise concluded in its Report that there was a need for a social survey in Australia to obtain factual data on the magnitude of unrest and disturbance attributable to aircraft noise and recommended that such a study be undertaken.<sup>1</sup> Although that Committee received considerable evidence from people expressing their feelings of resentment towards the intrusion of aircraft noise, it was unable to secure from any source an accurate measure of the magnitude of the social unrest attributable to aircraft noise.

15. The present Committee has the benefit of an extensive survey conducted by the National Acoustic Laboratories of the Commonwealth Department of Health on community reaction to aircraft noise. This survey was sponsored jointly by the Department of Aviation and the Department of Defence.

### NATIONAL ACOUSTIC LABORATORIES SURVEY

16. During 1979 a survey was conducted on a random sample of residents in noise affected areas around the commercial airports in Sydney, Adelaide, Perth and Melbourne and the Air Force Base at Richmond, NSW. The primary aims of this survey were:

- to investigate the effects that aircraft noise has on residential communities around Australian airports;
- to evaluate the index presently used to estimate aircraft noise exposure in Australia; and
- to provide scientific data which can form the basis of guidelines and standards for land use planning around Australian airports.

17. A total of 3575 people were interviewed. The questionnaire used in the survey was developed after careful consideration of procedures used in previous research. The questionnaire included questions on: attitudes towards the neighbourhood, health, everyday annoyances, time spent at home, noise generally, perception, reaction, behaviour and attitudes to aircraft noise and demographic information.

18. In the survey reaction was measured by means of a combination of responses given to many different questions. The measure is called GR (general reaction) and comprises ratings of how affected and how dissatisfied the person feels. The survey found that the relationship between the persons response and the amount of noise is very loose. The survey found that the amount of noise exposure explained no more than 13 per cent of the variation in peoples' reaction to the noise. Overall the most important disturbance from aircraft operations was from flickering of the picture on a television set and for those seriously affected by noise the most important disturbance was to sleeping.

19. NAL advised that in other studies much effort was expended in an attempt to explain why individuals with the same noise exposure show such a great difference in their reaction to noise — for example why one person may describe themselves as completely unaffected by aircraft noise while their neighbour reports that it disturbs many activities,

affects their health etc. This survey found that the most important characteristics which affect response were:

- negative attitudes to the airport, the airlines, the Government's effectiveness in controlling noise pollution etc.;
- fear that an aircraft will crash in the area; and
- sensitivity to noise in general.

20. These three factors appear to account for nearly 60 per cent of the variation in general reaction between individuals compared with 13 per cent of the variation which is accounted for by the amount of noise. NAL estimated the total number of residents who were seriously and moderately affected at each of the airports as shown in the following table:

Number of People Affected by Aircraft Noise		
	<i>Seriously Affected</i>	<i>Moderately Affected</i>
Sydney	78 800	231 300
Richmond	1 200	4 400
Adelaide	16 600	65 200
Perth	4 600	16 600
Melbourne	5 800	19 900

Source: National Acoustic Laboratories Report No. 88

21. The survey found that whether or not an individual takes active complaint action against aircraft noise is a poor guide to the extent to which they are affected by the noise. Willingness to take complaint action appears to be related to socio-economic variables.

22. The responses to the questionnaire converted to a single general reaction score were correlated with the location of respondents with noise exposure contours. The percentage of respondents who were seriously and moderately affected is shown in the figure on the following page.

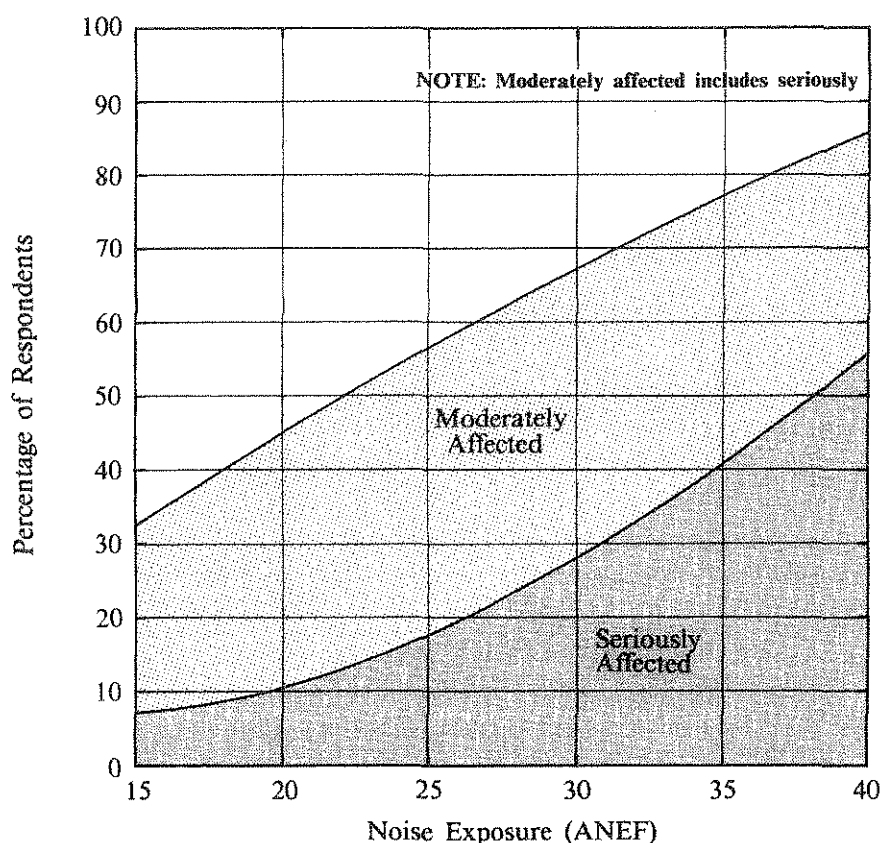
23. In areas with a noise exposure level of 20 ANEF almost half the population were at least moderately affected and 12 per cent were seriously affected by aircraft noise. The National Acoustic Laboratories concluded that it was reasonable to describe 20 ANEF as an excessive amount of noise. However, the issue of what should be done calls for socio-political decisions in the wider context of the needs of urban communities.

## COMMUNITY REACTION

24. The Committee held informal public meetings in each mainland State in addition to the formal public hearings. The public meetings were well attended with over 250 people at one of these meetings. Generally, people were non-specific as to the effect of noise on their activities. It was clear however that noise intrusion caused considerable annoyance and disrupted normal activities such as conversation and caused interference to television reception. Few of the people referred to physical effects of the noise. However it was clear that many found the noise distressing and it was apparent that there was considerable apprehension about the possibility of an aircraft crash. Comments relating to curfews and ground running at night suggests that there was considerable concern about sleep disturbance.

25. The Committee received many comprehensive submissions from community organisations which outlined overseas and Australian studies suggesting a relationship between aircraft noise and increased mortality, reduced birthrates, birth defects, cardiovascular diseases as well as psycho-neurosis, loss of sleep and annoyance.

## DOSE/RESPONSE RELATIONSHIP BETWEEN NOISE EXPOSURE FORECAST LEVEL AND COMMUNITY REACTION



Source: National Acoustic Laboratories Report No. 88

26. Submissions from community organisations and local, State and Commonwealth Government authorities advised of studies relating to a number of airports, particularly London's Heathrow and Los Angeles, which suggested a relationship between mental health and aircraft noise exposure. Studies at Heathrow suggested that mental hospital admissions were greater from populations which were affected by aircraft noise.<sup>2</sup> Other studies were less conclusive. The Commonwealth Department of Health commented that the effects of aircraft noise on mental health is an unresolved question but it appears that rather than being a cause of mental illness, aircraft noise acts on those already stressed and that factors other than the noise alone are involved. The Victorian Government advised that there was no evidence of increases in mental hospital admissions from noise affected areas.

27. Some studies conducted in Australia and overseas point to an association between aircraft flyover noise and excess mortality. A 1979 study of Los Angeles communities suggested increases in the incidence in deaths from stroke and from cirrhosis of the liver in aircraft noise affected areas.<sup>3</sup> An Australian study of communities within a ten kilometre

radius of Sydney Airport observed an increase in the incidence of deaths of people who lived under flight paths.<sup>4</sup> That study concluded that the magnitude of this increase is such that it is not reasonable to attribute the increase to chance alone. The Commonwealth Department of Health advised that where these studies have been critically examined it would seem that corrections to such factors as age, race, sex and socio-economic status of the inhabitants of the study areas have been sufficient to account for the observed increases in mortality.

28. Birth defects have been noted around Heathrow, Tokyo, Los Angeles and other airports. The Commonwealth Department of Health advised that some studies show that aircraft noise might have some small effect on birth weights. The Department advised however that the relationship between birth defects and aircraft flyover is doubtful in that study populations are ill-defined and it is not possible to rule out other factors. Critics suggest that if they occur the effects are very small.

29. In overseas studies on school children in noise-affected areas students have been found to have higher blood pressure, a greater susceptibility to respiratory problems, reduced cognitive faculties, more distractibility, less determination and lower motivation. An investigation of a noise-affected community near Schiphol Airport, the Netherlands, suggested that in areas with more aircraft noise, more people were under medical treatment for heart trouble and hypertension.<sup>5</sup> Studies have also shown that levels of sleep in both babies and adults may be altered by aircraft noise even if they do not wake up and that in adults this may be reflected in task performance the following day. The NAL survey which has been discussed earlier points to the fact that many people are seriously annoyed by aircraft noise. Fear of a crash is another aspect which affects the well-being of a number of people. In the first eight months of 1985 there were 15 large commercial aircraft accidents resulting in over 1500 fatalities. While none of these accidents occurred in Australia the wide publicity given can only have increased this fear.

30. The National Acoustic Laboratories survey showed a confusing pattern of response to the health survey. The Department of Arts, Heritage and Environment stated that the survey had found no clear relationship between aircraft noise and health. The Department commented that although the disturbing effects of aircraft noise are expressed in terms of annoyance or interference to activities rather than in terms of mental or physical health such effects may also be important. Qantas' assessment of the data is that it can be assumed that some 5 per cent of the sample indicated reliably their belief that they had adverse health problems from aircraft noise.

31. No State or local government was able to provide evidence to the Committee which suggested a link between health and aircraft flyover. The Victorian Government stated that there was no evidence of increased mental hospital admissions from municipalities located close to airports. It appears however that a number of councils, individuals and community organisations as well as some State Governments and the Department of Arts, Heritage and Environment believe that the Department of Aviation and the Commonwealth Department of Health are too definite in their rejection of existing Australian and overseas data. The Sydney Councils advised that it is no longer reasonable to assume that aircraft disturbance has no impact on the health of individuals and communities. The Councils believe that studies have produced evidence which, while falling short of proving that aircraft noise is hazardous to health, make it unreasonable to assume that aircraft noise has a negligible effect on the physical and mental state of people.

32. While it is apparent that the Department of Health has serious doubts about the relationship between aircraft noise and health they believe that the only way to allay anxieties or confirm such apprehensions and thereby provide objective data to planners may be to undertake a better series of studies in Australia which encompass all of the

possible health effects. Many councils throughout Australia, as well as community organisations and individuals, argued forcibly that such studies be undertaken.

33. The Committee is not in a position to comment on the type of study which might be required but notes that the National Acoustic Laboratories would be willing to undertake mortality studies at Sydney, Adelaide and Perth should the necessary resources be made available. The Committee agrees that an investigation is necessary and recommends that:

**the Commonwealth Department of Health in consultation with State and local governments undertake a study to determine the effects of aircraft noise on mortality and physical and mental health.**

34. The NAL survey found that, overall, the most important disturbance relating to aircraft noise is the flickering of the picture of a television set. The Department of Communications advised that until the NAL survey was drawn to its attention by the Committee it was unaware of the extent of the problem. The Committee finds it inexcusable that neither the Department of Health nor the Department of Aviation had drawn these findings to the attention of the Department of Communications.

35. The Department of Communications agreed that a significant problem exists and that the only solution seems to be to install cable television. However the Department also believes that this system does not provide a cost effective solution. It advised that the cost of a cable system to 60 000 residences would be approximately \$30 million. The Committee was advised that the construction of the Newport power station caused problems with television reception in areas close to the facility. Subsequently the State Electricity Commission installed cable systems to affected homes. The Committee is satisfied that the problem is significant enough to warrant further investigation and recommends that:

- the Department of Communications undertake a survey into the extent of interference to television reception caused by aircraft flyover; and
- investigate measures to alleviate the problem.

## **POLLUTION**

36. Aircraft engines discharge nitrogen oxide, carbon monoxide, hydrocarbons, particulate matter, smoke and odour. Of particular concern to a number of individuals and community organisations who spoke to the Committee was the practice of fuel venting (dumping). The Anti-Noise Group of South Australia advised that the most important type of pollution which their group can identify is the venting of fuel. The United States Environment Protection Agency was so concerned with the operation that it banned fuel venting in 1973. It was not until 1982 that this practice was banned in Australia.

37. Community organisations complained about pollution 'hot-spots'. Although aircraft may contribute little to the overall pollution rates their contribution to the pollution levels close to airports is significant. Many witnesses complained about the smell of kerosene and others complained about deposits on buildings and plants.

38. The Committee received evidence from the Department of Aviation and a number of State pollution control agencies. The Department of Aviation advised that whilst aircraft may produce significant local sources of nitrogen oxide and hydrocarbons, it is negligible when total emissions to the atmosphere are considered. Pollution from motor vehicles and other sources are likely to have a greater adverse effect on the health of people or on property. Authorities concede, however, that there may be a nuisance potential from smoke and odour. Results of pollution studies for Adelaide and Melbourne are produced in Appendixes 6 and 7.

39. The Department of Aviation advised that all aircraft manufacturers must meet an ICAO standard which requires that the aircraft cannot mechanically vent fuel without the



pilot actually causing it to happen. Equipment malfunction on the aircraft can result in venting. Some over-filling of tanks can occur but in these circumstances fuel is usually spilt either after refuelling on the tarmac or during taxi-ing. It is usually burnt off during or prior to take-off but in some circumstances may be discharged in the early stages of flight. The Department advised that this is a fairly small amount of fuel and would not happen often or extend to a point beyond the airport boundary. In normal situations however it just does not occur.

40. In terms of other pollution such as kerosene in water or deposits on plants or buildings the Department of Aviation has not found one instance where it can be proven that an aircraft has caused the problem. The most detailed examination concerned alleged pollution of tank water in Adelaide.<sup>6</sup> The Department employed an independent consultant to analyse the tank water of six complainants. The report concluded that no aircraft fuel or carbon particle emissions were detected in any of the samples.

41. The Committee received a number of complaints during the inquiry relating to both military and civil airports. In two cases which the Committee investigated and had deposits analysed it was shown that pollution from aircraft did not or was unlikely to have caused the problem (see Appendix 8).

42. On the evidence presented the Committee must conclude that aircraft emissions have a negligible effect on overall air pollution. The Committee notes that in areas close to airports residents may detect some odour and that in some circumstances aircraft emissions may contribute to higher levels of total hydrocarbons. The Committee accepts however that these levels are such as to cause no danger to health. The Committee also accepts that on the basis of the evidence of its own investigations and studies by experts, deposits on buildings and plants do not appear to be the result of aircraft operations.

43. While the evidence suggests that pollution from aircraft is not a problem it is obvious that this is not the view held by some sections of the community living close to airports. The Committee believes that while extensive further investigations are not justified at this stage *State pollution control agencies should as part of their normal functions monitor pollution from airports. Specific complaints received by the Departments of Defence and Aviation should be referred to State agencies for investigation. The Committee recommends that:*

**the Minister for Arts, Heritage and Environment request State Ministers responsible for environmental matters to include pollution from airports in any State monitoring programs.**

44. Within an airport there are a number of other pollution sources. The main sources are aircraft fuelling systems, operation of ground service vehicles and equipment, engine emissions during maintenance, airport plants and fuel storage losses. The Committee received no details of the contribution these sources make to total pollution levels but accepts assurances from State and Commonwealth authorities that they are not significant.

## **PROPERTY DAMAGE**

45. The previous Select Committee on Aircraft Noise recommended that an extensive investigation be undertaken into the effects of overflying aircraft on structures. In response to this recommendation and to a number of complaints received in 1979, the Department of Transport's Scientific Investigation and Measurement Laboratory undertook a study and made measurements of aircraft noise induced vibrations in three buildings located under flight paths near Sydney Airport. The purpose of the exercise was to obtain data from Australian buildings to allow a comparison to be made with extensive data available from overseas reports, particularly those from the United States National Aeronautics and Space Administration (NASA).

46. The investigation established that there is a correlation between the Australian and NASA data and hence NASA findings can be used. The main conclusions are that the vibration level in building structures caused by overflying aircraft is less than that generated by other household activities such as jumping, walking and door-slaming and that the vibration level during aircraft operations is less than the vibration level which may cause structural damage such as cracked plaster and broken windows. Studies conducted by the Building Research Station in the United Kingdom concluded that in twenty-five years of study and investigation no instance has been found of observed damage directly attributable to the effects of vibration alone.

47. Notwithstanding these studies many witnesses suggested that damage was caused by aircraft. Complaints included cracking in walls and plaster and broken windows. The Committee received complaints particularly relating to historic buildings in areas such as Launceston, Perth and Richmond. No State government gave evidence concerning property damage from aircraft noise. One council in Melbourne advised that they receive more complaints about property damage in areas subject to aircraft noise than in other areas of the municipality. It is difficult to determine the cause as ground movements in the area are very excessive during the dry months of the year. The council has not attempted to establish a monitoring system because of the cost.

48. On many occasions complaints about structural damage have been investigated by building inspectors and engineers appointed by the Department of Aviation. In all these cases there was no evidence to suggest aircraft noise caused the damage.

49. The Committee is concerned that apart from inspecting damage alleged to be caused by aircraft noise the Department of Aviation has only conducted one study and the results of that study conducted in Sydney are used as the basis for the Department's rebuttal of complaints. When asked why they had not conducted more engineering studies similar to that in Sydney the Department responded that it did not know what such studies would serve and that there would be little purpose in them. The Committee is concerned about the insensitivity of the Department. Even though the evidence presented suggests that aircraft noise does not cause property damage, it is not difficult to understand the attitude of people in Perth or Adelaide, for example, when presented with the results of a study carried out in Sydney, the USA or the UK.

50. The Committee considers it essential that the relationships between the Department of Aviation and the general community be improved. One means of achieving this would be to monitor house vibrations in each of the capital cities so that data of a more localised nature could be presented. Accordingly the Committee recommends that:

**the Department of Aviation commission studies and measurements of aircraft noise induced vibrations in buildings near selected major metropolitan airports.**

51. Given that many of the complaints relating to property damage concerned old or historic buildings the study should also include investigations at a number of other sites where these types of buildings are located, in consultation with the Australian Heritage Commission.

52. The Department of Aviation is less definite in its attitudes to the possibility of damage from wake-vortices or wake-turbulence. Aircraft generate turbulence from their wing tips. This turbulence is invisible but if it could be seen it would appear as a pair of narrow whirlwinds streaming back from each wingtip of the aircraft. The strength is governed by weight, speed and shape of the wing and tests have recorded velocities in the core of the vortex of up to 166 knots. The Department's main concern with wake-turbulence is the safety of other aircraft, as aircraft encountering wake-turbulence can experience loss of control and aircraft crashes have been attributed to this cause.

53. The Department advised that there is a possibility that vortices can cause damage to

dwellings (specifically the removal of tiles from roofs). The British Airports Authority (BAA) although not legally liable for damage caused by aircraft has introduced a free insurance scheme covering householders in a specific area against personal injury and damage to property. There are approximately forty claims a year. The BAA accepts that vortices are not normally strong enough to loosen secured tiles but may dislodge unsecured tiles. The Department of Aviation has a number of reported cases of tiles being dislodged at about the time an aircraft passed overhead. They cited an example from Rockdale. The Committee also received a number of examples where it was claimed that tiles had been removed by passing aircraft.

54. The Department has not paid any compensation relating to property alleged to be damaged by aircraft noise or wake-turbulence. The Department doubts that they have the statutory powers to do so even if they accepted that aircraft operations cause damage. The Department has on occasions unofficially replaced tiles.

55. The Committee is concerned that there appears to be little action that people can take against the Departments of Aviation and Defence or airline operators should they be able to establish that aircraft operations have caused damage to their property. While the Department has rejected the proposition that aircraft noise can cause damage they appear to concede that wake-turbulence could have an effect.

56. Where it can be proven that wake-vortices have caused damage the Commonwealth Government should meet the costs of repair. At present there is no statutory means by which such compensation could be paid. Necessary amendments to the Regulations should be made. Accordingly the Committee recommends that:

**in cases where it can be proven that damage to property from wake-vortices has occurred the Commonwealth Government pay for the cost of restoration.**

57. The Committee cannot make a recommendation concerning compensation for damage attributed to aircraft noise when all evidence at this stage suggests that there is no effect. However in the unlikely event that the further studies recommended by the Committee establish a relationship the recommendation relating to wake-turbulence should also apply to damage by noise.

## **INSULATION**

58. Many of the witnesses suggested that a solution to the aircraft noise problem is to insulate buildings. Insulation has been adopted by a number of countries as a partial solution to the problem. The Committee has no information relating to the effectiveness of these schemes. Unfortunately, despite several requests to the Government, resources were not made available to the Committee to enable it to visit overseas cities to discuss the effectiveness of insulation and other methods developed to alleviate noise.

59. Sound insulation as a solution has been criticised on a number of grounds. It was suggested that while the system may work in colder northern climates, Australian climatic conditions and the outdoors style of living would make it unsuitable. While insulation may be a cost effective solution in new buildings it may be uneconomic, if not impossible, to insulate existing buildings.

60. One expert witness advised that before the implementation of a sound insulation scheme for Australia it is essential that proper guidelines are available so that money spent on building improvements will result in efficient and effective aircraft noise reduction. The witness advised that little or no research has been carried out in Australia to determine the aircraft noise transmission data of buildings. Results obtained in laboratory conditions may differ from those actually achieved in the real environment. An outline of a detailed research program was submitted to the Committee which would cost in the order of \$62 000 (see Appendix 9).

61. The Committee believes that it is not possible for it to recommend an insulation scheme until such time as proper research has been undertaken but as insulation may be an effective solution to the problem of aircraft noise a research program along the lines submitted is warranted. Accordingly the Committee recommends that:

**the Commonwealth Government sponsor a research project to assess the effectiveness of various measures in achieving noise reduction in residences.**

62. If the results of this study show that cost effective measures can be taken to achieve a reduction in internal noise levels it will be necessary to establish trial sound insulation schemes to assess whether or not it is an appropriate means of bringing relief to those affected by aircraft noise.

63. The Committee received only limited information relating to the effects of aircraft noise on schools and hospitals. A number of teachers and pupils advised of the disruptive effects of being close to flight paths. The South Australian Government was the only State which provided the Committee with a written submission on schools. The State was unable to indicate whether aircraft noise had an effect on the achievement levels of students.

64. The Committee visited a number of schools where noise attenuation measures had been undertaken. It appears however, that programs operated by State education authorities relate to road noise rather than aircraft noise. State authorities appear to place a low priority on insulating schools. One district education inspector, while expressing concern at the noise in a number of his schools, had not formally approached the Education Department requesting that insulation be incorporated in the buildings.

65. The Committee has no means of assessing the effects of aircraft noise on either schools or other institutions but notes that many are located in areas which do not comply with the land use compatibility advice of the Departments of Aviation and Defence. The MANS study estimated that in 1976 there were 10 hospitals and 43 schools in Sydney located within 25 NEF. In Adelaide 19 schools are located within 20 ANEF. It is recognised that to relocate these institutions is not a solution in many cases. Their present location provides services to the local community. From the limited information available it is difficult for the Committee to make a detailed assessment of the problem but it considers that a jointly funded Commonwealth and State noise insulation scheme for institutions built prior to 1970 be established if the States consider it necessary. A number of institutions would have been established after 1970 but the Committee considers that as jet aircraft had been operating in Australia for five years previously and the previous Select Committee's Report was available, the States should be solely responsible for the costs of noise attenuation in those circumstances. Accordingly the Committee recommends that:

- **the Commonwealth Government at the request of State and Northern Territory Governments provide assistance to the States, on a case by a case basis, to provide noise attenuation measures in schools and other institutions provided that it can be demonstrated that the major source of noise disturbance is from aircraft; and**
- **that such assistance be provided only for institutions built prior to 1970.**

## **PROPERTY VALUES**

66. The Department of Arts, Heritage and Environment advised of the difficulty in determining which aspects of the differences in prices between properties is due to noise levels. *Studies of the effect of aircraft noise on property values have shown a large variation in the size of the effects reported both between different studies and within individual studies. The evidence received by the Committee confirms these comments.*

67. The Department of Aviation in written and oral submissions and during informal briefings advised that they had no evidence to suggest that aircraft noise had long term effects on property values. One study, commissioned by the Department for the Major Airport Needs of Sydney (MANS) Committee, concluded that property depreciation in noise affected areas can be detected after a significant event such as new airport terminal buildings or runway construction. However this was followed by an accelerated growth in property values thus restoring them to something not greatly different from similar properties unexposed to aircraft disturbance.<sup>7</sup> The Department, while recognising that aircraft noise and the development of a nearby airport generally does have an implicit affect on house values, is not prepared to accept that the cost of any one of the by-products of airport development, such as noise, is accurately reflected in the prices of houses as revealed in the market place.

68. The Victorian Government advised that so far as can be ascertained the broad scale impact of aircraft noise levels on property values has been negligible near Melbourne Airport. The Victorian Valuer-General undertook studies in the Municipalities of Essendon, Broadmeadows and Keilor. The study concluded that it appears that for every person who is adversely influenced by aircraft noise there are many others who are not. This latter group are not influenced adversely when purchasing property nor in the price that they are prepared to pay for it. There are no sales of real estate available which indicate any detrimental effect which can alone be attributed to aircraft noise.

69. The State Governments of Western Australia, South Australia, New South Wales and Tasmania advised that they had undertaken no studies into the effects of aircraft noise on property values. The South Australian and New South Wales Governments referred to mainly overseas studies which concluded that property values might be reduced by about 0.4 to one per cent for each decibel increase in aircraft noise.<sup>8</sup> Noisy and quiet properties could differ by at least 20 decibels, thus a \$40 000 house would sell for \$32-36 000 if located in a noisy zone.

70. The most detailed recent studies which suggest a reduction in property values in Australia were presented to the Committee by a private witness in Adelaide and by the Queensland Government.

71. The Adelaide study concluded that the rate of increase in house prices in aircraft noise affected areas was 15 per cent less than prices in non noise affected areas for the period 1970-1982. The study also concluded that, while the difference in the turnover rate between noisy and quiet areas was not statistically significant in the long term, there was some evidence that turnover rates respond to changing noise levels in the short term and that aircraft noise has prolonged the selling period of houses in the affected areas. The witness believed that the Department of Aviation's view that there were no long term effects in property values was incorrect.

72. The Queensland Government provided the Committee with detailed analysis of sales of properties in Brisbane between July and December 1981. The analysis indicates that the property values in the areas studied are diminished because of noise factors, with areas most adversely affected showing the greatest reduction in value of up to 15 per cent.

73. The Department of Aviation concluded that it would appear that the Adelaide study considered aircraft noise as the only influence on house prices whereas studies of Sydney Airport, for example, indicated that there were a number of factors other than aircraft noise which had an effect on house prices. The Department concluded that the Adelaide study may over simplify the situation and that if other factors were considered these may have a more significant effect on house prices. The Department of Aviation was unable to explain the reasons why the Queensland Government study results differed from those studies commissioned by the Department relating to Sydney Airport.

74. While some local governments were uncertain as to the effect of aircraft noise on property values most were definite in their view that aircraft noise had an effect although

none provided the Committee with detailed figures. A consultant to one of the Sydney Councils who was involved in studies for the MANS Committee stated that there is conclusive proof that the community perceives noise as a significant problem and that this perception is reflected in market values.

75. It is apparent that attitudes to the impact of aircraft noise on property values varies between State governments and between councils within a given metropolitan area and between States. It is also apparent that the Department has implicitly accepted as correct the results of studies which suggest that in the long run an airport does not have a net effect on neighbouring house values but has ignored studies which conclude otherwise. It is interesting to note that United States aviation authorities have accepted that a one decibel change in cumulative airport noise exposure usually results in a 0.5 to 2 per cent decrease in real estate values.

76. A witness representing the New South Wales Real Estate Institute stated that properties in the most noise affected areas around Sydney Airport were more difficult to sell and the property values were markedly affected by aircraft noise. The impact of aircraft noise was the single most significant factor affecting property values and had a greater effect than other aspects of aircraft operations or noise from road traffic. He also stated that persons who bought into the area before the major developments and changes in operations at Sydney Airport would not have received the same level of capital gains in real estate as other residents of Sydney.

77. The Committee notes the conflicting evidence presented to it and believes that further investigation is necessary. The Department of Aviation advised that it has been interested in this aspect for ten years or so and would continue research in this area if funds were available. It appears that Queensland is the best State for this study to be undertaken because of the computer data base relating to valuations and the work already undertaken by the State Government. In addition the current redevelopment of Brisbane Airport will result in a reduction in noise for some areas. An examination of changes in property values would provide some of the most detailed information yet available. The Queensland Government indicated that they would be pleased to co-operate in a study with the Department of Aviation.

78. Accordingly the Committee recommends that:

- the Queensland Government and the Department of Aviation continue their investigations into the effect of aircraft noise on property values, particularly the impact of the relocation of Brisbane Airport; and
- that the study be conducted with financial assistance from the Commonwealth Government.

## COMPENSATION

79. If these studies were to confirm that aircraft noise does cause a measurable depreciation in real estate values then difficult questions about compensation arise. It has been suggested that property depreciation could provide a direct measure of aircraft noise cost to the community and could therefore be used to calculate compensation. The Committee doubts this approach because of the difficulty in establishing that there is a depreciation and then calculating the actual depreciation. Even if it could be accurately determined for each individual property, depreciation may not accurately measure the cost to the occupant because there may be other costs, such as the expense and social disruption of moving. The occupants' perception of the noise might be different to the community average and they might therefore require a greater amount of compensation. Alternatively, the occupants might only be renting in which case the noise disturbance to them cannot be related to real estate depreciation.

80. There are instances where compensation based on real estate depreciation may not be appropriate. Airports can confer advantages to the neighbouring community by generating industry and employment and improved road transport. These economic advantages may partly offset property depreciation for some people and this would reduce the compensation required. People who move into an area and purchase property at depreciated values do not suffer a reduced capital gain and therefore have no claim for compensation unless there are unexpected increases in noise levels.

81. The most effective solution to aircraft noise is to separate the source of noise from the community. The Committee therefore has reservations about providing compensation in such a way that might encourage people to live in noise affected areas. If all airport neighbours were paid amounts to compensate them fully there would be no incentive to live away from airports. However, it is a fact of life that many airports are located next to heavily populated suburbs and that some people are seriously affected by noise.

82. The Committee agrees in principle with the Law Reform Commission's Report on Lands Acquisition and Compensation which argues that there ought to be a general right for owners of land to recover compensation when the value of the land is diminished by an injurious factor resulting from the use of Commonwealth land.<sup>9</sup> However, the Commission's view is qualified by the requirements that, first, injurious factors be limited to those matters that would (in the absence of statutory immunity for Commonwealth activity) give rise to a legal action under common law provisions. Secondly, compensation should not be retrospective and thirdly, that compensation should be related to the market value depreciation of the private property in question. This would limit the Commonwealth's liability to compensate all the people who would currently appear to have a legitimate case based on aircraft noise nuisance.

83. The Law Reform Commission's approach does not include loss of amenity, quality of life, health or pollution matters except to the extent that they result in a measurable reduction in property values. The Department of Local Government and Administrative Services suggested that there was a need to develop a methodology to assess these more subjective effects of aircraft noise.

84. The Committee believes that people who can establish some link between aircraft operations and damage to their property or health should have access to compensation. However it is unable to recommend any formula which would result in full and fair compensation for the indirect effects of aircraft operations, but which would also guarantee that people who do not experience a real nuisance are not paid compensation. The Law Reform Commission's approach to injurious affection, while limited, is the best solution the Committee can find and agrees that it should apply to future developments, particularly new airport construction.

85. When land is acquired for new airports and there is likely to be a noise nuisance the remaining land holders should be eligible for compensation. The compensation should be related to the reduction in the value of their properties and to other direct, measurable costs such as removal expenses. This principle should apply during the land acquisition phase of a possible second Sydney airport for any properties not acquired which will be subject to a reduction in value due to aircraft operations. The Committee emphasises however that compensation should be related to the land's present use and not to a reduction in value related to any expressed or implied future land use.

86. Accordingly the Committee recommends that:

**compensation be paid to property owners who, because of acquisition of property for a new airport or the redevelopment of an existing airport, suffer a reduction in value of land not acquired for those purposes, provided that valuations are based on existing land uses.**

87. The compensation scheme recommended in the previous paragraph should be restricted to those property owners who acquired property prior to the decision to establish an airport. Property owners affected by redevelopment proposals within existing airport boundaries should not be eligible for compensation if those works could have been reasonably expected taking account of the present use of the airport, growth in traffic and changing aircraft types.

88. In the absence of a fair and reliable compensation formula for existing airports the Committee considers that the Commonwealth and the air transport industry should be required to reduce the noise impact by improving noise abatement procedures and taking other measures to limit and confine noise levels. Any improvement in the noise environment should be seen as the removal of a nuisance from a minority of the community who suffer the consequences of aircraft operations. It does not involve conferring any special advantages not generally enjoyed by the community. The aviation industry should, in consequence, bear the noise abatement costs or pass the costs on to their customers. In this respect the Committee agrees with the Report of the Independent Inquiry into Aviation Cost Recovery which also stated that the cost of alleviating aircraft noise should be borne by the industry. The additional cost in terms of individual fares and freight rates is likely to be very small.

89. The most practical and effective way to solve the worst of the aircraft noise problem which cannot be overcome by noise abatement procedures is to acquire the worst affected properties. This simplifies the compensation problem and results in a permanent separation of people from the noise. Property acquisition is discussed further in Chapter 7.

#### Endnotes

<sup>1</sup> House of Representatives Select Committee on Aircraft Noise. *Report*. Parliamentary Paper No. 236/1970

<sup>2</sup> Herridge, C.F. and Chir, B. Aircraft noise and mental hospital admission. *Sound* 1972  
Meecham, W.C. and Smith, H.G. Effects of jet aircraft noise on mental hospital admissions. *British Journal of Audiology* 1977

<sup>3</sup> Meecham, W.C., and Shaw, N. Effects of jet noise on mortality rates. *British Journal of Audiology* 1979

<sup>4</sup> Williams, A.G. *Aircraft Flyover and Mortality* 1979

<sup>5</sup> Knipschild, P. Medical effects of aircraft noise: community cardiovascular survey. *International Archives of Occupational and Environmental Health* 1977

<sup>6</sup> Australian Mineral Development Laboratories 1982

<sup>7</sup> Major Airport Needs of Sydney Study

<sup>8</sup> Major Airport Needs of Sydney Study, Paper No. 17 1974

<sup>9</sup> Law Reform Commission. *Lands Acquisition and Compensation*. Parliamentary Paper No. 78/1980



## Chapter 3 Noise Abatement Procedures

'Preferred runways are probably the most effective noise abatement procedure available.'

*Department of Aviation*

'It is misleading to describe the runway allocation system . . . as the noise abatement preferred runway use . . . in fact it is the system minimising inconvenience to air operators.'

*Kingsford-Smith Airport Councils*

### FLIGHT PATHS

90. The flight path is the route which an aircraft follows when approaching or departing a particular runway. Preferred flight paths have been devised by the Department of Aviation to avoid noise sensitive areas. The aspect of aircraft operations which most concerns the community is the apparent variability in flight paths and the non-compliance with flight paths designed to lessen the impact on communities surrounding airports.

91. The Committee was told time and time again that aircraft seemed to follow flight paths of their own choosing with little or no consideration of the impacts these flight paths may have on the community. It is commonly believed that the pilot in command of the aircraft has control of where he or she may fly the plane. Many considered that the only consideration of pilots were economic considerations such as the saving of fuel. There were many complaints concerning aircraft flying at dangerously low altitudes. As one witness put it 'preferred flight paths are only as effective as the pilot wishes them to be'. Even witnesses who accepted that aircraft have difficulty in precisely following tracks along the ground considered that on many occasions pilot discretion was used to the detriment of the community.

92. The Department of Aviation, air traffic controllers, pilot associations and the aviation industry all strongly refuted these claims.

93. The Department of Aviation advised there are misconceptions on the part of the community about flight paths of aircraft. The belief that pilots fly whatever flight path they choose is without foundation. The Department advised that pilots are instructed which flight path to use, are monitored, infringements reported and, where applicable, disciplinary action is taken.

94. In its explanations the Department advised that the community pictures the flight path of an aircraft as a tram track. A flight path is in fact a three dimensional route. When an aircraft turns at a set distance, for example three nautical miles, this turning point will, when projected vertically downwards be less than three nautical miles along the ground from the reference point. The distance will also vary with the height of the aircraft. Similarly when an aircraft is required to turn at a set altitude, because of different performance and weather variables it will result in different distances along the ground. The Department of Aviation provided information which shows the variation in the ground track of an aircraft caused by a change in the take-off mass of a Boeing 727 and different weather conditions (see Appendix 10). By the use of its flight simulator Ansett demonstrated effectively to the Committee the problems aircraft experience in following defined tracks over the ground.

95. In addition there is a tolerance associated with each part of the description of the flight path. For departing aircraft the description invariably involves navigation by reference to aircraft or ground based aids. For arriving aircraft the flight path involves

both tracking by aids and instructions by air traffic control to direct an aircraft in a particular direction or to avoid a particular area. Each navigation aid used by pilots has a certain accuracy which is different for each type of aid and there are also limitations on the accuracy with which the information is presented to a pilot.

96. As mentioned previously there was a suggestion that flight paths are devised for economic reasons. While the Department of Aviation is conscious of the economic aspects of aircraft operations it advised that under no circumstances are flight paths varied in a manner which has adverse noise effects purely on economic grounds. Of course it cannot be denied that economic considerations, such as the use of fuel, are taken into account but there are many other factors, the most important being safety. The air operators advised that all noise abatement procedures are followed. The Department of Defence advised likewise.

97. Standard instrument departures (SIDs) are produced for selected aerodromes to satisfy the requirements of noise abatement procedures and airspace segregation for air traffic control purposes. The SID specifies in both diagrammatic and narrative form the direction of turn, heading, track and, in some cases, altitude requirements. Thus it may be used to either route aircraft away from noise sensitive areas or require them to overfly these areas at such an altitude as to reduce the effect of noise. There may be separate SIDs for jet and non-jet aircraft and for day or night time noise abatement use. Aircraft using a particular SID may appear to the observer on the ground to be following different flight paths.

98. One other means of causing flight paths to vary is the cancellation of standard instrument departures. It is sometimes necessary to cancel a SID for operational reasons. Cancellation of standard instrument departures appears to be one of the areas of concern as it results in aircraft being directed away from 'normal' or 'proper' flight paths. The Committee accepts that the result of SID cancellations may not significantly contribute to increased noise but it is clear that it contributes to an increase in annoyance.

99. Up to 20 per cent of SIDs are cancelled. While the Committee accepts that SID cancellations are necessary for operational and safety reasons, it appears from responses given by the Department of Aviation that little consideration is given to cancellation in a manner which would cause the least adverse effects on the community.

100. The Department of Aviation advised that standard instrument departures are continually under review to ensure that they are fulfilling both their operational and noise abatement purposes. Trial procedures using revised SIDs are currently being undertaken at Sydney. A number of witnesses complained that standard instrument departures for some airports are too numerous. The Department is aware of this concern and has examined the matter in respect of a number of airports, resulting in a rationalisation in some areas.

101. Notwithstanding the comments of the Department of Aviation relating to noise abatement SIDs and the apparent success of this procedure, it appears to the Committee that most standard instrument departures and flight paths are devised for operational reasons and subsequently examined for noise implications. The Committee considers that a more socially acceptable and responsible approach would be to devise flight paths designed to cause the least noise impacts on communities surrounding airports. These procedures should then be examined for their operational feasibility. Those considered operationally unsound could then be rejected or modified. The Committee firmly believes that if the Department adopted this approach a number of socially unacceptable flight paths would be withdrawn with a resulting beneficial effect to the community.

102. Comments relating to arrival and departure routes were made in each of the areas visited by the Committee. Perth Councils claimed that because of low traffic density arrival routes are largely determined by the pilot and are not prescribed to the same extent as departures. The Councils have requested that the procedures be reviewed. The Councils

also requested that a departure route be established to direct all aircraft along a single route up the Bickley Valley. This would result in departing aircraft overflying sparsely populated areas. Launceston residents have requested a review of departure routes to avoid overflying the city. The departure route from Canberra to the north to Melbourne requires aircraft to turn at low level at full power over residential areas when alternative procedures seem feasible. These examples are cited by the Committee as just some of the procedures which could be reviewed.

103. While the Committee does not doubt that operational considerations require the cancellation of SIDs, procedures should be developed which would ensure that as far as possible aircraft do not overfly noise sensitive areas. The Committee sees little point in the existence of standard instrument departures which allegedly are devised for noise abatement purposes if these are regularly cancelled. In addition flight paths devised primarily for operational reasons with noise abatement considerations as secondary do not necessarily result in an optimum balance between operational and noise abatement requirements.

104. Accordingly the Committee recommends that:

- the Department of Aviation review arrival and departure routes for noise sensitive airports and devise procedures based on noise considerations and modified only to the extent to make them operationally acceptable;
- the review should include but not be restricted to —
  - departures from Canberra on runway 35 for Melbourne,
  - increased use of runway 05 for approaches at Adelaide,
  - arrival and departure routes on all runways at Perth,
  - Standard Instrument Departure cancellation procedures on runway 34 at Sydney,
  - departures from runway 16 at Sydney flying over La Perouse,
  - Standard Instrument Departure cancellation procedures on runway 22 at Brisbane,
  - approaches on runway 04 at Brisbane, and
  - arrival and departure routes at Launceston;
- the Department of Aviation develop procedures to ensure that as far as practical Standard Instrument Departure cancellations occur in a manner which would result in no greater noise impacts on surrounding communities; and
- all Standard Instrument Departure cancellations with noise implications be recorded with an explanation as to why the cancellation was necessary.

105. The Committee emphasises that the airports specified in the previous paragraph are airports where it appears that some amendment to the procedures are necessary. As the Committee was unable to visit all airports in Australia it is unable to comment as to whether or not procedures operating at these other airports are satisfactory in terms of noise abatement. It is the Committee's view that the Department of Aviation should examine the procedures at airports where complaints have been received concerning operations. The Committee firmly believes that this review be undertaken after consultation with State and local governments which are in the best position to define the noise sensitive areas.

## **PREFERRED RUNWAYS**

106. The Department of Aviation advised that of all the administrative and operational measures the one which has most effect on the number of people exposed to aircraft noise is the preferential runway system. In order to alleviate annoyance from aircraft noise,

runways are nominated by air traffic control in a specified order of preferred runways. When the order of preferred runways is developed the first preference is given to ensuring that departing aircraft use the runway which causes the least annoyance. For example at Sydney the first preference for departing aircraft is given to departures into the south on runway 16 over Botany Bay. According to the Department of Aviation the order of preferred runways is a compromise between the environmental, economic and safety aspects. The order selected can affect the hourly handling rate of an airport and affect the distance an aircraft has to fly or taxi to a particular runway. It can also affect the traffic complexity within the terminal airspace which in turn has economic and safety consequences.

107. The use of preferred runways depends on prevailing weather conditions. For instance in Launceston even though the preferred runway is a departure into the south, because prevailing winds are northerly, the preferred runway can be used only 20 per cent of the time. Air traffic control nominates to the pilot the runway which should be used and the pilot is obliged to accept that runway unless he or she considers that the runway is operationally unacceptable, i.e. not suitable for use by the particular flight. In addition air traffic controllers are able to over-ride the nomination of preferred runways under certain conditions of weather, operational reasons or traffic complexity.

108. It is apparent from Committee discussions in many of the areas visited that there is general concern that the preferred runway system is not operating effectively because of pilot and air traffic control discretion. There is a suspicion that pilots nominate runways other than preferred runways for convenience or economic reasons even though prevailing weather conditions would enable the preferred runway to be used.

109. The Department of Aviation explained that wind directions at the airport may be different to the direction of wind at the location of the observer. In addition wind directions can shift from time to time. The Committee while in Brisbane noted that even though a number of aircraft departed on a preferred runway one international aircraft departed on a non-preferred runway apparently disregarding the noise abatement procedures. Upon investigation however it was revealed that prevailing wind conditions made it necessary for the international aircraft to use the non-preferred runway. While in Adelaide the Committee was told that on a specified day even though no wind was apparent, aircraft were departing over the city which was contrary to the preferred runway procedure. An examination of the meteorological data revealed that departures were in accordance with prevailing wind conditions.

110. The Committee received detailed analysis of aircraft movements for Sydney which showed that the preferential runway system is operating effectively. The Sydney Councils advised that it is misleading to describe the runway allocation system as noise abatement preferred runway use. They argued that the system in fact minimizes inconvenience to the air operators. The Councils did not suggest however, except in one case, that the preferred runway system did not have beneficial noise effects.

111. In general the Committee accepts explanations from the Department of Aviation relating to the uses of preferred runways and the reasons for their non use. This does not however overcome the problem that many believe that there are blatant abuses of the system. The Department keeps detailed records of occasions when a preferred runway cannot be used. When required by the Committee, the Department has been able to provide detailed information. The Committee understands that this information would be made available in response to specific complaints relating to non use of preferred runways. There may be some room for improvement in the system. In Adelaide for instance the preferred runways for use during the night are landings over the city and departures over the Gulf. It appears that this could be revised to require all landings to be on runway 05 when operational conditions allow.

## NAVIGATION AIDS AND RADAR

112. One suggested solution to the inaccuracy and variability of flight paths is the installation of more or improved navigation and radar systems.

113. The Department of Aviation advised that there appears to be no technical solution to the problems associated with flight paths. The Department stated that the tolerances associated with present equipment cause nothing other than minor problems and with the exception of microwave landing systems (MLS) there are no navigational aids which would materially improve the problem. The Department rejected better air traffic control radar as a solution as radar displays are not designed for the close monitoring of flight paths for noise abatement.

114. The Australian Electronics Industry Association advised of, and Ansett demonstrated, modern on-board equipment which enables aircraft to more accurately follow prescribed tracks. The Association concluded that the combination of more sophisticated radar, MLS and on-board navigation systems will provide pilots and controllers with the tools to improve, monitor and control aircraft routes with increasing accuracy. These improvements cannot change the flight characteristics of climbing, descending and turning aircraft in the most critical landing and take off phase of flight where the luxury of flexibility cannot be allowed to endanger the aircraft and its passengers.

115. The Department in its statement ignored the benefits that may be derived in redeveloped air routes by the installation of additional navigational beacons and radar in locations such as Launceston and Perth.

116. The Department of Aviation has prepared a National Airways Plan which relates to radar and navigational equipment. The Department identifies the objectives of the airways system as:

- safety of flight;
- expeditious movement of aircraft; and
- efficient operation.

The Department's investigations will be restricted to satisfying these three criteria. It is another clear example where environmental considerations are not included in the Department's planning philosophy. The Committee is not in a position to comment on these highly technical matters other than to observe that the Department seems to have dismissed technological means as a solution to the problems associated with flight paths.

117. Accordingly the Committee recommends that:

- the National Airways Plan be amended to include consideration of environmental matters; and
- the Department of Aviation investigate fully the feasibility of installing additional navigational equipment at noise sensitive areas which would enable flight paths to be designed to lessen noise impacts.

## GROUND RUNNING

118. Complaints about the ground running of aircraft engines represent from 5 per cent of complaints at some airports to 35 per cent at others. Many of the community groups and individuals who spoke to the Committee complained of this matter. Local governments were concerned as was the Western Australian Government. One council told the Committee that the greatest source of complaints relate to ground testing. Complaints do not only relate to ground running during sleeping hours but also to the testing of engines during daylight hours.

119. The need to test aircraft engines on the ground is obvious. Night time testing is generally related to unplanned maintenance in order that aircraft are available for departure at the earliest opportunity. In general if the aircraft is not required early in the morning companies will defer testing until later in the day. It was explained to the Committee that two Perth based operators are required to carry out most of their engine maintenance at night time. The main reason given for this procedure is the requirement to maintain high fleet utilisation during commercially acceptable hours, a requirement made far more inflexible by the extremely long journey legs flown by the operators' aircraft during the day.

120. The Department of Aviation has established ground running determinations for Adelaide, Brisbane, Perth, Sydney, Melbourne and Essendon Airports. In general they restrict the locations and times at which ground running can be undertaken and power settings for engines. With the exception of Perth the Department of Aviation restricts ground running during night time hours to aircraft involved in emergency flights or unplanned maintenance on aircraft required to operate early the following morning. In general the Department requires that airlines maintain records of all ground running and these records are forwarded to the Department.

121. Witnesses requested that noise proof cells or hangars for ground testing be established at airports. It was suggested that the use of noise deflectors, blast deflectors or suitably positioned mounds of earth could have significant impacts.

122. The Department of Aviation and the airlines have investigated the possibility of establishing hush hangars at a number of airports. The Department advised that equipment established overseas which can accommodate aircraft up to Boeing 747 size could reduce noise by 25-30 dB(A). One airline advised the Committee that this sort of installation is not economical given the amount of ground running which occurs. The Department of Defence explained that the high cost has deterred establishment of hush hangars at Air Force bases. A hangar to accommodate a B747 could cost as much as \$10 million but a hangar for smaller aircraft would be considerably less.

123. The Committee notes that in one part of its submission the Department advised that complaints about ground running represent a large proportion of total complaints received yet concluded that the low and sporadic incidence of ground running complaints over the last few years indicates that suppression devices are still not an essential requirement. The Department also advised that barriers are not efficient noise attenuators and concludes that barriers, be they artificial or natural, have limited value as noise reduction devices but that their psychological value in hiding the noise source and showing something has been done cannot be overlooked.

124. The Committee sought advice on the incidence of ground running at a number of airports during night time hours. Night time running is limited and at those airports where regular planned maintenance is not carried out the establishment of expensive insulated hangars and other devices is not justified. However Sydney, Essendon, Melbourne and Perth are planned maintenance bases and while the incidence of night time ground testing is low the Committee notes the concern which day time testing also causes. The Committee recommends that:

- the Department of Aviation and the Department of Defence investigate the suppression devices operating at overseas airports to establish the efficiency of such devices;
- if it is shown that such devices are effective they be established at major maintenance airports in Australia; and
- should alternative aircraft be available, requests by airline operators to ground test engines during night time hours be refused.

## TRAINING

125. In order to achieve and maintain an acceptable standard of proficiency, pilots and trainees are required to conduct regular periods of training which in the early stages consist largely of practice in taking off and landing the aircraft. The operation of these training flights is recognised by the Department of Aviation as a potential source of annoyance to residents. Annoyance is caused by the repetitive nature of these flights and the unusual manoeuvres required. In addition safety is of concern to some people. The Departments of Aviation and Defence advised that to reduce the impact of these operations restrictions are placed on the hours during which they may be conducted and also the type of operations permitted. Other restrictions at some airports include allocation of special flight paths and the use of particular runways.

126. Complaints relating to training received by the Committee related to Essendon, military operations at Canberra and Richmond and private training at general aviation airports. Residents near the major general aviation airfields such as Bankstown, Moorabbin and Archerfield are subject to periods of continuous overflight by aircraft completing training circuits. It is common practice for several aircraft to use the circuits at the same time and the circuits tend not to vary unless there is some change in procedures or activity at the airfield. This means that it is the same residents who continually experience the noise. Training flights often start early in the morning and, because of the need to practice night flying, they can often continue until late, particularly during the summer months.

127. The Committee is sympathetic to those who are concerned about training. The Committee accepts explanations from the Department of Defence concerning training at Richmond and helicopter training at Fairbairn and believes that the procedures adopted recognise the concerns of the community. The Committee is not convinced however, that procedures relating to circuit training operations of the VIP squadron at Fairbairn (particularly the BAC111) take full account of the impact of these operations on residents in nearby suburbs. The Committee believes the Department of Defence should investigate the feasibility of revising the flight paths used and investigate the possibility of transferring these operations to Avalon.

128. Similarly the Committee is not convinced that more cannot be done to alleviate the problem at general aviation airports. It appears that the situation at Moorabbin could be improved if the main circuit was relocated to avoid overflying residential areas. Where this is not possible consideration should be given to directing aircraft to fly to non urban airfields for circuit training. Accordingly the Committee recommends that:

**general aviation training circuit procedures be reviewed to ensure that repetitive overflying of residential areas is minimised.**

129. The Department of Aviation currently restricts night training at general aviation fields. At Moorabbin for example circuit flying is allowed up to 9.00pm but may be extended to 11.00pm on Monday, Tuesday and Wednesday nights during daylight saving periods. Such late flying is unreasonable when it involves repetitive overflying of residences. The Committee is aware that night flying is an essential element of training but believes that the night flying arrangements should be reviewed and therefore recommends that:

**repetitive circuit training over urban areas be prohibited after 10.00pm or one hour after last light, whichever is the later, during daylight saving periods.**

## HELICOPTERS

130. In recent years there has been a considerable increase in helicopter operations over urban areas. Between 1979 and 1982 the number of helicopters on the Australian Aircraft Register increased from 162 to 296. At the same time there has been an increase in the number of helicopter noise complaints received by the Department of Aviation. The Committee also received a number of submissions about this problem, particularly in relation to media helicopters involved in news reporting and sports broadcasting.

131. Some of the media organisations operate helicopters from helipads close to residential areas. Voluntary restrictions and noise abatement procedures have been adopted but complaints still arise. The New South Wales State Pollution Control Commission has developed interim recommendations on maximum noise levels for sites that are planned for residential and commercial areas. The Commission stated that although local government councils could control the siting of heliports there is no authority vested with the responsibility of influencing proposals where in-flight operations may produce unnecessary noise nuisance. The Committee considers that the issue of permits for heliport location and helicopter operations in urban areas should be the subject of an environmental review and that procedures should be developed to regulate operations. Helicopters are prohibited from operating in many areas of London and San Francisco. Accordingly the Committee recommends that:

**the Minister for Aviation in consultation with State Ministers with environment and planning responsibility review all environmental aspects of helicopter operations over urban areas and develop procedures for regulating such operations.**

## COST OF NOISE ABATEMENT PROCEDURES

132. Operational procedures designed to reduce noise impacts involve some cost to the airlines. The Department of Aviation estimated that the annual cost to the two major domestic airlines of the extra flying required for noise abatement procedures for aircraft operating between Adelaide, Melbourne, Sydney and Brisbane is \$4 million. While this is a considerable sum, at Sydney and Melbourne Airports alone there are over 10 million passenger movements annually and this noise abatement cost would represent only a very small proportion of ticket prices.

133. The Committee obtained information on cost benefit analysis of airport operations and considered the criticisms and difficulties of these studies. There are significant, perhaps insurmountable, problems in measuring the cost of noise and thus establishing the benefits and efficiency of noise reduction. The studies which are available probably only provide a guide to the magnitude of noise costs. It appears that these costs might be significant.

134. The Department of Aviation referred to several studies which attempt to cost aircraft noise nuisance. One study suggested that the annual social noise cost at Sydney Airport in 1980 could be in the order of \$25 million.<sup>1</sup> Another study suggested the cost of noise at Perth Airport over the next 25 years would be \$41 million.<sup>2</sup> The costs indicated in these studies suggest that major relocation or reconstruction of airports may not be viable in cost benefit terms alone. They do suggest however, that the industry could reasonably be expected to incur more costs and improve its noise abatement procedures.

135. The difficulties of measuring the cost and benefits of noise abatement procedures has allowed the debate over matters, such as compensation and who should pay for abatement, to become very subjective. The Department of Aviation stated that the question of costing aircraft disturbance at each major Australian airport has not been



undertaken because it can readily be shown that the sums involved are very small compared to other costs.

136. This approach is too simplistic as it allows the Department to dismiss claims about the seriousness of the noise problem. It is difficult to understand how the Department can deal with the aircraft noise problem and propose efficient remedies without taking account of factors in policy development and planning.

137. The Department itself recognised this when it submitted that there was a need to determine a consistent method of comparing the social cost of noise nuisance with the dollar cost of development alternatives. However this should not be limited to development proposals. The Department should be aware of the costs and benefits of all procedures designed to reduce noise impacts and should have a better assessment of the social cost of noise. The Committee recommends that:

**the Department of Aviation incorporate information on costs and benefits into its planning.**

138. The Committee believes that cost of capital works, land acquisition and other developments to reduce noise impacts should not necessarily be charged to the aviation industry. However the cost of the noise abatement procedures which involve airline operations as discussed in this chapter should be borne by the industry.

#### **Endnotes**

<sup>1</sup> R. Travers Morgan and Partners. Traffic Management Measures at Sydney (Kingsford-Smith) Airport. Supplementary Report No. 3: A Model for Costing the Effect of Aircraft Noise. Department of Transport, Canberra 1974

<sup>2</sup> Perth Airport Provisional Master Plan. Department of Aviation, Canberra 1982

## Chapter 4 Curfews

'... the only way not to cause any sleep disturbance around Sydney is to stop aircraft movements completely.'

*Department of Aviation Officer*

### BACKGROUND

139. The present curfew has evolved from procedures adopted following the introduction of international jet services to Australia in the late 1950s. In 1958 Qantas and the Commonwealth Government agreed that jet aircraft would not be scheduled to take off or land in the quiet hours of the night. The restrictions were on scheduled movements only and the airport director was given authority to approve delayed flights. With the introduction of domestic jet services the curfew was extended to include these operations. During the 1970s further restrictions were applied which effectively banned all off-scheduled jet aircraft in the curfew period. The curfew was modified in the late 1970s to allow the operation of small 'low noise' jet aircraft.

### PRESENT CURFEW

140. Major curfews operate at Adelaide, Avalon, Brisbane, Essendon and Sydney and generally apply to turbo-jet aircraft operating between 11.00pm and 6.00am. A small number of general aviation jets have been classified as 'low noise' and although these aircraft must obtain approval to operate during the curfew, this approval is normally given for operations at Adelaide, Brisbane and Sydney. Propeller driven aircraft are not subject to the curfew. Minor curfews operate at Melbourne and Perth which restrict the use of Australian registered turbo-jet aircraft which are not noise certified.

141. The curfew provisions allow the operation of turbo-jet aircraft during the curfew in some circumstances. Basically these circumstances relate to aircraft engaged in urgent medical, flood or fire relief purposes or flights which have an inflight medical emergency. The Minister can also grant dispensations from the curfew at his discretion when exceptional passenger hardship is involved, that is for humanitarian reasons, for delayed flights by visiting Heads of State, the Governor-General and the Prime Minister and when an aircraft involved is assessed by the Department of Aviation as a 'low noise' aircraft.

142. The aviation industry and the Department of Aviation advised that there are some illogicalities in the conditions of the existing curfew, the main one being the distinction between propeller driven aircraft and turbo-jet aircraft. The distinction implicitly assumes that propeller driven aircraft are quieter than turbo-jet aircraft. The assumption was valid when the curfew was originally established but with the introduction of the general aviation turbo-jet aircraft and the latest type of airline aircraft this assumption is no longer valid. Some turbojet aircraft are now quieter than some propeller driven aircraft. This is illustrated in Appendix 11.

### EFFECTS ON OPERATORS

143. Qantas advised that the existence of the curfew places severe constraints on international airline operations in and out of Australia, particularly on extremely long

range flights and where there are curfew conditions operating at overseas airports. Overnight stopovers are sometimes required for off-scheduled aircraft. In addition aircraft are sometimes required to hold or divert to alternative airports. Domestic airlines advised that the rigid curfew places severe limits on scheduling flexibility and in effect reduces the operational day to much less than the seventeen non-curfew hours. This reduction is the result of scheduling and operational requirements necessary to cater for the difference in time zones and to provide for the adequate time margins necessary to ensure completion of journeys involving connecting flights. Curfews create congestion in the early morning and can introduce delays at the start of the day which then carry through the day thus disrupting schedules. During the yearly peak periods (Christmas, Easter, school holidays) the curfew prevents an estimated 10 000 people from travelling.

144. Domestic airlines and freight operators are being forced to use obsolete and uneconomic propeller driven aircraft for carriage of cargo during the curfew. One result of this is that there is no incentive for freight operators to equip with quieter more economical jet aircraft which would have the effect of also reducing noise levels during the day.

## **COMMUNITY AND GOVERNMENT ATTITUDES**

145. Community groups and organizations are particularly concerned about night time operations. Many considered that curfew provisions were being breached while others expressed the view that operations which are allowed under the curfew provisions are inappropriate. The general feeling was that the curfew should be extended to include a ban on operations of all aircraft irrespective of whether they are jet or non-jet aircraft.

146. Many commented on the current operations of 'low noise' jets. In Sydney for instance the Committee was advised that even though low noise jets operating over residential areas during the curfew period represented only 1 per cent of total flights they generated 16 per cent of complaints received. A number of groups believe that the curfew is the main airport issue. It was generally accepted that Perth should operate on a curfew free basis, but that this be conditional on the construction of an additional runway to redirect noise away from residential areas.

147. The Australian Mayoral Aviation Council (AMAC) advised that the matter of curfews is probably one of the most politically sensitive areas. The view of AMAC is that any variation should involve less noise to those areas affected. AMAC believes that decisions relating to curfews and variation to curfews should involve discussions between the three levels of government.

148. A number of Councils suggested that restriction on certain types of aircraft outside the present curfew hours should be examined. Botany Council for example suggested that only Chapter 3 certified aircraft (low noise aircraft) should be allowed to operate at Sydney Airport between 7.00pm to 10.00pm and 6.00am to 8.00am. ICAO noise certification standards are shown at Appendix 12.

## **REVISED CURFEW PROPOSALS**

149. The Aviation Industry Advisory Council (AVIAC) has developed a new curfew policy which it believes will lessen noise exposure during the curfew. The Minister for Aviation has advised that no amendments to the curfew will be made until such time as the Committee has examined and reported on the AVIAC proposals. The AVIAC proposals are outlined at Appendix 13.

150. In developing its proposals AVIAC considered five basic principles:

- the noise environment around our airports should be improved;
- the curfew should be based on noise levels or noise certification, not engine type;
- runways should be curfewed, not airports;
- it should not unjustly discriminate against existing registered aircraft; and
- it should reflect community expectations in relation to air transport.

151. Briefly AVIAC's recommendations relate to revision of the curfew at Sydney and Brisbane. At Perth, AVIAC recognised that aircraft movements during curfew created annoyance but also that any curfew at Perth would seriously reduce aircraft services to the city. For this reason it decided against recommending a curfew at Perth. The existing curfew at Adelaide was retained because it was not considered possible to devise a policy that was acceptable to general aviation and, which at the same time, promised an improvement to the noise situation around Adelaide. The existing curfew on Essendon is retained. The subject of the curfew at Essendon will be examined as part of a Departmental review of the role of Essendon Airport scheduled to be completed this year.

152. The revised Sydney and Brisbane curfew will permit only aircraft certified to ICAO Annex 16, Volume 1, Chapter 3, 5 or 6 (the quietest aircraft) to land on one runway direction and depart from one runway direction (i.e. over Botany Bay for Sydney and Moreton Bay for Brisbane).

153. Propeller driven aircraft registered before the new curfew is introduced can operate on the above runways plus one additional runway for 14 years at Sydney and until the redeveloped airport becomes operational at Brisbane. The revised curfew would allow propeller driven aircraft to land over Sydney on runway 16 for a period of 14 years. At Brisbane these aircraft will be permitted to depart from runway 13 to the south-east over the Brisbane River for a period of 14 years.

154. In addition the new curfew will allow for delayed international flights at Sydney and Brisbane to land before midnight on runway 34 at Sydney and runway 22 at Brisbane subject to a yearly quota. Off-scheduled international flights arriving early at Sydney and Brisbane can land after 5.30am on runway 34 at Sydney and runway 22 at Brisbane subject to a yearly quota. At Sydney scheduled aircraft may land after 5.00am on runway 34 for a period of 3 weeks during March each year subject to a daily quota.

## **EFFECTS OF THE NEW CURFEW**

155. AVIAC argues that the new curfew places night time operations on a more rational basis. The curfew will be based on noise certification rather than the invalid distinction between propeller and jet aircraft. In addition particular runways will be curfewed rather than airports. Perhaps the most significant immediate effect would be the total ban on jet aircraft operations over residential areas in Brisbane and Sydney and after 14 years the total prohibition of all aircraft movements over those cities.

156. AVIAC estimates that the new curfew would allow a quota of 280 international landings at Sydney and 60 landings at Brisbane as well as an unquantifiable number of movements by Chapter 3 domestic airline aircraft. Movements by these aircraft would be restricted to Botany Bay and Moreton Bay.

157. The Committee considers that the revised curfew would accommodate those who were concerned about the operation of low noise jets over urban areas. The Committee notes that this was of a particular concern to many of the community organisations in Sydney. In addition it would prohibit all operations from the east-west runway which was requested by the Sydney Councils. In the longer term it would prohibit the operations of all aircraft over the urban areas of Sydney and Brisbane. However aircraft such as the F27

would continue to operate although under restricted conditions over urban areas for a period of 14 years.

158. The curfew policy does not meet the wishes of those who requested the total curfew on all aircraft. Nor does it apply curfew provisions for non-curfewed airports or provide revised operational procedures at airports such as Essendon, Adelaide or Perth.

## CONCLUSIONS

159. The Committee believes that while it is desirable that a total curfew be placed on flying during sleeping hours it accepts that such a proposal would be unacceptable to the Commonwealth Government, the State Governments and to some local councils as well as to the aviation industry. Accordingly the Committee gives its qualified support to the revised curfew provisions provided that they are amended as outlined in the following paragraphs.

160. *Propeller Operations:* The revised curfew exempts propeller driven aircraft from some of the provisions of the curfew at Brisbane and Sydney for a period of 14 years. The Committee believes that this period can be substantially reduced given that the revised policy has been known for three years. The Committee believes that operations should be restricted to Moreton Bay and Botany Bay by 1988. In addition the conditions applying to Chapter 3, 5 and 6 aircraft should apply to all aircraft by 1990. Special taxation and other incentives may be required to assist operators to achieve this aim.

161. *International Operations:* The revised curfew allows delayed scheduled and off-scheduled international aircraft to land provided that the movements do not exceed a certain number in any one calendar year. It is unclear how the quotas outlined in the AVIAC submission were calculated. It is the view of the Committee that the Department of Aviation should examine the number of presently delayed scheduled and off-scheduled international aircraft and determine a quota accordingly.

162. *Flight Paths:* Special departure and arrival flight paths should be devised for noise abatement reasons irrespective of the economic consequences.

163. *Noise Monitoring:* The Committee notes that estimates of the noise effect of the revised curfew have been made. The Committee considers that the actual impact of night operations should be monitored by the establishment of noise monitoring stations as appropriate (see following chapter). The effects of the revised curfew should be reviewed in 12 months in consultation with the community.

164. *Essendon Airport:* Councils and community groups were adamant that all night operations be prohibited at Essendon Airport. Because of the close proximity of Melbourne Airport which is curfew free, the Committee believes a curfew on all operations between 11.00pm and 6.00am should be introduced at Essendon.

165. *Adelaide Airport:* The Committee notes that AVIAC recommended that the curfew provisions remain unchanged. The local government representatives considered the present operations during curfew hours present little problem. This however is not the attitude of some witnesses particularly concerning operations relating to low noise jets and F27 aircraft. The Committee considers that the curfew at Adelaide be further examined with a view to restricting departures to runway 23 and arrivals to runway 05. The Committee notes that if only runway 23 were available for departure 10.6 per cent of aircraft would be unable to operate and if only runway 05 were available for landing 12.3 per cent of aircraft would be unable to operate. The Committee also notes however that 12 per cent of aircraft will be unable to depart from Brisbane when the curfew becomes fully operational in 1990. This figure seems to have been accepted by the aviation industry.

166. *New Airports:* The Committee assumes that if new major airports are constructed they will operate on a curfew free basis. With the construction of these airports and in line

with its recommendation relating to Essendon Airport all operations between 11.00pm and 6.00am should be from these airports.

167. *Redeveloped Brisbane Airport:* The Committee notes that it is Government policy that the redeveloped Brisbane Airport will operate curfew free. It is apparent that there is considerable concern within the community about the implications of this policy. It was suggested to the Committee that a curfew be placed on night operations until such time as the effects of day time operations could be assessed. However because of the huge capital investment the Committee believes that the airport should operate curfew free and that the operations be reviewed after 12 months in consultation with the community.

168. *Perth Airport:* There appears to be a general acceptance within the community and local and State Government that Perth needs to operate on a curfew free basis. This acceptance of curfew free operations is conditional on the construction of a parallel runway which would redistribute aircraft noise. Capital works programs are discussed in a later chapter. The Committee believes that the Department of Aviation should review arrival and departure flight paths and devise flight paths for night time hours based on noise considerations irrespective of the economic implications.

169. *Non-Curfewed Airports:* The Committee believes that the Department of Aviation should conduct detailed studies of major non-curfewed airports particularly those which may be affected by the revised curfew at Brisbane and Sydney. The Committee further believes that those airports which are located close to urban areas and where night operations may have an impact on the surrounding community (e.g. Launceston) be examined with a view of applying restrictions on aircraft not complying with Chapter 3, 5 or 6.

170. *Reverse Thrust:* Operators and pilots of jet aircraft have been requested by the Department of Aviation to co-operate in limiting the use of reverse thrust at Sydney Airport between 9.00pm and 6.45am. The Committee notes that for operational and safety reasons pilots cannot be directed to avoid using reverse thrust. However the Committee believes that the Department of Aviation should discuss with the aviation industry and pilots' federations rules and procedures which would ensure that the use of reverse thrust, during curfew hours, is kept to a minimum and used only to the extent that aircraft safety requires.

171. *Noise Certification:* Australian registered non noise certified aircraft are precluded from operating at Melbourne and Perth Airports during curfew hours. The Committee considers that this provision should also apply to internationally registered aircraft.

172. *Regulations:* It is generally felt that the present curfew is too flexible and discretionary. It was suggested that the curfew be embodied in legislation. The Committee believes that the revised curfew be embodied in Regulations under the Air Navigation Act. The Committee further believes that exemptions to the curfew be specified in the Regulations and apart from emergencies and mercy flights they be approved on a case by case basis by the Minister for Aviation.

173. Accordingly the Committee recommends that:

a revised curfew policy based on that recommended by the Aviation Industry Advisory Council be implemented subject to the following conditions:

- propeller driven aircraft at Brisbane and Sydney Airports be restricted to Moreton Bay and Botany Bay by 1988;
- conditions applying to Chapter 3, 5 and 6 aircraft should apply to all aircraft by 1990;
- a specific quota on landings of delayed international aircraft be determined after further examination by the Department of Aviation;
- special flight paths be devised for noise abatement reasons irrespective of economic consequences;

- the impact of the revised curfew be monitored at noise monitoring stations and be reviewed in 12 months;
- a curfew on all operations between 11.00pm and 6.00am be introduced at Essendon Airport;
- flight paths based on noise considerations be devised at Perth Airport for operations between 11.00pm and 6.00am;
- non-curfewed airports at which night operations may have an impact on the community be examined with a view to applying restrictions;
- the use of reverse thrust be restricted; and
- the revised curfew be embodied in Regulations under the Air Navigation Act with exemptions also specified in the Regulations.

174. The Committee realises that its recommendation relating to revised curfews in Australia will disappoint many of those who spoke to it during the course of the inquiry. However the revised policy is an improvement on the somewhat ad hoc approach which is presently operating and will bring relief to many thousands of people within the community. In addition, as the curfew will be specified in Regulations, amendments will only be possible following Parliamentary scrutiny.

## Chapter 5 Noise and Flight Path Monitoring

'We believe that action should be taken to remove the source of the noise rather than measure it.'

*Strathmore Progress Association*

### INTRODUCTION

175. Many witnesses have requested the installation of noise and flight path monitoring equipment. Generally it was believed that the system was required to check variability of flight paths and the perceived non-compliance with noise abatement procedures and to police the curfew. In addition it was believed the system could be used for land use planning purposes as it could check existing noise contours and result in revised contours which more accurately reflect actual noise levels and aircraft approach and departure routes.

### NOISE MONITORING AT SYDNEY AIRPORT

176. The Department of Aviation operates a computer based noise monitoring system at Sydney Airport. There are ten fixed noise monitoring terminals and one portable terminal at and around the airport feeding information to a central processor. These terminals measure the noise levels of all events above a certain level in the vicinity of the terminals and transmit the information to the Sydney noise monitoring centre where it is recorded. The control tower records for each aircraft movement are also entered into the computer and correlated with the noise events. Each day a record of the movements of aircraft and their noise levels is produced. The information is later used to produce consolidated monthly and quarterly summaries.

177. The daily outputs of the Sydney noise monitoring system is used for the following purposes:

- investigation of individual aircraft noise complaints;
- to provide a check on curfews;
- to ensure that the preferred runway usage for noise abatement has been adhered to consistent with airport weather conditions;
- to monitor aircraft ground running noise in night time hours; and
- detection of aircraft emitting noise levels in excess of a pre-determined level.

178. Monthly reports are provided to assist in the supervision of the preferential runway system procedures. Runway utilisation data, showing percentages of arrivals and departures on each runway over the period, provide information to confirm general adherence or otherwise to the preferred runway usage. A quarterly summary is produced showing for each aircraft type and airline company, comparative noise level statistics, average noise levels, number of excesses and number of aircraft. Quarterly reports provide a knowledge of long term average noise levels being experienced in communities near the noise monitoring terminals and also a comparative check on each airline company's noise performance during the period.

179. The noise monitoring system is also used to conduct special investigations. These investigations have included:

- reverse thrust noise propagation;
- the effect of meteorological conditions on the propagation of aircraft noise;
- measurement of noise levels of new or visiting aircraft; and



- the development of building standards and the provision of growth trend statistics for use in the long term planning of the airport and the planning for the second Sydney airport.

## MONITORING OVERSEAS

180. Noise monitoring systems have been established at many overseas airports. They vary from the simplest systems which monitor the noise levels of individual aircraft only to complex systems which collect information about the cumulative noise exposure and systems which monitor the flight paths of aircraft.

181. From the information which was provided to the Committee it appears that noise monitoring is installed to serve a number of purposes:

- to enforce related regulations (for example in the case of New York and London regulations on the noise levels of individual departing aircraft, and in the case of airports in California to enforce State noise exposure regulations);
- to monitor noise levels of individual aircraft, aircraft types and flight paths which, in some cases, are programmed to bring excess noise levels or off-track flight paths to the attention of the offender (Washington and Schiphol);
- to gather information to assess the effectiveness of noise abatement and land use policies and to assess the impact of aircraft noise on surrounding communities (for instance the systems installed in California airports); and
- for public relations purposes.

182. The Netherlands Department of Civil Aviation has installed a flight track and aircraft noise monitoring system at Schiphol Airport. This automatically compares the actual flight tracks with those which accord with the prescribed standard instrument departure or arrival procedure. It can present this information graphically on a topographic chart and provide information about the altitude and speed of an aircraft. When a deviation is recorded which is not in accordance with an instruction issued by the air traffic controller an explanation is sought.

183. The public relations aspects of noise monitoring systems may be incidental to their main purpose but are considered important by a number of airport authorities. There are a number of airports which have public display boards showing a map of the airport and the surrounding areas, the noise monitoring terminals and the noise levels made by aircraft as they pass over the terminals. These displays are normally placed in a public area in or near an airline terminal. San Francisco International Airport has a computer management system that has a data base which allows the airport to collect and store complaint data, produce reports and correlate complaint information with operational data and generates complaint response letters. The system can also generate computer maps illustrating the relationship between complaints and aircraft noise patterns, measure the impact of aircraft noise on sensitive land use areas and correlate the noise contours with population density and tabulate the noise impact distribution.

## REDUCING AIRCRAFT NOISE

184. The Department of Aviation distinguishes between reducing noise and reducing annoyance. Reducing noise means reducing the noise levels of an aircraft heard by a listener. Reducing annoyance involves taking account of attitudes of the person hearing the noise.

185. Maximum or average noise levels of aircraft could be determined and compared with individual aircraft causing the noise. When an aircraft exceeds this level both the

pilot and the company could be notified. The pilot should be notified as soon as possible after the event in order that he may consider the cause of the excessive noise and remedy. The probability that this system would lead to a reduction in noise levels could be increased if the names of the offending operators were made public, possibly in the form of a regular report that listed companies in order of the number of 'excesses'.

## REDUCING ANNOYANCE

186. Noise monitoring can be used to reduce annoyance by devising strategies directed at specific attitudes. Apart from the noise of aircraft, annoyance can be caused by the following factors:

- perceived irregularity of flight paths or perceived failure to follow flight paths;
- the belief that complaints are not taken seriously or that remedial action is not taken, or both;
- the belief that either the Government or the airlines, or both, do not care and do not take remedial action about aircraft noise; and
- the belief that aircraft noise is increasing.

187. A noise monitoring system which recorded flight paths of aircraft, identified the aircraft and compared the flight paths as flown with the tolerances of the correct flight path, notified the pilot and operator of any infringements and made public this information would effectively correct the first point. If the results of this activity were made public it would overcome the belief that complaints are not taken seriously and no remedial action is taken. At present flight paths of aircraft are only recorded for a few Australian airports and to reproduce the data in a meaningful way is a complex and time consuming task. Consequently it is not possible to investigate a large number of complaints and provide evidence that the complaint was either correct or a misconception.

188. The installation of noise monitors would effectively indicate a concern and commitment by the Department of Aviation and the aviation industry. The system would effectively measure the trend in aircraft noise.

189. In addition the system could be used to monitor curfews and the effectiveness of the preferential runway system and other noise abatement procedures. It could also be used to assess the effectiveness of land use planning policies and noise exposure of communities as expressed in the noise exposure forecast system. The Australian Mayoral Aviation Council provided the Committee with a map of actual departure tracks at Sydney which showed a wide divergence of routes. AMAC suggested that these results cast doubt on the validity of the ANEF contours. Flight path monitoring would enable forecasts to be made on actual flight paths and noise levels.

190. Noise monitoring equipment by providing information would assist in discussions relating to redevelopment or relocation of airports. In addition, it would show a commitment by the Department of not only attempting to reduce aircraft noise but also a commitment to the reduction of annoyance caused by aircraft operations.

## CONCLUSIONS

191. The Department of Aviation advised at the first public hearing of the Committee that installation of noise monitoring equipment at capital cities in addition to Sydney was not justified. The Department's rejection of the proposal appears to be based on the assessed purpose of proposed equipment as measured against the cost of the equipment. The information from the Sydney system allows the Department to assess with reasonable accuracy the noise levels of aircraft at other locations. The Committee agrees with the

Department's assessment that to install noise monitoring without a specific purpose (e.g. a commitment to reduce noise over populated areas, or reduce annoyance) would be of only limited use and be essentially an empty public relations exercise.

192. As outlined previously noise and flight path monitoring systems overseas can be used to reduce aircraft noise, reduce annoyance from aircraft noise and provide information. Given the current unrest around Australian airports the Committee considers that there are strong grounds for installing monitoring systems at Australian airports. The criteria for determining which airports should be provided with the equipment will need to be established.

193. The Department of Aviation has advised of two criteria which could be used. The first could be a number of people within the ANEF contours or the number of people adversely affected by aircraft noise, as calculated from the contours. If the criteria was the location of more than for example 3500 dwellings within 20 ANEF, airports ranked in order would be Sydney (69 892 dwellings), Adelaide (18 880), Brisbane (9999), Perth (5870) and Melbourne (3745). Alternatively criteria could be based on the number of people at least moderately affected counting down to 15 ANEF, for example when the number is greater than 15 000. This results in the same list of airports except that the order of the last two is reversed.

194. Other criteria could also be included. All new major airports could be included in addition to the new Brisbane Airport and Essendon. The Committee would also include in this category major airports which operate on a curfew free basis. Airports with the greatest need should be the first to have equipment installed. The Department advised that installation could be at the rate of one airport per year. The Committee recommends that:

- **noise and flight path monitoring systems be installed at major Australian airports;**
- **public displays be established at the airports; and**
- **a facility be devised to assess and analyse complaint data.**

195. The Committee firmly believes that the installation of noise and flight path monitoring systems together with improved or additional navigation and radar tracking devices and the revision of noise abatement flight paths will ensure that airports operate in a manner which is more responsive to community needs. Such installations will ensure that the mistrust and ill feeling which exist between the communities, the Department of Aviation and the aviation industry will be reduced.

## Chapter 6 Noise Exposure Forecasting

'Changes in noise exposure units of measure are now being planned which allow a degradation of the noise environment without changing the exposure figures.'

*Anti Airport Noise Association Inc.*

### BACKGROUND

196. The previous Select Committee on Aircraft Noise in 1970 recommended that the United States Noise Exposure Forecast System be adopted in Australia. The system was introduced in 1970 and was modified following a 1980 study by the National Acoustic Laboratories.

197. The NEF system is a scientific measure of the noise exposure levels around airports. It can be used for assessing average community response to aircraft noise and for land use planning around airports. The Australian NEF contours index is calculated to take account of the following factors of aircraft noise:

- the intensity, duration, total content and spectrum of audible frequencies of the noise of aircraft take-offs, approaches to landing 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 take-off and landing movements in both the day time and night time hours (day time defined as 7.00am to 7.00pm, night time as 7.00pm to 7.00am).

### NATIONAL ACOUSTIC LABORATORIES STUDY

198. In 1980 the National Acoustic Laboratories evaluated the indices used to estimate aircraft noise exposure in Australia. In particular the NAL study investigated whether other noise exposure indices or a modified NEF index may be more suitable for predicting community reaction. The study provided scientific data which can be used to form the basis of guidelines and standards for land use planning around Australian airports.

199. NAL concluded that composite indices such as NEF were more highly correlated with community reaction than other types of indices including peak level indices. It was found that the standard weighting given to night flights was too high and that there should be a weighting applied to flights during evening hours. A notable finding was that a comparatively small proportion (about 13 per cent) of the variation in the response of individuals to aircraft noise can be explained by the amount of noise present. Attitudes towards the aviation industry, personal sensitivity to noise and fear of aircraft crashing were found to be more important than a given amount of aircraft noise. Overall the most important disturbance related to aircraft noise is flickering of a picture on a television set. However for those seriously affected by the noise the most important disturbance is to sleeping.

200. As a result of the NAL findings the Department of Aviation revised the NEF system to reflect the specific Australian findings. The revised system is called the Australian Noise Exposure Forecast (ANEF). The Departments of Aviation and Defence publish land use compatibility advice based on ANEF.

## STATE GOVERNMENT ATTITUDES

201. Despite the limitations of the Australian Noise Exposure Forecast System all State Governments except South Australia and Western Australia seem to have accepted ANEF as a major tool for town planning.

202. Tasmanian Government authorities have adopted ANEF and the Department of Aviation's land use compatibility advice as policy for new developments and rezoning proposals. Victorian Government authorities advised that they believe ANEF is a useful planning tool and support ANEF as the best system available. The Queensland Government has accepted the system for planning purposes although the State has not accepted the restrictions placed on buildings within the 20-25 ANEF contour. New-South Wales Government planning authorities have recently issued directives which prohibit councils from rezoning land or approving buildings which do not comply with the Department of Aviation's land use compatibility advice.

203. The South Australian Department of Environment and Planning advised that in its view the ANEF system has an inherent difficulty as a tool in land use planning. Its relatively short forecast period (5 to 10 years) is susceptible to changes in flight movements and aircraft activity. They advised that it is not reasonable to expect land use zoning to be reviewed and refined regularly to match the latest noise projections. The zoning pattern establishes the basis for government investment in infrastructure, land values and private investment and development expectations. There are difficulties in implementing planning decisions based on ANEF contours as planning decisions have been overturned on appeal on the ground that there was not adequate evidence to support the zonings. The South Australian Government believes that it would be extremely useful to have a formal Commonwealth Government stance on the noise nuisance level acceptable within residential communities. It is interesting to note that this problem does not appear to present difficulties to New South Wales authorities as their planning directives state ' . . . Australian noise exposure forecast *as from time to time* advised by the Department of Aviation . . . '.

204. Western Australian Government authorities were highly critical of the ANEF system. They commented that the ANEF, while it may be the best available, is a very poor indicator of individual response to aircraft noise and is a poor indicator of the existing noise environment on the ground. They believe that the weaknesses, in part, are due to the fact that theoretical linear flight paths and theoretical noise emission figures are used in its calculation. In addition the calculation is based on what is perceived to be an average day and is not sensitive to seasonal or weekly fluctuations in aircraft movements or flight paths. They were also critical of the fact that the ANEF does not include ground running of jet engines, testing or training flights. The State authorities concluded that the ANEF can only be properly used in determining the relative impact of various airport planning options and its application as a major tool for town planning is doubtful. The State Government supported an extended monitoring program which would attempt to isolate aircraft noise from other environmental noise, identify the most significant aircraft noise sources and provide on-the-ground noise levels which may be used to improve the understanding of aircraft noise exposure patterns around Perth Airport.

## LOCAL GOVERNMENT ATTITUDES

205. It is clear that local government has serious reservations about the ANEF. A meeting of the Australian Mayoral Aviation Council passed the following resolution:

The present method of measuring noise exposure (ANEF) is not acceptable. It should be reviewed and systems of measurement for Australian conditions be adopted which more adequately express the degree of irritation, annoyance and disturbance suffered by members of the community affected by individual airports.

This was supported by AMAC at public hearings. AMAC particularly referred to the reduction in the night weighting and variations in flight paths and the effect these factors have on noise contours.

206. The Perth Councils concluded that the NEF system does not indicate the levels at which noise from single events intrude on the community. The Councils conducted a number of studies to determine the difference between the Department of Aviation's ANEF and assessment of unacceptable noise level and the extent of noise at 75 dB(A). The residential area contained within the 25 ANEF affects approximately 8000 homes whereas the area covered by 75 decibels includes almost 52 000 homes. Data collected from 14 sites showed that in almost all cases the peak sound level from aircraft exceeds the maximum level prescribed under the State Noise Abatement (Neighbourhood Annoyance) Regulations of 65 dB(A). The data indicated a significant intrusion of aircraft noise into the community to a degree not adequately described by the ANEF contours. The Perth Councils have requested the Committee to support the Councils' proposals for further investigations.

207. Detailed comments on the NAL study were provided by the AMAC environmental consultant. While he considered that the study provided valuable information, the consultant criticised the ANEF on the basis that it reduced the night weighting, did not take account of persons affected below 15 ANEF and did not include ground running. Given that ANEF is an average measure, the consultant's view was that it disguises the differences which exist between airports and implies that there should be only one measure of noise applicable to all airports. The consultant concluded that rather than, or in addition to, producing NEF contours consideration should be given to producing contours of community response by each of the categories surveyed as well as recording the number of events which exceed a particular noise level (known as N70).

## COMMUNITY ATTITUDES

208. The Anti Airport Noise Association of South Australia was particularly critical of the revised NEF which reduces the weighting given to night flights. The revised system reduces the weighting from one night flight being the equivalent of about 17 flights at other times to one evening flight and one night flight to be the equivalent of six flights at other times. The Association provided details which showed that the night weighting applied by other countries varies between about 10 and 17 flights. The Association was critical of the conclusions and the method by which the NAL questionnaire was devised and asserted that it ensured that the response would result in conclusions which would result in reduced night weighting.

209. The Association provided documentation from overseas experts which were critical of cumulative noise exposure rating scales (such as ANEF) in that the scales do not adequately account for sequence, spacing, duration, frequency or the noise levels of the events. Thus the result is only a single number indicating the average noise intensity level over a 24 hour period. Any single noise scale value can be obtained from an infinite combination of single noise event levels, duration and number of events. The result of a system such as ANEF is that by changing the night weighting or by the introduction of

some quieter aircraft, the number of aircraft movements could increase significantly while at the same time the noise exposure contour would remain the same or even contract.

## COMMONWEALTH GOVERNMENT ATTITUDES

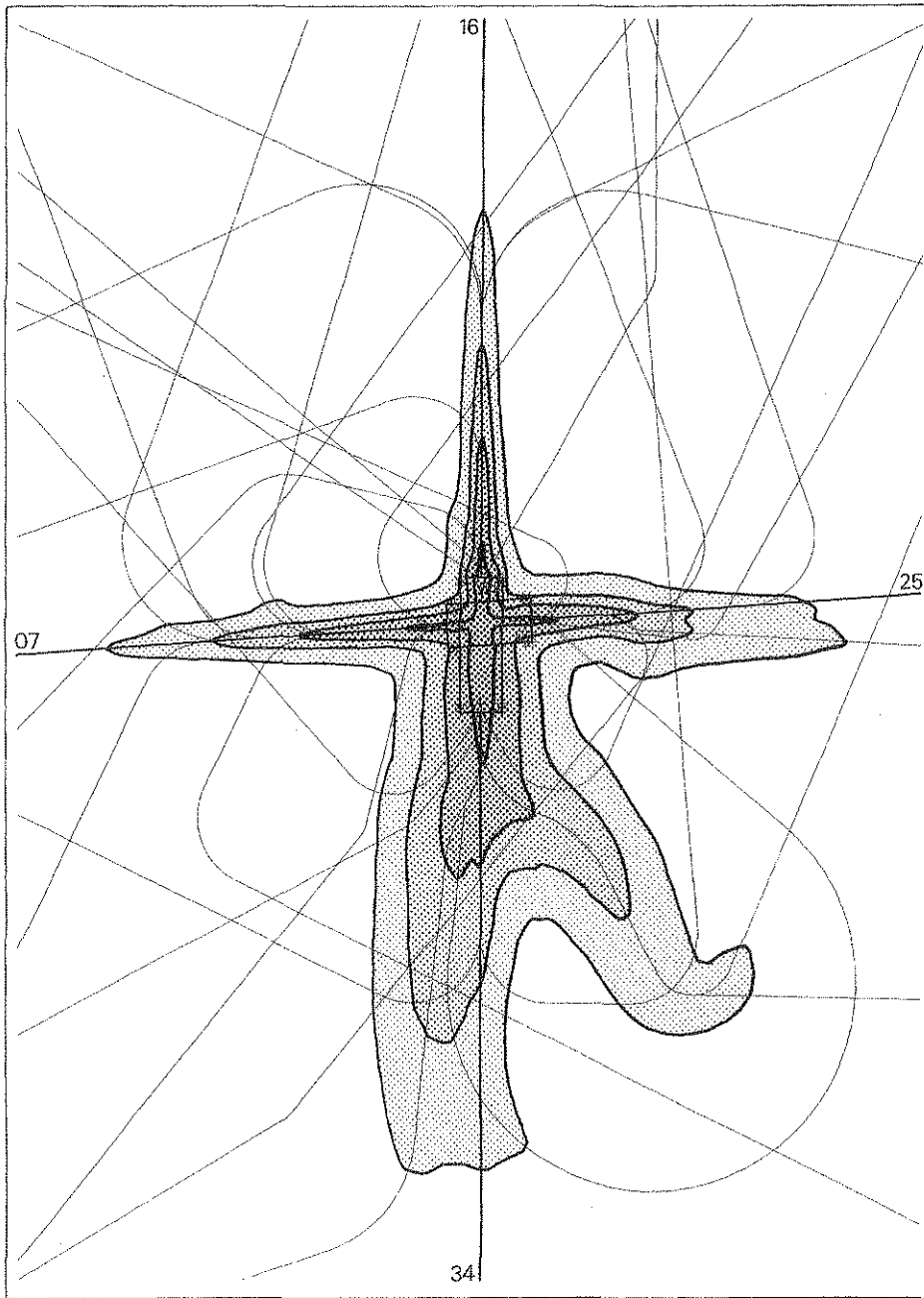
210. The Department of Arts, Heritage and Environment advised that the ANEF system shows a significant declining trend in noise exposure for current aircraft operations in Australia as increased numbers of flights are more than offset by lower maximum noise levels from newly introduced aircraft. The Department advised that a different index could show a lower fall or perhaps none under the same conditions. In the Department's view the expected future lowering of ANEF figures does not provide a satisfactory indication of the extent to which annoyance will decrease in the future nor an accurate picture of the effectiveness of noise amelioration measures. ANEF may be appropriate for planning purposes but it would be useful to develop a simpler system to make the problem of aircraft noise more comprehensible to the general public. The Department believes it could be helpful to describe the effects of a chosen noise threshold level (for example 70 decibels) and relate the number of times this noise impact is currently experienced at typical points under actual flight paths to the number of times such impacts can be expected in the future. The same information could be provided for impacts at higher levels. Information on the typical duration of each impact could also be given.

211. Generally the Department of Aviation and the National Acoustic Laboratories accepted the criticisms relating to the limitations of the ANEF in predicting an individual's reaction to aircraft noise but emphasised that the system is the best available to predict average community reaction. NAL investigated a number of systems including single events which all had a poorer correlation with community reaction. NAL advised that the provision of N70 adds to the predictive power of ANEF. The Department of Aviation advised that while it does not provide N70 on its charts the number of movements by runway is shown.

212. In answering specific criticisms the Department of Aviation advised that there is no substance in the criticisms that single or straight line flight paths are used to calculate the ANEF as multiple flight paths are used in the calculation (see following figure). The Department tabled a number of charts which illustrated the many flight paths used in the calculations. While actual noise emission levels of aircraft are not used in the calculations the Department advised that NAL found that noise levels derived from manufacturers' noise certification trials are generally in close agreement with the levels actually measured. The Sydney noise monitoring system confirms these results.

## CONCLUSIONS

213. On the evidence presented to it the Committee on balance accepts that with all its limitations the Australian Noise Exposure Forecast system is the most appropriate system for use in Australia. There are two qualifications to this acceptance. First, the Committee notes that the local governments in Perth have commissioned a study relating to noise and community reaction. The results of this study may have implications for ANEF. Secondly, the Committee considers that ANEF which is based on a 24 hour average is not a suitable measure to assess change to curfews. There is no generally accepted measure for assessing the impact of aircraft operations during the curfew. It appears that not only the cumulative average energy occurring during the curfew should be taken into account but also, and separately, the number and noise levels of individual aircraft in order to take account of sleep arousal.

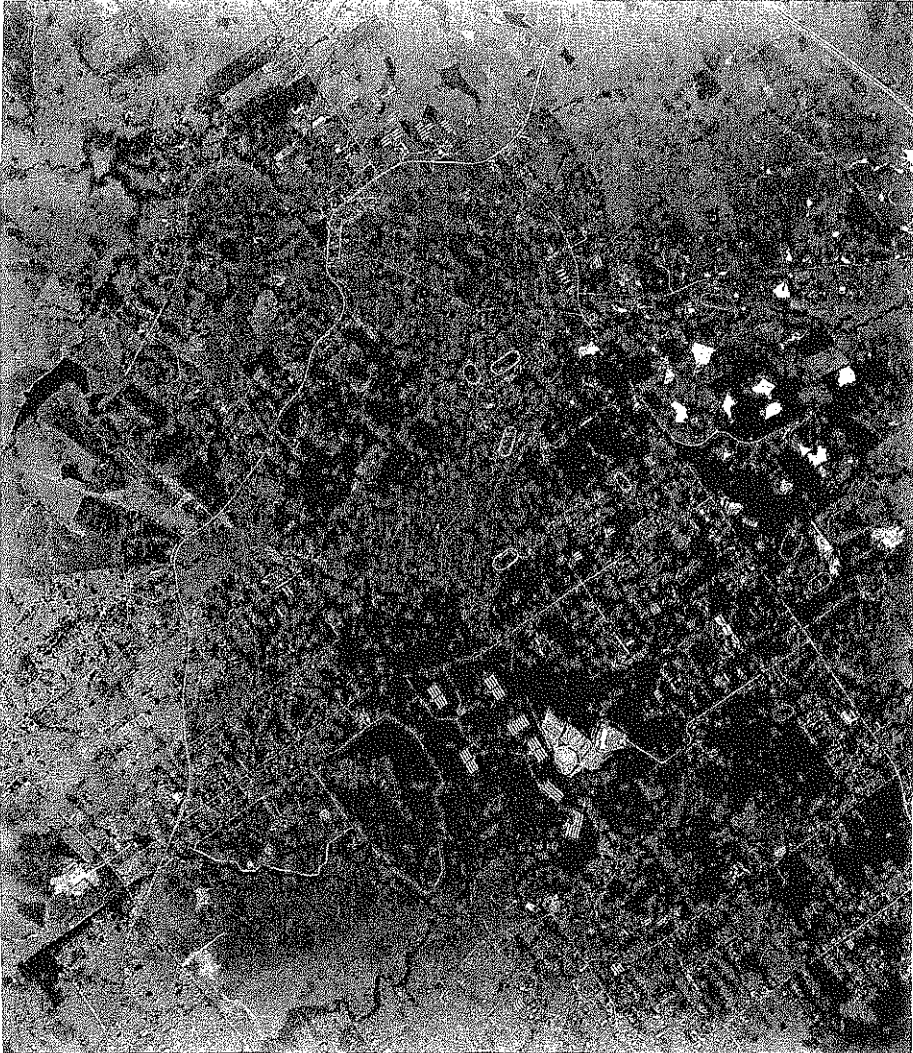


An example of an Australian Noise Exposure Forecast and the nominal flight paths used in the calculation of the contours. The example shown is the 1990 Australian Noise Exposure Forecast for Sydney (Kingsford-Smith) Airport.

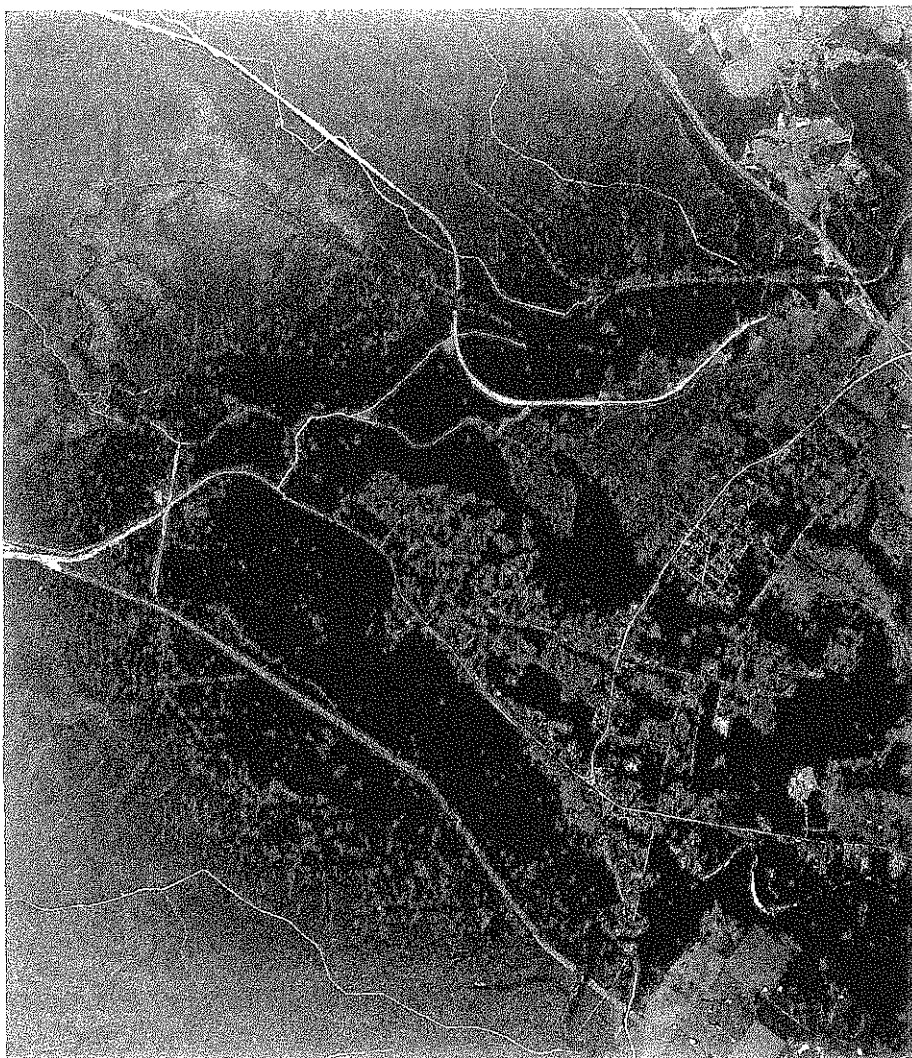
Source: Department of Aviation



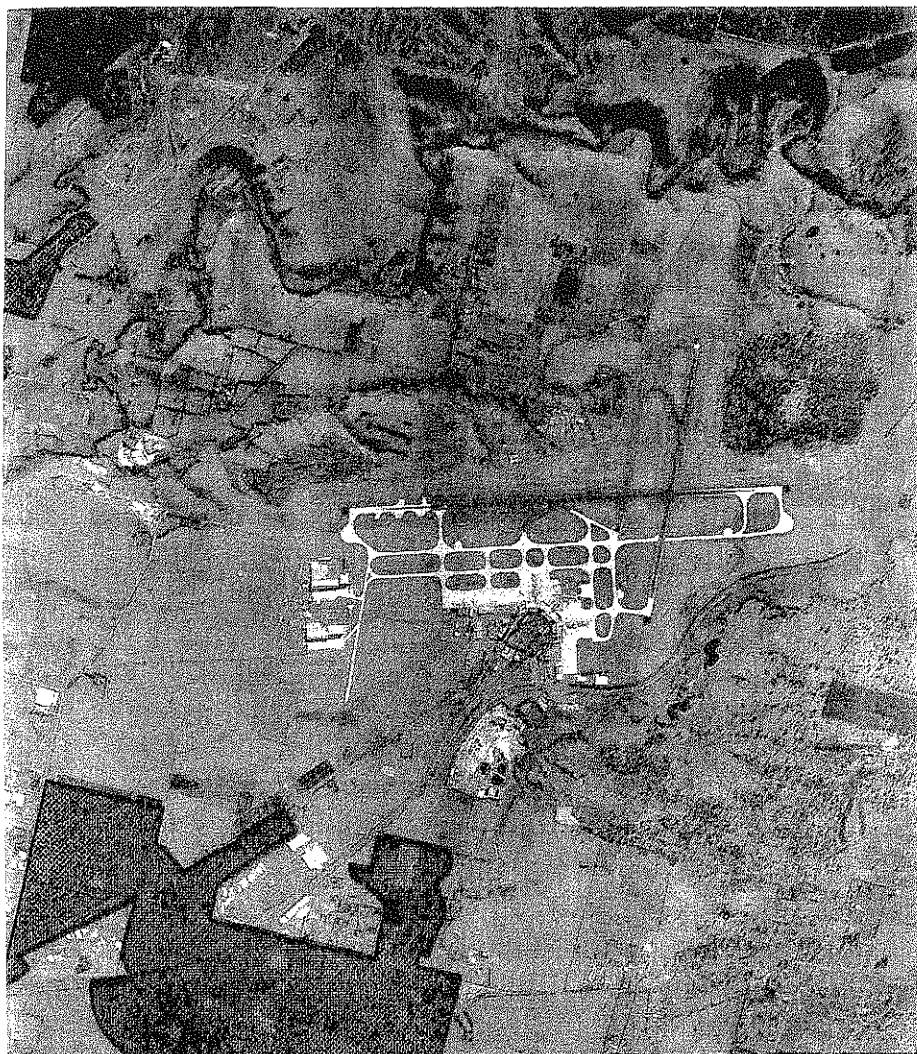
214. As a number of witnesses commented, the NAL study collected much useful information on community reaction. The Committee believes that this data should be readily available to those who wish to conduct further research.



*Badgerys Creek*

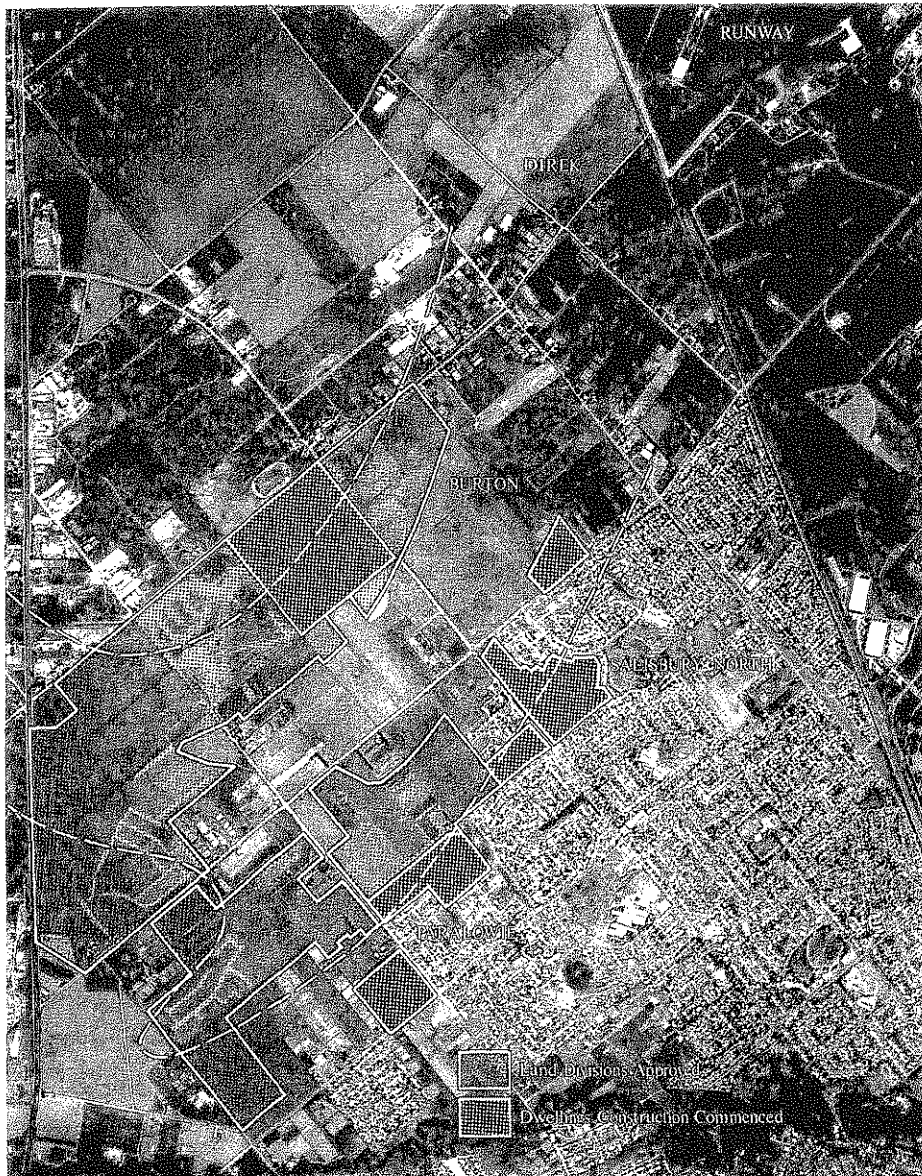


*Wilton*



*Tullamarine 1984*

*Note the lack of residential development at Badgerys Creek and Wilton. The Committee has recommended means by which the unsuitable development which has occurred at Tullamarine does not occur at the finally selected second Sydney airport site. Hatched areas represent housing development since the construction of the Airport.*



*Land use surrounding Edinburgh RAAF Base. Not only will some of the proposed development be subject to excessive noise but in the event of engine failure in the single engined jet aircraft which use the Base many homes will be at risk.*





*Adelaide Airport. Described by the Department of Aviation as one of the most intrusive in terms of the effect of noise on urban areas.*

## Chapter 7 Land Use Planning and Control

'... how effectively have you been pursuing [land use control] which you say is important?'

'... we have spent 12 or 13 years and a considerable amount of resources.'

'What has been your success rate?'

'Zero, I suppose.'

*Department of Aviation*

### BACKGROUND

215. Major airports are important transport facilities essential to modern communities and constituting a very major investment of public funds. However large airports are actual or potential generators of significant environmental disturbance, a major component of which is aircraft noise nuisance. The previous Select Committee on Aircraft Noise concluded that land use zoning is the key to resolving the conflict between requirements of modern air transport and occupiers of nearby land.

216. Airports have generated noise pollution since their inception but the problem has been highlighted with the general growth of air traffic volume and particularly since the wide-spread introduction of commercial turbo-jet aircraft operations. This growth in air traffic volume and use of jet aircraft coincided with increased public concern generally regarding environmental protection.

217. Non compatible land use around an airport has resulted in aircraft operations being conducted in such a way as to minimise the disturbance caused by aircraft noise. The implementation of these noise abatement procedures can result in less than optimum use of the existing runway system. In addition it has led to the demand for relocation of otherwise perfectly adequate airports capable of meeting the community's demand for air travel for decades to come.

218. Land use planning is an important complement to airport planning and operation. It is in the interest of both the public and the air traveller for the use of land around an airport to be as compatible as possible with the airports operation. The International Civil Aviation Organisation airport planning manual advises that the requirement for land use planning in the vicinity of an airport is twofold:

- to provide for airport needs e.g. obstacle limitation areas, future airport development; and
- to ensure minimal interference to the environment and the public e.g. by locating residential areas away from zones subject to excessive noise or by preserving park lands.

219. Land use planning is more likely to be effective in semi-rural areas surrounding new airports than in urban areas surrounding old airports where often the suburban structure has developed long before aircraft noise became a major social problem. In old suburban areas such as those surrounding Sydney Airport land use planning is still important as a potential long term partial solution to aircraft noise exposure.

### LAND USE SURROUNDING AUSTRALIAN AIRPORTS

220. With the exception of Tullamarine all major city airports were located at their present sites by the mid 1950s. Urban growth has occurred around airports and under

flight paths without regard to aircraft movements. In some cases the growth of the airport resulted in airport boundaries moving closer to existing urban development.

221. The Department of Aviation produces noise exposure charts for most airports throughout Australia expressed in Australian Noise Exposure Forecast units (ANEF). In the areas outside 20 ANEF the Department claims that it is generally accepted that noise exposure is not a significant concern. Within the areas from 20 to 25 ANEF aircraft noise exposure begins to emerge as an environmental problem whilst above 25 ANEF the noise exposure becomes progressively more severe. In its land use compatibility advice the Department recommends that residential development within 20-25 ANEF is acceptable but that some noise control features may need to be incorporated in residences. Residential development above 25 ANEF is an unsuitable land use (see Appendix 14).

222. The following table shows the number of dwellings within various noise exposure zones at some major airports in Australia.

**Number of Dwellings by Noise Exposure Zone**

Airport	Noise Exposure Zone				
	20-25 ANEF	25-30 ANEF	30-35 ANEF	35-40 ANEF	40+ ANEF
Sydney	36 514	22 708	7 863	2 242	565
Adelaide	11 959	4 418	1 794	620	89
Perth	3 797	1 830	218	25	—
Melbourne	3 232	513	—	—	—
Brisbane	7 420	1 789	(1)	(1)	(1)
Essendon	2 225	377	(2)	(2)	(2)
Richmond	978	328	264	—	—

(1) 790 residences 30+ ANEF

(2) 6 residences 30+ ANEF

Source: National Acoustic Laboratories Report No. 88 and Department of Aviation

223. It can be seen from the table that Sydney is by far the worst affected area in Australia followed by Adelaide. The redeveloped Brisbane Airport will bring significant relief to a number of areas in that city. While no definite conclusions should be drawn it is worthwhile noting that at the busiest airport in the world, Chicago's O'Hare, there are 313 000 people located within the 30 NEF contour and at Boston's Logan International Airport (about twice as busy as Sydney) there are 100 000 people within the 30 NEF contour. This compares with 32 000 people for Sydney and 780 people for Perth.

224. From the Committee's inspections and discussions with State and local authorities irrespective of the suitability of existing land use, it is clear that most development took place in accordance with policies and principles which were compatible with airports at the time of the development. The Committee noted however, that a considerable number of inappropriate developments were proceeding in many areas it visited. Even so this development generally relates to zoning decisions made before the full impact of aircraft noise was known.

225. Despite the stated commitment by State and local governments unsuitable development has taken place in recent times and is continuing to occur. Residential subdivisions have been approved close to Perth Airport despite the objections from the Department of Aviation and the Perth Metropolitan Planning Authority. This development proceeded as a result of a successful appeal and will result in houses being built within the 25 ANEF zone. Similarly the Committee saw a development which is proceeding close to Adelaide Airport which will result in houses being located close to or within 25 ANEF. The sub-division was approved more than 12 years ago and was based upon information available at that date. Even though the sub-division occurred only recently and more

recent information of noise effects were available the council was powerless in preventing the development proceeding. The Committee also has examples where despite the evidence which suggests that development should not proceed within specified noise exposure zones there are pressures for development to proceed. Evandale Council in Tasmania for example has proposed that residential development be allowed within the 25 ANEF levels. Fortunately State Government policy precludes residential development within this zone.

226. Perhaps the best example of the inadequacy of planning controls and advice is the situation which has occurred in the area surrounding Tullamarine Airport. The previous Committee noted that Tullamarine was surrounded by vast areas of rural property. Despite the deliberate intention to site the airport in a substantially rural area and the detailed planning and the knowledge of the noise problem there is considerable urban intrusion into existing and future aircraft noise impacted areas. Over 500 residences are located within the 25 to 30 ANEF. In addition over 3000 residences are located within 20 to 25 ANEF. While the Department of Aviation in its land use compatibility advice gives qualified support for residential development within 20 to 25 ANEF, NAL found that 50 per cent of residents would be moderately affected by aircraft noise and 20 per cent seriously affected in this zone. The Department advises land use authorities to consider the incorporation of noise control features in the construction of residences as an appropriate measure. Residential development in the area takes no account of this advice.

227. From the outset of planning associated with Tullamarine there existed certain misunderstandings. The Department of Aviation believed that the land it had acquired for airport purposes provided a noise buffer area. Later the Department declared that the full extent of the noise buffer area included not only the airport acquisition area but also the surrounding areas zoned rural. The State Government later argued it understood the Commonwealth had provided sufficiently for noise protection by its acquisition. Also the proposed retention of rural zoning precipitated fears for compensation claims associated with refusal of applications for rezoning of privately owned land within the rural zone. The Department and the Committee find it difficult to understand the justification of any such claim in absence of any evidence which suggests that the existence of agreements on rezoning had been the basis of the original purchase.

228. Although many discussions had taken place there remained throughout the planning period and beyond a real lack of combined interest and resolve to avoid potential noise problems. There also appears a distinct lack of confirmation of strict planning decisions. The net result is that Tullamarine now causes some noise problems which could have, and should have, been avoided with the efficiency of at least one future runway being compromised. The Tullamarine case illustrates the care which should be exercised in the planning of new airports.

229. The Committee considers that together with the Tullamarine case developments occurring close to Edinburgh RAAF Base warrant special highlighting. During a recent visit the Committee observed residential development which is occurring up to the 30 ANEF noise contour.

230. The Committee has two concerns in respect of Edinburgh RAAF Base. First, the development is contrary to the land use compatibility advice of the Department of Defence. Secondly, the development is occurring in an area which in the event of power loss in a military aircraft could be an impact area for jettisoned underwing loads or, in the event of total power loss, the aircraft itself. Single engined jet aircraft which operate from the Base are more susceptible to power failure than civilian or other military aircraft. This problem is further compounded by the high incidence of bird strikes in the area (second highest in Australia) which could be worsened if a proposal to develop a solid waste disposal depot proceeds.

231. Attempts by State and local government to prevent residential development within



the 25 ANEF were lost on appeal to the Planning Appeal Board in 1977. The Appeal Board argued that it did not have sufficient evidence to refuse development in 25-30 ANEF. Early in 1985 Salisbury Council narrowly approved further residential development to the 30 ANEF contour. The Committee commends the actions taken by the Department of Defence in attempting to prevent this unsuitable development. The Committee considers that South Australian State and local government authorities must accept full responsibility should death, injury or damage occur through an aircraft accident. It is the view of the Committee that the Commonwealth should make further approaches to South Australian planning authorities to prevent this development occurring. Should these approaches be unsuccessful the Commonwealth should take direct action in accordance with the recommendation contained in paragraph 255.

## OVERSEAS APPROACHES

232. The Committee considers that before discussing approaches which the Commonwealth, State and local governments can take to alleviate the noise problem in Australia, it would be of value to consider the approaches adopted by way of land use and building control by authorities overseas. The Committee was able to obtain written information relating to authorities in the United States, Canada, Britain, the Netherlands, Germany and Japan. The discussion relates only to land use and building regulations and not measures adopted in terms of airport or aircraft operations. It is not the intention to discuss aspects of all approaches but rather to highlight aspects that are either unique or effective or could have direct application to the Australian situation.

233. Perhaps the most extensive legislation relating to land use and building control in the United States operates within the State of California. The State has proclaimed a law which requires that Californian airports shall have no incompatible land use (homes, schools etc.) within the 65 CNEL (approximately 30 NEF) by 1 January 1986. This noise level was accepted 'as a noise level acceptable to a reasonable person'. The Los Angeles Airports Authority has acquired 3000 properties adjacent to the airport and removed the occupants of houses. In addition it has sound-proofed a number of adjacent schools. The Authority is in the process of establishing a pilot sound-proofing scheme for private residences to establish the costs and the occupants' assessment of its effectiveness. The San Diego Airport Authority advises that no airport will be able to meet the requirements of the law. The Authority believes that acquisition is not a serious option nor is sound-proofing a solution because of the Californian outdoors living style.

234. Airport authorities in other US States are acquiring residential properties close to airports. In addition sound insulation schemes have been introduced by at least five airport authorities in various States. It also appears from examination of available information that redevelopment for new land uses incompatible with noise compatibility advice is prohibited.

235. The most detailed information available to the Committee relates to the scheme operating in the Netherlands. Basically the Dutch scheme provides for the acquisition of all properties in zones greater than 40 NEF and the eventual acquisition of properties between 30 and 40 NEF, although some buildings may be eligible for noise insulation. Areas within 20 to 30 NEF are eligible for sound insulation and within 16 to 20 NEF new buildings will be required to meet certain internal noise standards. Under the system nobody will be forced to move. In the highest noise area if the house is likely to be occupied for a considerable period sound insulation will be provided. The scheme is paid from a levy on airlines. It is expected that 50 houses will be acquired and about 4000 insulated over a period of approximately 12 years.

236. In Germany land use zoning is in operation based on three noise zones. Incompatible existing land use can continue but no changes may be made if they do not fit the noise zoning category. The airport owner is liable for the payment of compensation.
237. In Canada the situation is similar to that operating in Australia by which the Federal Airports Authority provides land use compatibility advice which local authorities can implement or otherwise as they see fit. It appears that at least in Ontario new developments must adhere to the compatibility table provided by Canadian airport authorities.
238. In the United Kingdom land use planning is the responsibility of local authorities and is based on land use compatibility advice provided by the British Airports Authority. In Britain no acquisition scheme operates. A sound insulation scheme has been introduced for areas surrounding Heathrow and Gatwick. All houses within the 35 NEF zone are eligible for insulation. The British Airports Authority will pay the costs of insulating up to two living rooms and all bedrooms subject to a maximum cost. People are eligible to apply for insulation for a period of five years. About 30 000 houses are eligible under the scheme.
239. In Japan there are strict land use controls in areas adjacent to airports ranging from no development within certain zones through to restricted development with sound insulation provided at the airport authority's expense.
240. While the recommended land use within certain noise zones operating in overseas countries is similar to that in Australia acquisition or insulation schemes apply only to the highest noise levels. The schemes are very restrictive and offer no relief to many who would be considered to be living in high noise areas.
241. In the United States a new concept is developing; namely the airports environs plan. This is the formulation of a co-ordinated strategy to improve compatibility between airports and their environs. Environs plans include noise abatement procedures, noise forecasting, noise monitoring, land use planning, voluntary property acquisition (including resettlement of people in very high noise areas) and sound insulation schemes.
242. Other practices adopted in the United States are legal attachments to land, either through the establishment of easements by which unrestricted use of air space above the land for civil air navigation purposes is permitted or the purchase of development rights of properties in which existing use is allowed but further development is precluded.

## LAND USE CONTROLS IN AUSTRALIA

243. In most areas in Australia unsuitable land use surrounding airports has resulted from the concurrent growth of airports and urban development with little or no understanding of the likely future impacts of this development. From an examination of State legislation it appears that in all States it would be possible to raise a planning instrument prohibiting certain types of development or constraining other types of development in noise affected areas. Existing land use may be exempt from the provisions in a newly raised planning instrument but changes or improvements to the existing use would not be. However opposition to proposals and formal appeal may be successful in preventing the development or implementation of a particular policy and constraints imposed on existing land use may well incur compensation payments to land owners.
244. From the Committee's discussions and the evidence received it is apparent that the Commonwealth has narrowly defined its constitutional responsibilities to the provision of safe and efficient air services and has not attempted to actively pursue a solution to land use problems around airports. There also appears to be a lack of commitment by both State and local governments, partly because each sees the primary responsibility as belonging to the other, with the consequence that the problems associated with aircraft

noise are not specifically provided for in State legislative or administrative requirements. In the case of local government it appears that they have little or no powers which require that buildings be constructed to take account of the likely impact of noise. A problem faced by both State and local government seems to be associated with compensation for refusing redevelopment or rezoning land for a more suitable use. It appears that as State legislation now stands decisions relating to developments compatible with airport and aircraft operations are too easily subject to appeal.

245. The Committee notes attempts made by State Governments to ensure proper land use. The New South Wales Department of Planning and Environment, for example, has issued instructions prohibiting the rezoning of land in a manner which does not comply with the Department of Aviation's land use compatibility advice. It is not clear whether existing legislation in all States provides Government with the power to issue similar directives. Nor is it clear whether or not State legislation is adequate to ensure that presently undeveloped land is not developed, or whether land already developed is not rezoned in a manner that would conflict with the Department's advice.

246. The Committee believes that the land use compatibility advice of the Departments of Aviation and Defence which is in line with standards adopted by most overseas countries should be adopted as policy by Commonwealth, State and local governments for new developments and redevelopments. The Committee believes that relevant State and Commonwealth legislation should be amended to specifically require adherence to the compatibility advice. Accordingly the Committee recommends that:

**the Minister for Local Government and Administrative Services in consultation with the Minister for Aviation discuss with State and Northern Territory local government ministers the adoption of, in State legislation, the land use compatibility advice of the Department of Aviation and the Department of Defence.**

247. The Committee is also concerned that State and local government building regulations generally do not include provisions for sound insulation. The Committee believes that the Minister for Local Government and Administrative Services should include the adoption of Australian Standard 2021 in his discussions with the State local government ministers.

248. The Committee believes that all Commonwealth departments and instrumentalities should adopt the land use compatibility advice. Accordingly the Committee recommends that:

- **the Commonwealth Government adopt as policy the land use compatibility advice of the Department of Aviation and the Department of Defence; and**
- **actions by the Commonwealth Government, including grants under State Grants Acts, be in accordance with the land use compatibility advice.**

249. While the Committee supports the land use compatibility advice which allows residential developments to 25 ANEF it notes that at least one council located close to an airport believes that residential development should be precluded within the 20-25 ANEF zone. Bulla Shire Council maintains that no housing should occur above the 20 ANEF contour. The Shire advised that the State Government with the acquiescence of the Commonwealth has permitted new residential areas up to 25 ANEF. The Shire believes that it is quite obvious that in a 'green fields' situation the opportunity is available to prevent future opposition to the operation of the airport. The Committee is sympathetic to the views of Bulla Shire Council but believes that restricting residential development below 25 ANEF would be unacceptable to most State Governments. It is the Committee's view however, that should a local government authority be willing to support the restriction of residential development in noise zones lower than 25 ANEF, this should be supported by Commonwealth and State authorities.

## COMMONWEALTH POWERS

250. In many of its submissions the Department of Aviation advised that the Commonwealth has no legal jurisdiction over land use outside the boundaries of Commonwealth owned land. The Department suggested that perhaps the only means of ensuring that unsuitable land use does not occur around new airports is for the Commonwealth to acquire sufficient land to provide a noise buffer zone.

251. During the course of the Inquiry the Committee received written legal advice from the Commonwealth Attorney-General's Department. In addition officers from the Department appeared before the Committee to amplify that advice. The Department suggested that the Commonwealth has some power to control land use in areas surrounding airports. The Department suggested that if the Commonwealth wishes to build an airport and if the uses of land around the airport could be incompatible with the use of the airport then the Commonwealth can purchase not only the land which will be used for the runways and the buildings but also a surrounding area of land to provide a buffer zone. The Department further advised that the Commonwealth could prohibit uses of adjoining land which are incompatible with the use of the airport even on land which is not owned by the Commonwealth. If actual acquisition of a property occurred there would be a constitutional requirement for the Commonwealth to pay compensation on just terms. The Department explained that the Commonwealth power is a negative power in that it would be a law restricting or prohibiting certain uses rather than a law which would direct the ways in which the land could be used. The Commonwealth legislation would be 'incidental' to the effective exercise of relevant Commonwealth powers relating to the construction and use of an airport.

252. Not only do these powers extend to new airports but they also apply to areas surrounding established airports. The Department advised that in its view the Commonwealth would have the power to acquire land adjoining an existing airport which is seriously affected by the use of that airport, either by way of agreement with the owners or by compulsory acquisition, on payment of just terms. The Commonwealth also has the power to prevent further development within these areas. The question as to whether the Commonwealth has the power to require certain building standards (e.g. sound insulation) is doubtful but the Attorney-General's Department has no doubt that the Commonwealth has the power to provide financial assistance which would enable special noise attenuation measures to be taken. The Department also advised that there is no legal obligation on the Commonwealth to compensate local government if actions by the Commonwealth cause losses in rate revenue. The written advice provided by the Attorney-General's Department is included at Appendix 15.

253. Following the evidence given by the Attorney-General's Department the Department of Aviation advised that despite their previous view that the only solution to the problem of incompatible land use was the purchase of noise affected properties, such purchase, particularly of land only marginally affected by aircraft noise, should be a last resort.

254. In a previous section of the Report the Committee recommended that the Commonwealth seek the agreement of the States to enact legislation to ensure that future land use planning and building regulations are in accordance with the Department of Aviation's land use compatibility advice and Australian Standard 2021. The Committee notes instances where State and local governments have been unable to prevent unsuitable development despite a commitment to proper land use planning. The Committee believes that the Commonwealth must be in a position to exercise the powers which the Attorney-General's Department has advised are available. The Committee sees these powers as supplementary to those of State and local government and accepts that land use controls would only be used by the Commonwealth as a last resort. Specifically the

Commonwealth would take direct action only in instances where the States were unable or unwilling to act. The Committee is of the view that it is appropriate for the Commonwealth to be able to preserve its investment of many thousands of millions of dollars. Accordingly the Committee recommends that:

**the Commonwealth Government make it clear to State and Northern Territory Governments that if relevant State and local government authorities do not prohibit inappropriate land use in areas surrounding Commonwealth airports the Commonwealth Government will legislate to do so.**

255. The land use compatibility advice recommends that no residential development occur in areas higher than 25 ANEF. Acquisition of residential properties within these zones would be expensive and cause considerable social dislocation. For these reasons it is not feasible. In many areas land within 25 ANEF is presently undeveloped, for instance, areas close to Brisbane, Melbourne and Edinburgh Airports. While most States have accepted that residential development is unsuitable in the highest noise levels some vacant land close to airports was zoned residential a considerable time ago and a number of States claim they have no power to prevent that development proceeding. The Committee believes that in instances where the States are unwilling or unable to prevent residential development on presently undeveloped land, irrespective of its present zoning, the Commonwealth use its powers to prevent that development occurring within the 25 ANEF contour. Accordingly the Committee recommends that:

**the Commonwealth Government exercise all necessary powers to prevent residential development occurring on land within the 25 ANEF contour.**

## **NEW AIRPORT SITES**

256. The Australian Mayoral Aviation Council advised the Committee that in the event of there being any new airport in a particular area, the Commonwealth should acquire sufficient land surrounding the airport to act as a buffer to prevent the encroachment of residential or other land uses which are not compatible with the operations of an airport. In the draft environmental impact statement for the second Sydney airport the site boundaries for acquisition do not provide for noise buffer zones. The Department of Aviation advised that the site boundaries do not necessarily represent the amount of land to be acquired but only indicate the area of land which is required for airport operations.

257. The Committee notes the confusion which arose concerning land use in areas surrounding Tullamarine Airport and believes that the Commonwealth should do all in its power to ensure that these problems do not arise in the future. Accordingly the Committee recommends that:

**the Commonwealth Government when acquiring land for new airports purchase all land within the 35 ANEF contour to provide noise buffer zones.**

## **ACQUISITION**

258. The Committee notes the schemes relating to land acquisition introduced overseas, particularly those operating in the United States and the Netherlands. A number of United States airport authorities have programs which will result in the acquisition of all residential properties within the 40 NEF and in some cases eventual acquisition of properties in excess of 35 NEF. The Committee believes that a limited acquisition scheme should be introduced for the worst affected areas in Australia. Ideally, the scheme should reflect the Department of Aviation's land use compatibility advice. The Committee

accepts that this is not feasible on economic or social grounds. However by any definition, residential development within the 40 ANEF noise contour is inappropriate. The Committee believes that the Commonwealth should eventually acquire all residential properties within the 40 ANEF contour. Acquisition should be on a voluntary basis and at fair market value. Relocation and re-establishment expenses should be met by the Commonwealth. Accordingly the Committee recommends that:

**the Commonwealth Government in consultation with State and local governments introduce a scheme for the acquisition of residences within high noise zones surrounding military and civil airports.**

259. Approximately 700 houses would be involved in the acquisition program. It is the Committee's view that should further resources become available acquisition of properties within the 35 to 40 ANEF contour should be implemented. Approximately a further 3000 residences would be involved.

260. The Committee believes that land within the 40 ANEF should become part of the airport, although if rezoned to an appropriate land use this would be acceptable.

## **LOCAL OWNERSHIP**

261. The aim of the Aerodrome Local Ownership Plan is to transfer ownership of all suitable aerodromes serving a local, rather than a national, need to the communities which they serve. Under the Plan the Commonwealth continues to meet the full cost of establishing, providing, maintaining and operating aviation services such as navigational aids, communications and air traffic control. The Commonwealth provides grants covering 50 per cent of the cost and approved development and maintenance works at locally owned aerodromes. A condition under the Plan is that the local authority shall take such action as is within its power to create land use zoning around the aerodromes which will prevent residential and other incompatible developments.

262. The Department of Aviation advised that the land use condition is only one of the twenty conditions relating to the Plan. The Commonwealth is in a negotiating position in these handover arrangements and cannot necessarily insist on everything that it would like included in the agreements. The Department does not conduct a detailed analysis of surrounding land use and zoning before handover. It advised that 269 aerodromes have been transferred to local ownership with forty remaining available for transfer.

263. The Committee believes that its comments relating to major metropolitan airports should also apply to provincial and regional airports. Accordingly it recommends that:

**the terms and conditions of the Aerodrome Local Ownership Plan be amended to provide that —**

- **non developed land be zoned in a manner which does not conflict with the land use compatibility advice before ownership is transferred; and**
- **provision of maintenance and development grants be restricted to those authorities which comply with the land use compatibility advice.**

## **PROPERTY TRANSFER**

264. In response to a National Acoustic Laboratories questionnaire, 46 per cent of persons surveyed claimed they did not know about aircraft noise in their neighbourhood before they moved to the area. Of those that did not know and those who found the noise greater than expected 36 per cent advised that they would not have moved into the area if they had known of the aircraft noise.

265. The Real Estate Institute of New South Wales doubts that there would be many people who would not be aware of the impact of aircraft noise in areas surrounding large busy airports such as Sydney. The Institute advised that while it would be concerned about large areas being designated as noise affected, it had no objection to a notification being placed on conveyancing documents advising purchasers that they should make their own inquiries concerning the effects of aircraft flyover. A number of council representatives who spoke to the Committee believed that local government has some responsibility in providing this sort of information to prospective purchasers.

266. The Law Council of Australia supports any moves to have likely aircraft noise problems disclosed somewhere in the conveyancing documents. The Council believes that to be effective there must be a positive obligation to disclose the information and this disclosure should not be left to vendors.

267. The Department of Aviation and the Department of Defence publish ANEF maps for each of their airports. In addition the Department of Aviation is preparing a series of documents which will advise people of the effects of living near airports. If the recommendations of the Committee relating to noise and flight path monitoring are accepted by the Government further more detailed information will also be obtainable. Although information is available the problem is ensuring that this information is made available to persons proposing to live in areas which may be affected by aircraft noise. It appears that the most effective means of doing so would be to provide this information during the conveyancing process. Accordingly the Committee recommends that:

**the Minister for Local Government and Administrative Services advise State and Northern Territory local government ministers of the need for documents relating to property transfer for all properties located within the 20 ANEF noise contour to specify that inquiries be made concerning aircraft noise.**

## **RATES AND REGULATIONS**

268. Councils argued that airports represent substantial costs to municipalities because local facilities and infrastructure are used to service them. The Commonwealth Government does not pay general rates to local authorities to compensate them for these costs. Councils argued that airport land should be rateable. The Councils believe that airport authorities should also be subject to local government building and planning controls. The Shire of Bulla specifically drew the Committee's attention to the serious financial situation which would face the Shire should action be taken to withdraw ex gratia payments for leased areas and concessions within Melbourne Airport.

269. The Department of Aviation advised that they see airports as municipalities in their own right rather than part of a municipality. The Department advised that Sydney Airport, for example, could be seen as a city which has a population of 14 000 and is quite independent of surrounding municipalities.

270. The Standing Committee on Environment and Conservation of the 31st Parliament in its Report on the Commonwealth Government and the Urban Environment observed that the non-payment of rates by Commonwealth authorities could lead to significant inequality between municipalities, particularly where there is a concentration of Commonwealth installations in some.<sup>1</sup> That Committee also observed that Commonwealth authorities are not bound by local government laws and regulations. It recommended that the Commonwealth pay general rates and comply with local government by-laws.

271. The Committee has sympathy with the views expressed by local government. However it notes that the principle relates not only to the Department of Aviation but also to many other Commonwealth departments and instrumentalities. The Committee believes it is outside its terms of reference to make specific recommendations concerning the payment of rates. It advises that councils individually or through the Australian Mayoral Aviation Council discuss the matter directly with the Department of Aviation and the Department of Local Government and Administrative Services.

**Endnote**

<sup>1</sup> House of Representatives Standing Committee on Environment and Conservation. *Report on the Commonwealth Government and the Urban Environment*. Parliamentary Paper No. 142/1978



## Chapter 8 Airport Development

[‘the problem with determining priorities for airport works] . . . is as if there were five individuals being individually hit on the head with a hammer. Each one of those individuals is not very interested when it is going to stop happening to somebody else, but they are very keen to know when it is going to stop happening to them.’

*Australian Mayoral Aviation Council*

### BACKGROUND

272. The Committee received requests from State and local governments and airport communities for the relocation of airports and the construction of new or the realignment of existing runways to assist in the alleviation of noise.

273. The Independent Inquiry into Aviation Cost Recovery concluded that in the past Australia’s airport systems have been developed in a rather ad hoc way. The Parliamentary Public Works Committee has noted in many of its reports that a piece meal approach exists and has called for the establishment of a national airport development strategy. The Public Works Committee, by way of example, has cited the Department of Aviation’s view that Sydney (Kingsford-Smith) Airport works would clearly have a higher national priority than Brisbane, even though the present Brisbane project is proceeding at a cost of nearly \$500 million.

274. It is clear that many of the proposed works suggested to the Committee will have noise abatement benefits but at huge costs. The Committee is concerned that its recommendations do not contribute to the ad hoc development approach which has existed in the past. In the following sections the Committee proposes to discuss capital works proposals for Perth, Adelaide and Sydney. In selecting these particular airports the Committee realises that there are other airports in Australia which could be included in these discussions. These three airports have been chosen as they provide good examples from which general conclusions can be drawn. In addition the most detailed proposals submitted to the Committee relate to these three airports.

### DEVELOPMENT PROPOSALS

275. The construction of a wide spaced parallel runway at Perth Airport two kilometres to the east of the existing 02–20 runway would reduce aircraft traffic over residential areas and reduce noise impacts on surrounding communities. In 1970 the Commonwealth acquired property to facilitate the establishment of a wide spaced parallel runway and to provide for noise buffer zones. The Perth Councils have argued ever since that there was a commitment by the Commonwealth to proceed with the construction of the runway. The Councils suggest that there are sound environmental grounds for the immediate construction. At present there are 9500 homes which are affected by noise of 75 dB(A) and over. A parallel runway would reduce to 3500 the number of homes which would fall within this noise zone.

276. The Department of Aviation argued that the construction of a parallel runway could not be justified on capacity grounds. The present airport capacity is 180 000 movements per year and Departmental forecasts show anticipated movements of only 98 000 movements by 2010. The Department agreed that the early provision of this runway would, if operated in an optimum noise reduction manner, result in a net reduction in the number of households affected by noise. It is forecast that in 1985, 3500 houses will be within the 20 ANEF zone, compared with 2300 if a parallel runway was provided. Of

these 2300, 1300 would lie outside the 20 ANEF if existing runways were retained, that is 1300 homes would be newly affected but the total number of homes affected by aircraft noise would be reduced by 1200.

277. The Councils submit that if areas within 75 dB(A) were used as a criteria no additional properties would be affected by the operation of the parallel runway. While the Department agreed this is so if single event criteria is used, the argument is misleading in that many within the 75 dB(A) contour are now only subject to a few movements in a year. The parallel runway would subject many of these to a significant increase in movements and this is reflected in the revised 20 ANEF contour. The Department further advised that no commitment has ever been given for the construction of a parallel runway for noise abatement reasons alone.

278. The Councils argued that the parallel runway would have other benefits such as safety. Should departures be restricted to the new runway, in the event of an accident the aircraft would impact in largely unpopulated areas which is not the case with existing runway alignments.

279. The Department of Aviation judges Adelaide to be one of the most intrusive of the major Australian regular public transport airports in terms of the effect of noise on urban areas. This is in spite of it being only the fifth busiest airport. Accordingly, it is not surprising that the Committee received many submissions requesting its relocation.

280. The South Australian Government supports the eventual development of a new airport site, although it also accepts that the present airport will remain operational for the rest of this century. The Commonwealth and South Australian Governments have agreed to take steps to identify a site for possible purchase for the construction of a new or second airport.

281. In its original submissions to the Committee the Adelaide Councils requested that a new site outside the metropolitan area be identified and construction of a new airport commenced. They also advised that an appropriate solution would be to relocate Adelaide Airport to Edinburgh RAAF Base and develop a new site for the Air Force. Councils and community organisations advised that the main 05-23 runway was unsafe for international operations.

282. The Department of Aviation has no specific development proposals for Adelaide and stated there was no need for the development of a second site for at least 30 years. The Department advised that the runway length is in accordance with international standards and is safe. A relocated fully operational domestic and international airport would cost in the order of \$500 million.

283. In a further submission to the Committee the Adelaide Councils advised that they would support the airport remaining at its present site provided that a close spaced parallel runway of 3500 metres was constructed and that noise abatement procedures were adopted for its operation. The Department of Aviation considered that the Councils' proposal would effectively mean the construction of a new airport. It would not increase the capacity of the existing airport. There would be a reduction in the number of people within the higher ANEF contours but there would probably be little change in the number of people between 20 and 30 ANEF.

284. The present New South Wales Government opposes any expansion of the operations at Kingsford-Smith Airport and supports a second airport to be built and brought into operation at the earliest possible date. The Sydney Councils also are opposed to any further development of the airport. It is generally accepted by the Councils that Kingsford-Smith will continue to operate as a major airport for Sydney provided that it is operated within accepted capacity and environmental standards.

285. The Commonwealth Government has stated that Kingsford-Smith Airport will have to handle traffic for some years to come and the improvement of the Airport's facilities is essential to meet growing public demand. These improvements include

taxiway development and improvements to the international and domestic terminal areas. 286. The Commonwealth Government is in the process of identifying and acquiring a site for a second Sydney airport. The Government advised that the timing of the development of a second airport is a matter for decision at a later date. The role which a second airport would fulfil has yet to be determined.

287. The Department of Aviation advised that even with the provision of new taxiways the present Sydney airport would be operating at full capacity by 1992 or 1993. A close spaced parallel runway which was proposed by a previous Government would increase capacity at the airport by 30 per cent and would enable the airport to operate well beyond the turn of the century. The previous proposals for a close spaced parallel runway at Kingsford-Smith have been abandoned by the present Government.

288. The Department advised that while detailed costing had not been undertaken the cost of building a 2600 metre runway at a new site to take trunk domestic jets with a capacity of two million passengers a year would be in the order of \$200 million. A close spaced parallel runway at Kingsford-Smith of the same length would be in the order of \$150-\$200 million. The costs of construction of the runway at the new site does not take account of costs to the industry and the provision of infrastructure. The Department advised that the construction of a second airport at Sydney would do little to ameliorate aircraft noise at Kingsford-Smith unless traffic was forceably required to use the second airport.

## CONCLUSIONS

289. All the capital works proposed to the Committee would reduce the number of people affected by aircraft noise and may be justifiable if noise was the only criteria. Sydney is the only airport where works can be justified on present capacity or operational grounds. The Committee has been placed in the difficult position of allocating a priority to various capital works programs. The Committee believes, after considerable deliberation, that should a capital works program be developed based on noise criteria, the highest priority should be given to those airports where the noise intrusion is greatest as determined by the number of persons within the 20 ANEF contour. The Committee therefore concludes that Sydney followed by Adelaide should be given the highest priority in this regard.

290. The Committee is also conscious that it has examined the problems associated with airports and aircraft operations in isolation. Aviation and its adverse effects is just one of the problems faced by urban communities. The Committee is not in a position to determine the priority which should be given to alleviating noise effects compared with other Government priorities such as education, health, housing and other social welfare problems. To undertake an extensive and effective capital works program relating to airports would cost many billions of dollars.

291. Notwithstanding the Committee's comments in the previous paragraph it believes that the Government needs to establish a national airports priority development program to overcome the ad hoc approach to airport development which has existed in the past. In developing this program the Committee believes that it is essential for noise considerations to be given a high priority. It also believes that in the development of the national priority program no major capital works should be undertaken at existing metropolitan areas which would add significantly to the present adverse effects of aircraft and airport operations. Should resources become available and a capital works program be developed for noise alleviation purposes highest priority should be given to those airports with the worst noise problem.

292. The Committee considers that development options at Adelaide should be examined by the Department of Aviation to ascertain if a cost-effective works program can be developed. The Committee notes that in the Department's view the proposals submitted by the Adelaide Councils would effectively mean the construction of a new airport at the existing site. An option which the Committee has not examined in detail but may result in a reduction in the number of people adversely affected by aircraft operations would be the extension of the existing 05-23 runway. The Committee believes that this and other options should be fully examined in consultation with the local community.

293. The Committee notes that acceptance by the community and local and State Governments of the operation of Perth Airport on a curfew free basis is conditional on the construction of a wide spaced parallel runway to redistribute aircraft noise. The Committee is also aware of an undertaking by a previous Government in 1970 to provide such a runway. The safety factors outlined in a submission from local councils as justification for the provision of the new runway warrant close examination by the Government. The Department of Aviation advised that a parallel runway cannot be justified on operational grounds until well into the next century. It is the view of the Committee that, in time, a parallel runway at Perth Airport is justified subject to the priorities contained within this Report.

294. The existing problems are a result of a continuation of ad hoc development and a lack of understanding of the problem of aircraft noise. Accordingly the Committee recommends that:

- a national airports development program be developed by the Commonwealth Government in consultation with State and local governments which takes account of aircraft noise nuisance; and
- if a capital works program is developed based primarily on noise considerations highest priority should be given to those airports worst affected by aircraft noise as measured by the noise exposure forecast system.

295. A number of witnesses commented that the problems relating to capacity, noise and safety would be alleviated if the type of aircraft permitted to use major airports was rationalised. Requests to prohibit the operations of general aviation aircraft on both safety and noise grounds were made, particularly for Adelaide. The Committee believes that this is an area which the Department of Aviation should investigate. Accordingly the Committee recommends that:

**the Department of Aviation review general aviation operations, particularly discretionary operations, at major metropolitan airports.**

## Chapter 9 Conclusions

'... public servants ... have all the technical expertise to come and argue[against] what any single citizen puts up and they have the force and the numbers of vast departments to put them down.'

*Federal Member for Hindmarsh*

### DEPARTMENTAL ATTITUDES

296. The relationship between the Department of Aviation and communities surrounding airports is not good. Over the period of the inquiry a number of comments were made regarding the attitude of the Department to complaints or suggestions put to it by the public and the lack of consultation with outside bodies during the decision making process on major matters. The majority of comments related to the impersonal manner in which complaints were handled, the apparent lack of concern shown and the reluctance to investigate and report. It was stated that forbearance and understanding of the problems raised was required by the Department.

297. It was also considered that the information the Department supplied was either too technical to comprehend or was usually only an unsatisfactory justification for the nuisance. A further area of concern was the inefficiency of the telephone service for complaints. Problems raised were that the number was not adequately publicised or had changed, an answering machine was used for much of the time and there was a lack of a suitable response to the complaint.

298. Specific examples illustrating the attitude of the Department of Aviation include the announcement of the parallel runway at Sydney only two months after the Department had undertaken to discuss all matters fully before decisions and announcements were made; the preferred option of the Department for the redevelopment of Perth Airport which did not recognise a possible parallel runway despite community expectations and the purchase of land by the Commonwealth for this purpose; failure to follow-up some NAL findings such as television flicker; inactivity to investigate and apply overseas remedies; and the provision of incomplete or misleading information. In general according to complainants the Department does not publicise various planning options supported by firmly expressed opinions and is concerned with running an airport and making it safe and efficient, but not concerned with the problems it generates.

299. The Committee also received many responses favourable to the Department. It was mentioned by some councils that the Department was responsive to advice given and complaints received prompt consideration and investigation. Other councils stated that liaison with the Department had increased considerably and an excellent relationship had been formed with regular meetings held to discuss various matters. It is clear from the public meetings organised by the Committee that sections of the community are impressed with the actions taken and concern shown by regional officers appointed to deal with the public.

300. It appears that the Department has now become conscious of its public image and has taken steps to improve its profile and acceptability to the community. It has adopted a more personal approach to the handling of complaints with an officer contacting complainants either directly or by telephone and explaining the Department's response to the problem less ambiguously than previously.

301. A Second Sydney Airport Community Access Program has been established by the Department to provide information, seek the views of the public and ascertain community

attitudes on the proposed second airport. As part of this program a Community Access Centre has been set up in Sydney which contains a manned display and a toll free phone number, local displays were located in the vicinity of the two sites selected for investigation, briefings are being provided to public meetings, community groups and local councils, written material has been widely distributed, a telephone survey was conducted and a bus is visiting various locations to provide information and answer questions.

302. The Department is also preparing booklets, to be distributed to people living near airports, explaining various aspects of aviation and its problems.

303. In reaching its conclusions relating to the Department's relationships with the community the Committee realises that there are many aspects of airport and aircraft operations and airport development which are highly political. To some extent the Department has been constrained by government policy and directives in its community relation activities and the nature and extent of the information it has been able to provide. Some unpopular decisions, for which the Department has been criticised, were government decisions. Notwithstanding these comments the Committee notes that all government departments are required to work within government policy and seem to have achieved sound working relationships with the communities they serve.

304. It appears that the problems concerning relationships between the Department, local government and the community can be categorised as follows:

- community expectations;
- communication; and
- misunderstanding of procedures relating to the operation of airports and aircraft.

305. The role of Essendon Airport and the construction of a parallel runway at Perth are two examples of where community expectations have resulted in a deterioration in relations between the Department of Aviation, local government and the community.

306. It is apparent that with the transfer of jet passenger operations from Essendon to Tullamarine in the early 1970s there was an expectation that there would be a cessation of operations at Essendon. Various community witnesses cited press reports which widely speculated on the future alternative uses for the land. Local government witnesses advised that there was an expectation within the community that the airport would close but the councils emphasised that no correspondence from past or present Ministers for Aviation had ever made such a statement. The Department of Aviation tabled newspaper reports which indicated that neither the Department nor the Minister stated that the airport would close. Despite these comments from Aviation authorities speculation relating to the future of the airport continued. It is the Committee's view that if the Government and Department was more actively concerned with its relations with the community a more concerted effort would have been made to clarify the situation relating to Essendon.

307. Similar misunderstandings have arisen relating to the construction of a parallel runway at Perth. In 1970 the Commonwealth commenced to acquire properties adjacent to the airport to guarantee the integrity of the airport's future development and at the same time to provide additional noise buffer zones. The land would facilitate the construction of a parallel runway. In October 1971 the then Minister for Civil Aviation announced that the proposal to build a parallel north-south runway with an appropriate buffer zone would effectively move the noise nuisance a considerable distance to the east and away from areas most sensitive to aircraft operations at Perth Airport. The Department of Aviation in 1970 advised councils that there was little likelihood of the parallel runway being required before 1980 at the earliest. The councils advised the Committee that they were then of the clear understanding that a wide spaced parallel runway would be built to alleviate the noise nuisance on the residents of Belmont and surrounding municipalities and that it was not unreasonable to expect that that runway would have been operational by now.

308. The Department of Aviation advised the Committee that construction of a parallel runway could not be justified on capacity grounds in the foreseeable future. They also argued that no commitment had been given by the Department or the Government for its construction before it was required for operational purposes.

309. From an examination of the documents presented to it the Committee agrees that no specific commitment was made to construct the parallel runway for noise abatement purposes alone. However, nowhere in the correspondence or ministerial statement was it specified that the primary consideration for the construction of the parallel runway would be the capacity of the airport. The Committee concludes that the information provided by the Aviation portfolio in the early 1970s was incomplete and has resulted in the conflict and ill feeling which exists between the Department of Aviation, the Perth Councils and the community.

310. The Committee is concerned that statements and decisions relating to second or new airport sites in Sydney and Adelaide may lead to false expectations. Care should be exercised by the Department and the Minister when discussing these matters. In the case of Adelaide no decision has been made relating to the purchase of land, let alone the construction of a new airport. In the case of Sydney it is Government policy that Kingsford-Smith will remain the major airport for Sydney.

311. It is obvious that there is a great deal of misunderstanding about the procedures relating to the operation of airports and aircraft. This is evidenced in comments relating to variability in flight paths, use of non preferred runways and breaches of the curfew. The Committee is satisfied that aircraft and airport operations are in accordance with stated government policies and procedures. This observation by the Committee however should not be taken as an endorsement of all those policies and procedures. The Committee notes that the Department recognises the need for improved public understanding and is examining ways and means of disseminating information.

## **NOISE IN DECISION MAKING**

312. During the hearings a number of witnesses proposed that noise was only a secondary consideration in the decision-making process of the Department and it was contended, as an example, that many standard instrument departure decisions were for the convenience of the airlines and were not made to minimise noise. It was agreed that on occasions noise abatement procedures do show that noise is taken into account but it was maintained that on balance capital works decisions take account of noise only when all other criteria are satisfied. The Department refuted these assertions and listed examples of actions taken by it to minimise noise. These included the adoption of the NEF system, curfews, rearrangement of flight paths, noise monitoring and using the International Civil Aviation Organisation as a forum to press for reduction in noise levels.

313. The Committee considers that the majority of operational and administrative procedures have been developed for reasons other than noise. Development of flight paths and runway usage are determined for operational and economic purposes rather than because of the impact of these procedures on surrounding communities. Notwithstanding these comments it is clear that when alternatives are available the Department of Aviation chooses procedures which have the least noise impacts. Curfews, preferred runways and some standard instrument departures have been implemented for noise abatement purposes, but only when these procedures have minimal economic and operational disbenefits.

314. Noise considerations are of only secondary importance in capital works decisions. The preferred options of the Department of Aviation for the redevelopment of Perth Airport and their attitude to the early construction of the parallel runway are clear

examples. In addition the decisions relating to the new airport at Brisbane (which has significant noise benefits) was only taken when a comparative analysis of the costs of a new airport and the redevelopment of the existing site indicated that the costs were the same. Similarly decisions relating to acquisition of land for a second Sydney airport are the result of capacity considerations at Kingsford-Smith rather than a conscious effort to alleviate the noise at that airport. Decisions relating to Tullamarine were made because Essendon could not be redeveloped to accommodate increasing traffic.

315. The Committee agrees with the Department of Aviation that safety should always be the primary consideration. Economic considerations are also important. The Committee believes however that aircraft noise is the most significant environmental effect of airport and aircraft operations and as such requires careful consideration in the decision making process. In previous sections of the Report the difficulties in determining a proper weighting for noise based on costs are discussed. The Committee concludes that cost benefit analysis cannot be applied effectively to noise effects. Therefore the weighting given to noise will often be subjective. However in all the decisions having significant noise impacts this factor must be identified and fully examined. In the past the Department has readily dismissed noise abatement measures on the basis of cost.

## CONSULTATION

316. The Committee is concerned that the Departments of Aviation and Defence do not appear to take initiatives to ensure that planning authorities are provided with necessary information to assess the impacts of alternative developments. It also appears the planning authorities do not always approach the Departments to seek information. The failure to consult was illustrated during the hearings relating to Canberra Airport. While only three planning authorities are involved, namely Queanbeyan City Council, Yarrowlumla Shire Council and the National Capital Development Commission (NCDC) communication between these authorities and the Departments of Defence and Aviation is unsatisfactory.

317. The NCDC, as part of its planning responsibilities, keeps the Departments of Aviation and Defence informed of its planning policies. The Commission provided the Departments of Defence and Aviation with their planning policy for Metropolitan Canberra for comment. The Commission advised that all that was received from both Departments was an acknowledgment, even though the ANEF contours used in development of that policy were five years out of date. Operational procedures and aircraft types have significant implications for planning but these matters are not discussed with the Commission. At present there is no regular liaison between the NCDC and the Departments of Defence and Aviation, although the Department of Defence has agreed in principle to some machinery being established. The Department of Aviation considers that such liaison is unnecessary. The Commission observed that there seems to be some reluctance on behalf of the Department of Aviation to have the Commission involved in any major way in the planning of the airport.

318. The Queanbeyan City Council advised that while they had access to ANEF charts it was not until they appeared before the Committee that they had seen charts which demonstrated the many flight paths used for approaching, departing and training aircraft. The City considered that this sort of information is essential. Plans for sub-divisions which may be affected by aircraft noise have not been submitted to the Departments of Defence and Aviation for advice.

319. The Yarrowlumla Shire Council advised that their local environmental plan was made publicly available and consultation was invited from all authorities. The only consultation with the Department of Aviation was at the initiative of the Shire because of prompting from the National Capital Development Commission. The Shire advised that



nothing had been volunteered to Council by the Departments of Defence or Aviation in relation to any of the flight paths or any other information which should have been taken into consideration at the time that the plan was on exhibition. The Department of Defence did not make Council aware that one particular sub-division would be subject to up to 50 helicopter movements per day. The Shire described its relationship with the Departments of Defence and Aviation as non-existent. The Shire believes that the responsibility for the provision of information lies with the aviation authorities rather than those authorities relying on approaches from local government.

320. The Department of Defence advised that they did not approach local government in areas surrounding Canberra because the developments discussed during the hearing related to areas outside what would normally be considered high noise areas. The Department jointly with the Department of Aviation has taken steps in producing noise exposure forecasts and makes these available to land use planning authorities. Where noise is seen as a more serious problem the Department takes positive steps to consult with local government and other planning authorities. The Committee is aware that this has in fact taken place, certainly in the case of Edinburgh Air Force Base in South Australia. The Department advised that it is very willing to participate in any improved consultative processes which might be established for military airports in general and Canberra in particular.

321. The Department of Defence attitude is in marked contrast to that of the Department of Aviation. While the Department consults with other authorities concerning major planning matters, general operational matters and minor capital works programs at Canberra Airport are not discussed with planning authorities. In response to NCDC criticism that no comments were received from the Department of Aviation relating to their Metropolitan Canberra Development Plan, the Department advised that they would not respond to a document unless there was some content in it or some aspect of it which impinges on areas for which the Department is responsible. This comment ignores the fact that the Development Plan will influence planning in Canberra into the next century and that noise contours shown in the Plan were forecasts made in 1973 for 1985.

322. The Department advised that there are over 140 cities, Municipalities and Shires in New South Wales alone and it would be impossible to consult with each of these. The Department does consult with those in areas adjacent to airports within the 20 ANEF. The Department further advised that airport committees which would include local government representatives will be established in various parts of Australia.

323. The Committee acknowledges the difficulties that both the Departments of Defence and Aviation would have in consulting every local government authority which was subject to aircraft flyover. It appears however that the Departments generally confine their activities to those areas where unsuitable development may adversely effect the operation of airports. There seems to be little concern on the part of the Departments that their activities may have adverse social effects in areas which are not normally considered high noise areas.

## AIRPORT COMMITTEES

324. Noise Abatement Committees operate at most major airports with varying degrees of effectiveness. Some committees have had little effect because of infrequent meetings, lack of interest and the feeling of hopelessness by members. Others meet more regularly and are performing a useful if limited function.

325. Noise Abatement Committees were established in 1970, as advisory bodies, to improve public understanding of the aircraft noise problem and to facilitate public participation in finding the most satisfactory solutions, to maintain a liaison between airlines, community groups, the Department of Aviation and Government representatives

on methods of alleviating the impact of noise on housing and other community projects, and to act as a clearing house for specific noise nuisance complaints.

326. Criticisms of the Noise Abatement Committees were that they make little progress because of the lack of co-operation of the Department and that membership of the committees was weighted in favour of the Department and the airlines. The Department of Aviation believes that some difficulties with the proceedings of the committees are brought about by the fact that, at the local government level, they are not meeting with local government officers who have expertise in particular areas, but with the elected representatives who are usually not as proficient in dealing with the technicalities involved.

327. The Department has always resisted allowing small groups, which do not represent the community in general, being permanent members of the committee. However if any group has a particular view they are sometimes invited to present that view to the committee.

328. The Minister has proposed that Noise Abatement Committees be discontinued and broader-based committees be established at each major airport. In addition to considering noise issues the committees would provide the Minister and the Department with advice on all major issues of concern regarding the airport and the surrounding communities. It is believed that these broader-based committees would improve the consultative process and give a better feedback as to what is actually happening in the community including the feelings emanating from the community. Community organisations are supporting the establishment of airport committees provided that community representatives are involved and notice is taken of decisions emanating from them.

329. The Department of Defence has stated that it would have no objection, in principle, to participating in liaison committees or other consultative processes with communities around military airfields, provided it could be seen that some practical purpose might be served. The Department is in constant communication with the Department of Aviation and standing committees have been set up which deal with specific aviation matters.

330. At Lambert-St Louis International Airport in the United States the local community was involved in the development of an airport environs plan. Through the existence of community advisory committees, which represented a broad cross section of the general public, they had input to plan proposals from the perspective of citizen and group interests. In order that full community involvement was ensured sub committees were formed to review specific problems. Neighbourhood meetings and public forums were held and newsletters published and distributed.

331. The Committee supports the establishment of airport committees with charters which would enable them to discuss all aspects of airport planning and operations. Accordingly the Committee recommends that:

**airport committees be established at all major military and civil airports to undertake discussions and make recommendations on all matters relating to airports and aircraft operations.**

## **DEPARTMENTAL FUNCTIONS**

332. The defined functions of the Department of Aviation are to formulate, implement and oversee operational standards and procedures for the safe conduct of flight operations; plan, provide and operate airport and airway facilities; promote measures for the improvement of air safety including the investigation of aircraft accidents and incidents; provide advice to the Government on aviation matters and administer policies, and carry out and assist research into aviation matters. The Department is divided into eight

Divisions and the Bureau of Air Safety Investigation all of which contain various Branches and Sections.

333. While there is no specific mention of environmental aspects in the Department's functions or the Air Navigation Act and Regulations there are two Divisions which contain Sections with responsibility for environmental matters. In each regional office there is one specialist involved in this area of the Department's functions.

334. The Federal Airports Corporation (FAC) will be established in 1986 to manage the major capital city airports. While one of the objectives of the FAC will be to make airports better neighbours to the communities which they serve it will also be required by its charter to place airports on a sound commercial basis to produce an adequate return on investment. The Committee has no doubt that there is a built in conflict between these two objectives. If Sydney is taken as an example the FAC may define the community which it serves as the Greater Sydney Region. In this instance the Committee wonders what weight will be given to the views of those located close to the airport.

335. The Committee believes that it is essential that the charter of the FAC clearly recognises the special interest of the community most likely to be adversely affected by the operation of the airport. The need to take account of environmental aspects must be specifically included in the legislation establishing the FAC.

336. To provide a balance to the economic objectives of the FAC the Committee believes that an environmental policy and assessment branch should be established within the Department of Aviation. The responsibilities to remain with the Department have not been determined but it is likely that air traffic control and navigation will continue as responsibilities of the Department. The Committee considers that noise certification of aircraft, curfews, preferred runways and all noise abatement procedures should remain with the Department. In addition should the Committee's recommendations relating to noise and flight path monitoring be accepted these facilities should be operated by the Department as they relate directly to aircraft operations.

337. The Committee has no objection to the FAC having responsibility for capital works decisions but these should be subject to independent assessment by the environment unit within the Department. The Department would also be responsible for developing environmental guidelines within which the FAC should operate. Accordingly the Committee recommends that:

- an environment policy and assessment branch be established within the Department of Aviation, within the Department's approved average operative staffing level, to —
  - develop and monitor noise abatement procedures at airports,
  - assess capital works programs,
  - develop environmental policy guidelines, and
  - assess complaints relating to aircraft operations;
- the Air Navigation Act be amended to include environmental matters; and
- legislation establishing the Federal Airports Corporation specify consideration of environmental matters in the functioning of the Corporation.

## IMPLEMENTATION OF RECOMMENDATIONS

338. Upon the tabling of the Report the Committee ceases to exist as it is a select committee and automatically expires when its Report is presented. The Committee believes that the House of Representatives Standing Committee on Environment and Conservation should assume the role of ensuring that the recommendations are fully examined by the Government and monitor their implementation. Accordingly the Committee recommends that:

**the House of Representatives Standing Committee on Environment and Conservation monitor the consideration of the Report by the Government.**

PETER MILTON  
*Chairman*  
September 1985

## APPENDIX 1

### Dissent by Mr Burr, Mr Fischer and Mr Webster

Pursuant to Standing Order 343 we add this dissent to the Committee's Report.

We agree with the conclusions and recommendations contained in the Report with two exceptions. These two matters upon which we disagree with the majority of the Committee relate to the use of Commonwealth powers in land use planning and the construction of a parallel runway at Sydney Kingsford-Smith Airport.

We agree with the conclusions and recommendations in paragraph 246 that the land use compatibility advice of the Departments of Aviation and Defence should be adopted by Commonwealth, State and local governments to ensure proper land use planning in areas surrounding airports. We strongly support the consultative process outlined in the recommendation. We cannot however, agree to the recommendations in paragraphs 254 and 255 which request the Commonwealth to legislate to over-rule legitimate State powers in the area of land use planning and control.

We acknowledge that there has been an appalling lack of commitment by both State and local governments to ensure that the environment surrounding airports is preserved not only to allow for the efficient use of the airport but to ensure the well-being of the community. State and local government authorities must accept full responsibility for the hardship and discomfort caused by inappropriate development decisions. We firmly believe however, that for the Commonwealth to take direct action would set a dangerous precedent for action in other areas which are the legitimate responsibilities of the States. In line with our previous comments we fully support the Committee's condemnation in paragraph 231 of South Australian State and local government planning authorities relating to developments close to Edinburgh RAAF Base, but cannot support the conclusion that direct unilateral action be taken by the Commonwealth.

We consider that it is essential for the Commonwealth to acquire sufficient land at the time of planning an airport to ensure that an effective noise buffer zone is created. We note the confusion and misunderstanding relating to land acquisition for Tullamarine Airport. In the absence of firmly stated and agreed principles and objectives unsuitable development has occurred. The Attorney-General's Department advised of the difficulty in the Commonwealth and the States agreeing to legally binding contracts. This however does not preclude the two levels of government reaching clear and precise agreement that the States would legislate to maintain the integrity of land surrounding the new airport. We consider that in the absence of such an agreement the Commonwealth should not proceed with airport construction.

The second matter of disagreement relates to the construction of a close spaced parallel runway at Sydney Kingsford-Smith Airport.

The previous Coalition Federal Government in 1982 decided to proceed with the construction of a close spaced parallel runway at Sydney Airport. The new runway was to be 2600 metres in length, parallel with and located to the east of the existing 16-34 runway commencing south of runway 07-25 and extending into Botany Bay. In announcing its decision the Government advised that in 1981 delays to passengers and operators at Sydney could have been at a cost of at least \$30 million.

We fully support the decision of the previous Government and believe that the arguments for the construction of the runway are now even stronger. It is our view that the reality is that whatever decision is made relating to the location and role of the second Sydney airport, Kingsford-Smith will continue to operate as the major domestic and

international airport for Sydney. The existing runway system will reach full capacity by 1992 and for the safe and efficient operation of Sydney Airport planning for the close spaced parallel runway must commence immediately.

A decision not to proceed with the construction of a new runway at Kingsford-Smith could add to the noise problems at Sydney. The acquisition of land, planning and construction of a new airport could take about 15 years. Action will need to be taken at the existing airport to enable it to operate in the intervening period. One probable means of achieving an increase in capacity of the existing airport will be to alter runway usage which will result in an increased usage of non preferred runways with resulting increases in noise exposure over built-up areas. The close spaced parallel runway would enable most departures to be restricted to Botany Bay. A parallel runway could be available in 6 or 7 years. Because of the changed operational arrangements which the new runway will make possible there will be some alleviation of noise in suburbs to the west and no significant change in the overall noise exposure.

Adoption of the Committee's recommendations relating to noise and flight path monitoring and revised operating procedures together with the construction of a close spaced parallel runway will ensure that Sydney Kingsford-Smith Airport will be able to operate as a safe and efficient airport with minimum disruption to the surrounding communities.

M.A. BURR

T.A. FISCHER

A.P. WEBSTER

## APPENDIX 2

# The Inquiry

### BACKGROUND

In November 1968 the House of Representatives appointed a Select Committee on Aircraft Noise to inquire into and report on the effects of aircraft noise on persons, property, institutions and communities. The Report of the Committee was tabled in 1970. The recommendations and action taken by the Government are at Appendix 5.

The Parliamentary Standing Committee on Public Works in a report tabled in 1982 (PP No. 50/1982) concluded that there was a need for a further study by a Parliamentary Committee into aircraft noise and recommended that the House refer the matter to the House of Representatives Standing Committee on Environment and Conservation.

### TERMS OF REFERENCE

On 21 June 1982 the Minister for Aviation referred the matter of aircraft noise to the House of Representatives Standing Committee on Environment and Conservation for inquiry. At the time of the dissolution of the 32nd Parliament the Committee had held one public hearing. The Inquiry was re-referred to the Committee in the 33rd Parliament on 20 May 1983 and at the conclusion of that Parliament the Committee had almost completed taking evidence. The Committee recommended in an unfinished inquiry report that a select committee on aircraft noise be appointed in the new Parliament to complete the Inquiry.

Upon the commencement of the present Parliament the Select Committee on Aircraft Noise was appointed to finalise the Inquiry. This Report is the result of the work of the Committees mentioned above.

The terms of reference require the Committee to inquire into and report on the effects of aircraft operations on the environment surrounding airports.

### CONDUCT OF THE INQUIRY

During the Inquiry submissions were invited from interested people through the medium of national press advertisements and by written invitations to various organisations and government instrumentalities.

Evidence was taken at public hearings from 163 witnesses representing Commonwealth and State Government departments and instrumentalities, local government bodies, community groups, industry and individuals appearing in a private capacity. A list of witnesses who appeared before the Committee is at Appendix 3. The Committee received over 600 submissions and documents and recorded 3660 pages of evidence at public hearings. Evidence given at public hearings is available for examination in *Hansard* form at the National Library or at the House of Representatives Committee Office. A list of submissions received is at Appendix 4.

The Committee conducted 15 public hearings which were held in Canberra, Melbourne, Launceston, Perth, Adelaide, Brisbane and Sydney. Informal discussions and inspections were undertaken at Canberra, Melbourne, Essendon, Moorabbin, Launceston, Perth, Brisbane, Sydney, Bankstown and Adelaide Airports, Fairbairn, Richmond and Edinburgh Air Force Bases and at the National Acoustic Laboratories, Sydney.

## AIMS OF THE INQUIRY

The Committee has been able to determine the extent of the aircraft noise problem, through discussion, consultation and first hand observation. It believes that the recommendations if implemented will either solve or reduce the problems or at least ensure the problems related to aircraft operations do not worsen and ensure that airports operate as far as possible in a manner compatible with the surrounding communities.

The Committee visited all the major capital city airports, some of the larger secondary and light aircraft airports and three air force bases during the course of the Inquiry. As a result of time constraints and cost factors it was not possible to visit and take evidence at all airports in Australia which suffer noise or noise related problems. However it is felt that as a broad cross section of aviation facilities was inspected and information was supplied by a large variety of sources sufficient information has been obtained to formulate meaningful recommendations.

## APPRECIATION

The Committee acknowledges the co-operation and assistance from all who made submissions, assisted with inspections and gave evidence to the Committee. Local Government was particularly helpful in providing meeting rooms for the conduct of the public hearings. The Committee also wishes to make special mention of the officers of the Department of Aviation for courtesy shown and their frankness despite, in some instances, implied criticism of their own actions.

Although a majority of the evidence was taken by the Standing Committee on Environment and Conservation in previous Parliaments, the conclusions and recommendations are those of the present Select Committee. The Committee appreciates the contribution made to the Inquiry by the members of the previous Committees.



## APPENDIX 3

### List of Witnesses

Anderson, Mr E.M.	Assistant Secretary, Environment Division, Department of Home Affairs and Environment
Anderson, Mr G.P.L.	Assistant Secretary, Policy and Development, Facilities Division, Department of Defence
Angus, Mr F.	Deputy Mayor, City of Henley and Grange, and Member, Western Region of Councils (South Australia)
Arnett, Mr P.J.	Chief Town Planner, Marrickville Municipal Council
Arnold, Hon. L.M.F.	Minister of Education and Minister for Technology (South Australia)
Atherton, Mr H.E.	Private Citizen
Austin, Captain R.	Safety Council Representative, Australian Federation of Air Pilots
Badham, Mr I.F.	Deputy Director, Division of Noise Abatement, Department of Mapping and Surveying (Queensland)
Baker, Mr A.R.	Health Surveyor, City of Canning
Barrett, Mr G.J.	Supervisor, Air Traffic Control, Queensland Region, Department of Aviation
Beattie, Mr B.C.	City Manager, Essendon City Council
Bicknell, Mr H.G.	Principal Technical Officer, Noise, Facilities Division, Department of Defence
Birch, Mr I.	Guildford Study Group (Western Australia)
Botwood, Mr J.G.	Senior Vice President, Civil Air Operations Officers' Association of Australia
Boyce, Mr H.W.	Town Clerk, City of West Torrens (South Australia)
Boyd, Mr D.Mc.	Schedule Planning Manager, Qantas Airways Ltd, and Member of Curfew Working Group, Aviation Industry Advisory Council
Boys, Mr R.I.	Air Traffic Control Check Controller, Department of Aviation
Brady, Mr J.W.	Deputy Mayor, Leichhardt Municipal Council
Brass, Mr A.	Secretary, Community Committee on Essendon Airport
Bricknell, Wing Commander K.J.	Acting Director, Air Force Plans, Policy and Plans — Air Force, Department of Defence
Brookes, Mr H.G.	Warden, Municipality of St Leonards (Tasmania)
Brown, Mr D.G.	Senior Supervisor, Air Traffic Control, Department of Aviation

Bruce, Mr G.P.	Systems Development Engineer, Ansett Transport Industries, and Member of Curfew Working Group, Aviation Industry Advisory Council
Burrowes, Mr N.E.	Secretary, Anti Airport Noise Association (South Australia)
Cahill, Captain D.	Chief Pilot, IPEC Aviation
Cameron, Air Commodore D.G.	Director-General, Policy and Plans — Air Force, Department of Defence
Cameron, Major R.A.C., MC	Councillor, Municipality of Evandale (Tasmania)
Cameron, Mr R.A.	City Engineer, Essendon City Council
Carvosso, Mr P.D.	Secretary, Western Region of Councils (South Australia)
Challis, Mr L.A.	Consultant
Christiansen, Mr R.M.	Chief Health Surveyor, City of Belmont (Western Australia)
Cockburn, Mr R.F.	Regional Manager, Central Area, Department of Planning (Victoria)
Cook, Mr L.I.	Aeronautical Engineering Manager, Qantas Airways Ltd, and Member of Curfew Working Group, Aviation Industry Advisory Council
Cooper, Mr D.S.	Buildings Administrator, City of Belmont (Western Australia)
Cownley, Mr P.J.	Councillor, City of Keilor, and Representative, Australian Mayoral Aviation Council
Cramond, Mr J.	Technical Services Manager, Trans Australia Airlines
Cruickshank, Mr R.A.	Land and Property Officer, Shire of Kalamunda
Cumming, Mr P.R.	Director, Tamar Regional Master Planning Authority
Darling, Mrs E.E., MP	Private Citizen
Davidson, Captain J.E.J.	Flight Superintendent, Training, Trans Australia Airlines
Deveson, Mr B.E.J.	Executive Director, Regional Airlines Association of Australia Ltd
Dinnie, Mr P.A.	Acting Superintendent, Environment and Security, Department of Aviation, and Secretary, Perth Airport Noise Abatement Committee
Doyle, Mr P.	Airport Director, Launceston Airport, Department of Aviation
Dundas, Mrs B.	Member, Guildford Study Group (Western Australia)
Edmonds, Mr R.J.	Private Citizen
Elliott, Miss A.C.	Private Citizen
Evenett, Mr M.L.	Acting Director, Environmental Engineering, Airways Division, Department of Aviation
Felgenhaur, Dr J.W.	Director, Environmental Hygiene Section, Public Health Division, Department of Health
Firmstone, Mr P.J.	Real Estate Institute of New South Wales
Ford, Mr A.S.	Town Clerk, Botany Municipal Council

Fraser, Mr A.	Assistant Secretary, Strathmore Progress Association
Fuller, Mr R.	Town Clerk, Rockdale Municipal Council
Gallery, Mr A.F.	Acting Chief Property Officer for New South Wales, Department of Local Government and Administrative Services
Gardner, Mr R.M.	President, Strathmore Progress Association
Gardwood, Mr B.M.	Council Clerk, Municipality of Evandale (Tasmania)
Garner, Mr A.T.	Assistant Secretary, Broadcasting Services Division, Department of Communications
Gerlach, Mr D.K.	Acting Assistant Regional Director, Flying Unit, V/T Region, Department of Aviation
Gilchrist, Mr J.	Director, Metropolitan and Canberra Central Planning, National Capital Development Commission
Golding, Mr D.	Member, Community Resource Centre (New South Wales)
Grubb, Mr B.P.	Private Citizen
Hardman, Mr D.C.	Superintendent, Environment Operations, Airways Division, Department of Aviation, and Member of Curfew Working Group, Aviation Industry Advisory Council
Harris, Mr B.G.	Principal Airways Engineer, Department of Aviation
Harris, Mr W.B.	Airport Director, Adelaide Airport, Department of Aviation
Hartley, Mr D.	Acting Engineer, Broadcasting Policy and Planning Division, Department of Communications
Haupt, Mr W.T.	Chief Town Planning Officer, Department of Local Government (Queensland)
Haxell, Wing Commander M.J.	Commanding Officer, No. 5 Squadron, RAAF Base, Fairbairn
Hay, Mr D.J.	Treasurer, Municipality of Evandale (Tasmania)
Higgins, Mr J.T.	Town Planner, Essendon City Council
Hoening, Mr R.	Mayor, Botany Municipal Council, and National President, Australian Mayoral Aviation Council
Hollingworth, Mr G.H.	Engineer, Main Roads Department (Queensland)
Holroyd, Mr S.	Secretary, Bexley Aircraft Noise Protest Committee
Hopman, Lieutenant-Colonel J.H.	Senior Executive Officer, Environment, Facilities Division, Department of Defence
Horcicka, Mr J.V.	Private Citizen
Howard, Mr E.	Acting Shire Engineer, Shire of Bulla
Huggett, Mr J.W.E.	Principal Adviser (Airports), Department of Aviation
Hutchinson, Mr J.W.	Deputy Director, Policy Research, Department of Transport (South Australia)

Isherwood, Mr R.G.	Mayor, City of Keilor, and Representative, Australian Mayoral Aviation Council
Jeffery, Mr P.	Acting Principal Legal Officer, General Counsel Division, Attorney-General's Department
Jiggen, Mrs L.	Secretary, Northgate East Progress Association
Johnson, Mr R.G.	Private Citizen
Jones, Mr E.L.	Mayor, Leichhardt Municipal Council
Keil, Mr A.	Professional Adviser, Metropolitan Region Planning Authority (Western Australia)
Kelly, Mrs C.	Co-ordinator, Community Resource Centre (New South Wales)
Keough, Mr J.F.	Chairman, Airport Committee, Western Region of Councils (South Australia), and Representative, Australian Mayoral Aviation Council
Kerin, Mr F.	Acting Senior Assistant Secretary, Property and Agreements Branch, Attorney-General's Department
Kocher, Mrs H.I.	Vice-President, Anti Airport Noise Association (South Australia)
Lade, Mr J.W.	Principal Engineer, Department of Aviation
Lam, Mr R.C.	Acting Assistant Secretary, Advanced Planning and Technology, Airways Division, Department of Aviation
Lane, Captain A.F.	Director of Operations, Ansett Transport Industries
Lang, Mr P.N.	Mayor, Rockdale Municipal Council
Langlands, Mrs N.R.	Secretary, Guildford Study Group (Western Australia)
Lawrence, Associate Professor A.B.	Graduate School of the Built Environment, University of New South Wales
Lee, Mr B.V.	Airport Director, Brisbane Airport, Department of Aviation
Lessels, Air Commodore J.D.G.	Director-General, Accommodation and Works — Air Force, Department of Defence
Lever, Mr D.I.	Private Citizen
Ley, Mr A.	Planning Officer, Melbourne Metropolitan Board of Works
Lyneham, Ms S.	Director, Planning Workshop Pty Ltd (New South Wales)
McCahey, Ms P.F.	Acting First Assistant Secretary, Property Directorate, Department of Local Government and Administrative Services
McCallum, Mr K.R.G.	President, Northgate East Progress Association
McClements, Mr D.A.	Acting Town Clerk, City of Belmont (Western Australia)
McDonald, Mr B.	Alderman, Hurstville Municipal Council
McEwen, Mr D.W.	Shire President, Shire of Bulla
McGuiness, Mr T.G.	Solicitor
Maitland, Mr E.J.	Chairman, Essendon Airport Operators Association

Markham, Mrs J.B.	Private Citizen
Mason, Mr W.B.	Chief Engineer, Department of Aviation
Miller, Mr N.R.	First Assistant Secretary, Facilities Division, Department of Defence
Mulgrew, Mr A.J.	Airport Director, Western Australia Region, Department of Aviation
Nettleton, Mr B.C.	Deputy Town Clerk, Ashfield Municipal Council
Newman, Mr D.	Member, Guildford Study Group (Western Australia)
O'Keefe, Mr H.B.	First Assistant Secretary, Airways Division, Department of Aviation
O'Sullivan, Mr D.	Chairman, Community Committee on Essendon Airport
Ogden, Mrs N.A.	Secretary, Brisbane Airport Curfew Committee
Ogilvie, Mr R.C.	Assistant Town Planner, Queanbeyan City Council
Oma, Ms V.P.M.	Convener, Airport Information Residents' Study Group (Western Australia)
Paterson, Dr J.G.	Mayor, Town of Bassendean
Petersen, Mr P.	Consultant, IPEC Aviation
Plowright, Air Commodore R.W.	Deputy Director-General, Health Services — Air Force, Department of Defence
Plunkett, Mr K., MP	Private Citizen
Pollard, Mr P.H.	Acting Director, Natural Resource Proposals Section, Environment Division, Department of Home Affairs and Environment
Porter, Mr C.F.	Director, Department of Conservation and Environment (Western Australia)
Quay, Ms D.E.	Convenor, Environment Sub-Committee for the La Perouse and Peninsula Society
Rae, Mr F.W.	Mayor, City of Belmont (Western Australia), and Representative, Australian Mayoral Aviation Council
Rathbone, Mr R.W.	Council Representative, Rockdale Municipal Council
Renew, Mr W.D.	Senior Noise Control Officer, Division of Noise Abatement, Department of Mapping and Surveying (Queensland)
Rice, Mr G.E.	Deputy Town Clerk, City of Keilor
Rose, Mr J.A.	Chief Engineer, Noise Investigation Section, National Acoustic Laboratories
Rouse, Mr D.R.	Town Planner, Yarrowlumla Shire Council
Rumsby, Mr A.M.	Sector Manager, Department of Environment and Planning (South Australia)
Sanderson, Mr G.C.	Deputy Director, Premier's Department (Queensland)
Sansom, Mr J.E.	Assistant Secretary, Advanced Planning and Technology, Airways Division, Department of Aviation
Scott, Dr G.H.	Principal Environmental Officer, National Capital Development Commission

Scott, Mr J.L., MP	Private Citizen
Shorthouse, Mr A.Q.	Pilot and Airways Surveyor, Department of Aviation
Smith, Mr R.N.	First Assistant Secretary, Broadcasting Policy and Planning Division, Department of Communications
Stanuovo, Mr V.H.	Committeeman, Anti Airport Noise Association (South Australia)
Sulway, Mr R.B.	Senior Health and Building Surveyor, Special Projects Officer, Queanbeyan City Council
Swadling, Mr F.J.	Superintendent of Airways Operations, Department of Aviation
Szwed, Mr V.	Acting Scheme Controller, Planning Section, Melbourne Metropolitan Board of Works
Tacoma, Mr E.	Mayor, City of Canning, and Representative, Australian Mayoral Aviation Council
Tait, Mr D.R.	Project Officer, Environment Division, Department of Home Affairs and Environment
Taplin, Dr J.H.E.	Co-ordinator General of Transport (Western Australia)
Taylor, Mr I.R.	Senior Noise Officer, Environment Protection Authority (Victoria)
Teodosijevic, Mr V.	Airport Operations Engineer, Trans Australia Airlines, and Member of Curfew Working Group, Aviation Industry Advisory Council
Thompson, Mr K.E.	First Assistant Secretary, Environment Division, Department of Home Affairs and Environment
Travers, Dr D.B.	First Assistant Director-General, Medical Services Division, Department of Health
Turnbull, Mr D.	Planning Officer, Shire of Bulla
Turner, Mr G.	Superintendent, Environment and Security, Department of Aviation
Underwood, Mrs M.	Private Citizen
Wade, Mr R.L.	Principal Airport Engineer, Department of Aviation
Wallace, Mr B.J.S.	Assistant Valuer-General, Valuer-General's Department (Queensland)
Wallace, Mr H.E.J.	Town Clerk, Hurstville Municipal Council
Wareham, Mr S.	Aviation Manager, IPEC Aviation
Warner, Mr S.J.	Shire Clerk, Yarrowlumla Shire Council
Wilkinson, Mr E.N.	Council Clerk, Municipality of St Leonards (Tasmania)
Willheim, Mr E.	First Assistant Secretary, General Counsel Division, Attorney-General's Department
Williams, Mr A.G.	Consultant
Williams, Mr D.J.	Deputy Town Clerk, Corporation of the City of Adelaide
Willshire, Mr D.W.	Chief Property Officer for South Australia, Department of Local Government and Administrative Services

Wong, Mr E.

Woods, Mrs J.K.

Woonton, Mr I.W.

Yates, Mr R.J., AM

Acting Principal Education Officer,  
Department of Education (South Australia)  
Secretary, School Council, Cowandilla Primary  
School

Assistant Secretary, Major Airport Projects,  
Department of Aviation  
Deputy Chief Executive, Qantas Airways Ltd,  
and Member of Advisers Group, Aviation  
Industry Advisory Council

## APPENDIX 4

### List of Submissions

#### PRIVATE CITIZENS

Adams, A., Dingley, Vic  
Adams, G., Luddenham, NSW  
Adams, H., Clarendon, SA  
Adamson, L.W., Camp Hill, Qld  
Angel, J.E., Richmond, NSW  
Atherton, H.E., Evandale, Tas  
Atkins, M.F., Launceston, Tas  
Badman, N.W., Netley, SA  
Baily, R.C., Netley, SA  
Baker, G.C., Dolls Point, NSW  
Bambrick, R.H., Hackett, ACT  
Barbary, L.L., Glenelg North, SA  
Barber, R., Lockleys, SA  
Bartlett, M.N., Ludmilla, NT  
Barton, G. & E., Launceston, Tas  
Bassett, J.M., Launceston, Tas  
Bateman, L.A., Deagon, Qld  
Bayton, C.A., Morningside, Qld  
Beard, D.M., Glenelg North, SA  
Beerts, I.J., Balmoral, Qld  
Berry, S., Maitland, NSW  
Bierton, D., Netley, SA  
Bigelow, J.H., Coorparoo, Qld  
Birch, M., Cundletown, NSW  
Blackmore, E., Ingleside, NSW  
Blight, S., Glenelg North, SA  
Boin, C., Glenelg North, SA  
Bolton, K.R., Acacia Ridge, Qld  
Bonomi, R. & A., Acacia Ridge, Qld  
Bowly, N.E., Richmond, NSW  
Bradshaw, D.G., Richmond, NSW  
Brangwin, M.W., Windsor, NSW  
Brooks, H.R., Hamilton, Qld  
Brown, A., East Melbourne, Vic  
Brown, D.E., Corinda, Qld  
Bruen, E., South Perth, WA  
Brunott, A.F., Acacia Ridge, Qld  
Byrnes, R.R., North Plympton, SA  
Bryson, J.D., Bulimba, Qld  
Buckler, E.G., Aeroglen, Qld  
Buisse, F.V., Cannington, WA  
Burns, E.C., Salisbury East, Qld  
Burrige, B., Hendra, Qld  
Burros, W.M., Richmond, NSW  
Buwalda, A., Wynnum North, Qld  
Byrnes, R.R., North Plympton, SA  
Callen, B., Netley, SA  
Campbell, M., Dingley, Vic  
Campbell, P., Cowandilla, SA  
Carruthers, R., Launceston, Tas  
Carvosso, P.D., Glenelg, SA  
Chapman, R.A.R., Strathmore, Vic  
Chatys, D., Cowandilla, SA  
Claffey, T., Hamilton, Qld  
Clare, M., Hawthorne, Qld  
Clark, N., Canberra City, ACT  
Clifton, F.M., Richmond, NSW  
Coleman, G., West Richmond, SA  
Collins, J., Darwin, NT  
Coniglio, S., Guildford, WA  
Craitem, M. & P., Ascot, Qld  
Crossin, S., Midway Point, Tas  
Curthoys, I. S., Camperdown, NSW  
D'Astoli, R.V., Rockdale, NSW  
Davis, J. & L., Kings Meadows, Tas  
Dawson, E.T., Belmont, WA  
Dawson, R., Guildford, WA  
Dennison, I., Balmoral, Qld  
Dettrick, E.L., Coorparoo, Qld  
DeVine, L., New Farm, Qld  
Dibley, C., Richmond, NSW  
Dixon, W.J., Hawthorne, Qld  
Domanski, J., Brooklyn Park, SA  
Doria, N., Dingley, Vic  
Doyle, P.J., Norman Park, Qld  
Drury, A.J. & S.J., Acacia Ridge, Qld  
Duggan, E.A., Dingley, Vic  
Duigan, M., Walkerville, SA  
Dunn, R.H., Plympton, SA  
Eddolls, R.E., Balmoral, Qld  
Egan, J., Bulimba, Qld  
Ellery, Z.F., Glenelg North, SA  
Elliott, A.C., Newstead, Tas  
Esler, K., Wynnum, Qld  
Evans, T.W., Arncliffe, NSW  
Fagan, T., Cloverdale, WA  
Farrant, R.W., Lockleys, SA  
Fenton, M.E. & P.E., Lockleys, SA  
Fisher, D.M., Wynnum, Qld  
Flaherty, J.A., Torrensville, SA



Fonseca, L., Ashfield, NSW  
 Fowler, R., Dingley, Vic  
 France, H.D., Acacia Ridge, Qld  
 Frankcom, M.W., Watson, ACT  
 Franz, P., Bulimba, Qld  
 Frew, D.A., Keilor, Vic  
 Frommolt, B.R., Acacia Ridge, Qld  
 Gall, J., Wynnum, Qld  
 Garcia, R., Bulimba, Qld  
 Gare, F.E., Shelley, WA  
 Gibbs, W., Queanbeyan, NSW  
 Gilbertson, G.R., Essendon, Vic  
 Gnesier, E., Sawtell, NSW  
 Godfrey, E.C., Acacia Ridge, Qld  
 Godfrey-Smith, R.A., Launceston, Tas  
 Godley, M.W., Alexandria, NSW  
 Godsell, M.C. & T.R., Cloverdale, WA  
 Golding, P., Thebarton, SA  
 Gordon, H., Mile End, SA  
 Gorry, P.E., Cairns, Qld  
 Graham, E.M., Cowandilla, SA  
 Gray, B., Parkdale, Vic  
 Green, A.T., Downer, ACT  
 Greenwood, R., Redcliffe, WA  
 Griffin, N., Acacia Ridge, Qld  
 Gutjahr, C.M., Parkville, Vic  
 Gwynne, J., Richmond, NSW  
 Hadfield, M.J., Breadalbane, Tas  
 Hagan, R.B., Acacia Ridge, Qld  
 Hankin, I., Mordialloc, Vic  
 Harapeet, F.J. & A.R., Guildford, WA  
 Harrison, J.L., Manly, Qld  
 Hastie, E., Penshurst, NSW  
 Haugh, C., Dingley, Vic  
 Hedley, K.M., Queens Park, WA  
 Hele, M.E., Aldinga, SA  
 Hemer, J.M., Turner, ACT  
 Henselin, M.E., Acacia Ridge, Qld  
 Higbed, D.J., Adelaide, SA  
 Higgins, J.F., Norman Park, Qld  
 Higgins, J.W., Acacia Ridge, Qld  
 Hilton, E.M., Toormina, NSW  
 Hoare, R.J.T. & C.A., Wilton, NSW  
 Hoenselin, M.E., Acacia Ridge, Qld  
 Hooper, F.T., Bexley, NSW  
 Horcicka, J.V., Launceston, Tas  
 Horton, M.A., Bexley, NSW  
 Hosking, J., Glenelg North, SA  
 Howard, S., Launceston, Tas  
 Hughes, L. & G., Guildford, WA  
 Hurley, J., Mentone, Vic  
 Hutchison, M.B., Morningside, Qld  
 Hutton, R.K. & L.J., Dingley, Vic  
 Hynes, P., Campbell, ACT  
 Javes, J.W., North Ryde, NSW  
 Jenkins, F.L., Hamilton, Qld  
 Jennings, V.E., Mt. Eliza, Vic  
 Jordan, D., Bulimba, Qld  
 Keidel, L. & G., Bexley, NSW  
 Keizer, J. & J.H., Netley, SA  
 Kennard, L.T., Lockleys, SA  
 Kirkegard, G.A., Bulimba, Qld  
 Kitchener, G., Bulimba, Qld  
 Knowles, L., Belmont, WA  
 Kocher, H.I., Cowandilla, SA  
 Kolberg, L.A., Morningside, Qld  
 Krystman, B., Queanbeyan, NSW  
 Lamb, H. & N., Cloverdale, WA  
 Larkin, J.A., Torrensville, SA  
 Lathouris, R., North Richmond, NSW  
 Lawicki, P., Dingley, Vic  
 Leach, E.J. & L.M., Queens Park, WA  
 Lever, D.I., Adelaide, SA  
 Lewis, W., Freemans Reach, NSW  
 Liekvold, P., Rockdale, NSW  
 Little, B., Stanmore, NSW  
 Livingstone, M., Richmond, NSW  
 Love, N.L. & I.P., Bulimba, Qld  
 Lynch, A., Stanmore, NSW  
 Lyons, M., Greenslopes, Qld  
 McAvoy, J.R., Queanbeyan, NSW  
 McCaughan, M., Guildford, WA  
 McClure, J., Acacia Ridge, Qld  
 McCutcheon, J.J., Hawthorn, Vic  
 McDonald, E., Hamilton, Qld  
 McDougall, J.A. & G.M., Hendra, Qld  
 McGee, K., Salt Ash, NSW  
 McGuinness, T.G., Maroubra Junction,  
 NSW  
 McHallam, M., Mordialloc, Vic  
 Macdonald, G.D., Hamilton, Qld  
 MacIntosh, A., Majura, ACT  
 Markham, J.B., Launceston, Tas  
 Marlow, D.J., Clayfield, Qld  
 Marshall, K.J., Helen Valley, WA  
 Marshall, R.A., Dingley, Vic  
 Martin, J.H., Netley, SA  
 Martin, P., Hamilton, Qld  
 Martin, R.A., Ferndale, WA  
 Mathers, S.D. & E., Launceston, Tas  
 Mazzone, E., Botany, NSW  
 Medway, H., Brighton, Qld  
 Megee, V.L. & E.M., High Wycombe,  
 WA

Meikle, H., Bundaberg, Qld  
 Miller, C., Bexley, NSW  
 Mills, D., Mermaid Beach, Qld  
 Minty, T., Turrumurra, NSW  
 Moore, M.C., Glenelg North, SA  
 Mordaunt, C.A., Hackett, ACT  
 Morgan, B.V. & N.J., Acacia Ridge, Qld  
 Morgan, R. & I., Netley, SA  
 Morphett, J., Brooklyn Park, SA  
 Moylan, J., Kogarah, NSW  
 Navin, J.E.J., McKinnon, Vic  
 Neilson, R., Campbelltown, NSW  
 Ng, C.K., Queanbeyan, NSW  
 Norman, D.K., McGraths Hill, NSW  
 O'Mara, D. & L., Balmoral Heights, Qld  
 Odgers, D., Cloverdale, WA  
 Olsen, L., Hamilton, Qld  
 Oma, V.P.M., Guildford, WA  
 Oosterweghal, J., Hamilton, Qld  
 Orpwood, D.G., Launceston, Tas  
 Otto, J., Redland Bay, Qld  
 Parkes, K.N., Rockdale, NSW  
 Parr, D., Bexley, NSW  
 Pascoe, L. & T., Acacia Ridge, Qld  
 Pascoe, N. & L., Acacia Ridge, Qld  
 Pasfield, N.S. & F.J., West Richmond, SA  
 Patterson, B., Norwood, Tas  
 Phillips, G., West Richmond, SA  
 Pierce, W.G., Canberra City, ACT  
 Pilton, D., Kurralta Park, SA  
 Pirani, G., Greenvale, Vic  
 Plummer, J., Dingley, Vic  
 Pomery, A. & M., High Wycombe, WA  
 Pope, J., Balmoral, Qld  
 Porsche, S.Y., Guildford, WA  
 Pruden, G.G., Wilton, NSW  
 Purtell, W., Morningside, Qld  
 Quinn, G., Cowandilla, SA  
 Quinn, P., Lesmurdie, WA  
 Rann, L., South Perth, WA  
 Rannu, W., West Richmond, SA  
 Rawlins, W., Hamilton, Qld  
 Rayner, K.M., Guildford, WA  
 Rea, L. & E., Cronulla, NSW  
 Read, F.M. & W.S., Lockleys, SA  
 Reid, J., Norman Park, Qld  
 Rey, P.M., Cremorne, NSW  
 Richardson, K. & W., Dingley, Vic  
 Riddell, R.W., Wilton, NSW  
 Robb, R.A., Guildford, WA  
 Roberts, D.L., Guildford, WA  
 Roberts, R.S., Ascot, Qld  
 Robinson, N., Morningside, Qld  
 Rodrigues, S. & J.R., Gooseberry Hill, WA  
 Rodukoff, P., Hawthorne, Qld  
 Rogan, N., Richmond, NSW  
 Rose, R.A., Wynnum West, Qld  
 Rosenzweig, B.W., Prospect, SA  
 Ruppen, V., Hurstville, NSW  
 Russell, P.C. & A.M., Brighton, Qld  
 Ryan, C.E., Pitt Town, NSW  
 Ryan, C.J., Watson, ACT  
 Ryan, G., Mentone, Vic  
 Ryan, J., Keilor, Vic  
 Scott, M.J., Queens Park, WA  
 Senn, P.A. & A.M., West Beach, SA  
 Sharp, G.H., Netley, SA  
 Sharpe, R.A., Richmond, NSW  
 Short, P.J., Clayfield, Qld  
 Simcock, C.E., Guildford, WA  
 Simmons, R.J., Launceston, Tas  
 Skenridge, P., Leichhardt, NSW  
 Skinnies, B.L., Brisbane, Qld  
 Skipper, G.A., East Cannington, WA  
 Skrezyna, M., Balmoral Heights, Qld  
 Smith, A., Richmond, NSW  
 Smith, D.J., Hamilton, Qld  
 Smith, G.P. & E.P., Hackett, ACT  
 Smith, N. & L., Acacia Ridge, Qld  
 Smith, R., Acacia Ridge, Qld  
 Snelson, H., Launceston, Tas  
 Spibey, L., West Richmond, SA  
 Stanuovo, V., Plympton, SA  
 Stephens, W.H., Launceston, Tas  
 Stewart, P., Richmond, NSW  
 Stonehouse, D.R., Beckenham, WA  
 Strgar, I., Lockleys, SA  
 Stringer, I.A., Taringa, Qld  
 Stubbersfield, S., Morningside, Qld  
 Sweett, S., Montmorency, Vic  
 Syddell, M.J., Hornsby Heights, NSW  
 Tan, A., Dingley, Vic  
 Tarrant, S., Kurrajong Heights, NSW  
 Taylor, J.W., Richmond, SA  
 Thomas, R.W., Boondall, Qld  
 Thomas, Z., Hamilton, Qld  
 Thompson, B., Richmond, NSW  
 Thompson, V., Hilton, SA  
 Tilson, J.B., Wynnum, Qld  
 Tomkinson, K.J., College Park, SA  
 Topfer, R.D., Greenslopes, Qld  
 Townley, B., Adelaide, SA  
 Townley, A. & E., Netley, SA

Trevillian, W. & D., Bexley, NSW  
 Tuddenham, L. & B., Deagon, Qld  
 Tull, W., Underdale, SA  
 Tuohy, O.I. & W.P., Cundletown, NSW  
 Turner, A. & B., Guildford, WA  
 Turner, I., Kingston, ACT  
 Turner, N.W., Springvale, Vic  
 Underwood, M., Launceston, Tas  
 Usher, N. & J., Acacia Ridge, Qld  
 van Dieren, M.A.J., Acacia Ridge, Qld  
 Van Galen, B., Launceston, Tas  
 Vauser, R.M., Cowandilla, SA  
 Wakeford, E., Hobartville, NSW  
 Walker, R., Virginia, Qld  
 Walker, R.B., Windsor, NSW  
 Ward, P.B., Beverly Hills, NSW  
 Warry, N., Bulimba, Qld  
 Waters, P., West Richmond, SA  
 Watson, R., Dingley, Vic  
 Watterson, J., Grose Vale, NSW  
 Wauchope, B.M., Lockleys, SA  
 Wenzel, E., Balmoral, Qld  
 Wharton, G., Holden Hill, SA  
 Whitfeld, P.R., Hackett, ACT  
 Whiting, M.B., Cowandilla, SA  
 Whitty, H.G., Ascot, Qld  
 Wigmore, M.R. & L., Lockleys, SA  
 Williams, B., Ascot, Qld  
 Winter, I.G., Seacliff Park, SA  
 Wixted, V.E., Acacia Ridge, Qld  
 Woodgate, B.G., West Brunswick, Vic  
 Woods, J.K., Cowandilla, SA  
 Wright, G., Bullcreek, WA  
 Wright, V.A. & L.W., Brooklyn Park, SA  
 Young, M., Acacia Ridge, Qld  
 Zacher, H., Corinda Heights, Qld

## LOCAL GOVERNMENT

Adelaide City Council, SA  
 Ashfield Municipal Council, NSW  
 Australian Mayoral Aviation Council  
 Bankstown City Council, NSW  
 Bassendean Town Council, WA  
 Bayswater Shire Council, WA  
 Belmont City Council, WA  
 Botany Municipal Council, NSW  
 Brisbane City Council, Qld  
 Broadmeadows City Council, Vic  
 Canning City Council, WA  
 Canterbury Municipal Council, NSW

Clarence Municipal Council, Tas  
 Coffs Harbour Shire Council, NSW  
 Darwin City Council, NT  
 Drummoyne Municipal Council, NSW  
 Essendon City Council, Vic  
 Evandale Municipal Council, Tas  
 Fairfield City Council, NSW  
 Glenelg City Council, SA  
 Gold Coast City Council, Qld  
 Gosnells City Council, WA  
 Hawkesbury Shire Council, NSW  
 Henley and Grange City Council, SA  
 Hunters Hill Municipal Council, NSW  
 Hurstville Municipal Council, NSW  
 Ipswich City Council, Qld  
 Kalamunda Shire Council, WA  
 Keilor City Council, Vic  
 Kingsford-Smith Airport Councils, NSW  
 Kogarah Municipal Council, NSW  
 Lane Cove Municipal Council, NSW  
 Leichhardt Municipal Council, NSW  
 Marrickville Municipal Council, NSW  
 Melbourne City Council, Vic  
 Metropolitan Central Region, Inc., SA  
 Metropolitan Regional Organisation  
     Western, SA  
 Moorabbin City Council, Vic  
 Mundaring Shire Council, WA  
 Perth City Council, WA  
 Prospect City Council, SA  
 Queanbeyan City Council, NSW  
 Randwick Municipal Council, NSW  
 Rockdale Municipal Council, NSW  
 Ryde Municipal Council, NSW  
 Shire of Bulla, Vic  
 Shire of Lillydale, Vic  
 Sorell Municipal Council, Tas  
 South Perth City Council, WA  
 Springvale City Council, Vic  
 St Leonards Municipal Council, Tas  
 Sutherland Shire Council, NSW  
 Swan Shire Council, WA  
 Sydney City Council, NSW  
 Tamar Regional Master Planning  
     Authority, Tas  
 Thebarton Town Council, SA  
 Unley City Council, SA  
 West Torrens City Council, SA  
 Yarrawlumla Shire Council, NSW

## COMMONWEALTH GOVERNMENT

Attorney-General's Department  
Commonwealth Scientific and Industrial  
Research Organisation  
Department of Administrative Services  
Department of Aviation  
Department of Capital Territory  
Department of Communications  
Department of Defence  
Department of Defence Support  
Department of Health  
Department of Home Affairs and  
Environment  
Department of Immigration and Ethnic  
Affairs  
Department of Science and Technology  
Department of Sport, Recreation and  
Tourism  
National Capital Development  
Commission

## STATE GOVERNMENT

*New South Wales*  
Department of Environment and Planning  
Premier's Department  
State Pollution Control Commission  
*Northern Territory*  
Conservation Commission  
*Queensland*  
Department of Local Government  
Department of Mapping and Surveying  
Department of Transport  
Department of the Valuer-General  
Premier's Department  
*South Australia*  
Department of Education  
Department of Environment and Planning  
Department of the Premier and Cabinet  
Department of Transport  
*Tasmania*  
Premier's Department  
*Victoria*  
Department of the Premier and Cabinet  
Environment Protection Authority  
Health Commission  
Law Department  
Melbourne and Metropolitan Board of  
Works  
Ministry of Planning  
Valuer-General's Office

## *Western Australia*

Department of Conservation and  
Environment  
Department of Transport  
Metropolitan Region Planning Authority  
Premier's Department  
Public Health Department

## COMMUNITY ORGANISATIONS

Addison Road Community Centre Ltd,  
NSW  
Airport Information Residents' Study  
Group, WA  
Aldinga Plains Awareness Group, SA  
Anti Airport Noise Association Inc., SA  
Australian Natives' Association, Vic  
Badgery's Creek Anti Airport Group,  
NSW  
Bexley Aircraft Noise Protest Committee,  
NSW  
Blues Point Progress Association, NSW  
Botany Bay Sub-Region Community  
Advisory Committee, NSW  
Botany Independent Action Group, NSW  
Brisbane Independent Action Group, NSW  
Brisbane Airport Curfew Committee, Qld  
Community Committee on Essendon  
Airport, Vic  
Community Resource Centre, NSW  
Eastlakes Environment Protection Group,  
NSW  
Forrestfield Progress Association, WA  
Georges Hall Progress Association, NSW  
Guildford Study Group, WA  
Hawkesbury-Hills Airport Protest  
Committee, NSW  
Hawkesbury River Association, NSW  
Kissing Point Progress Association, NSW  
La Perouse and Peninsula Society, NSW  
Lara Progress Association, SA  
Lower Burns Bay Road Progress  
Association, NSW  
North Adelaide Society Inc., SA  
Northgate East Progress Association, Qld  
Planning Workshop Pty Ltd, NSW  
Richmond Primary School Parent/Teacher  
Committee, NSW  
South Sydney Committee of the Australian  
Assistance Plan, NSW  
South Sydney Community Aid Co-op Ltd,  
NSW

South West Sydney Environmental Health  
Committee, NSW  
Stanmore Society, NSW  
Strathmore Progress Association, Vic  
Sydney (Kingsford-Smith) Airport Noise  
Abatement Committee, NSW  
Toormina Airport Action Committee,  
NSW  
Tugun Progress Association, Qld  
Vaucluse Progress Association, NSW  
West Torrens Residents' Association, SA

## **AVIATION INDUSTRY**

Ansett Transport Industries  
Australian Federation of Air Pilots  
Australian International Pilots Association  
Australasian Flight Facilities International  
Aviation Industry Advisory Council  
Boeing International Corporation  
British Aerospace Australia Ltd  
Civil Air Operations Officers' Association  
of Australia  
East-West Airlines  
Essendon Airport Operators Association  
Fokker Representative Office South Pacific  
General Aviation Association (Australia)  
General Aviation Distributors Association  
Guild of Air Pilots and Air Navigators  
Hawker Pacific Pty Ltd  
IPEC Aviation  
International Air Transport Association,  
Canada  
Pro-Aero Training Centre Pty Ltd  
Qantas Airways Limited  
Regional Airlines Association of Australia  
Ltd  
Royal Federation of Aero Clubs of  
Australia  
Trans Australia Airlines

## **OTHER**

Australian Broadcasting Corporation  
Australian Labor Party  
British Airports Authority, UK  
Building Owners and Managers  
Association of Australia Ltd  
Environmental Management  
Federation of Australian Commercial  
Television Stations

Orlit Holdings Ltd  
Real Estate Institute of New South Wales  
Richmond Primary School pupils,  
NSW (51)  
Standards Association of Australia  
TCN Channel Nine Pty Ltd

## **MEMBERS AND SENATORS**

Bowen, L.F., Maroubra, NSW  
Burns, T., Cannon Hill, Qld  
Cameron, D.M., Sunnybank, Qld  
Darling, E.E., Nundah, Qld  
Fry, K.L., Canberra City, ACT  
Hooper, K.J., Inala, Qld  
Jacobi, R., Adelaide, SA  
O'Neill, P., Darwin, NT  
Rowe, B., Moonee Ponds, Vic  
Scott, J.L., Findon, SA  
Senator Coleman, R.N., Redcliffe, WA  
Senator Colston, M., Brisbane, Qld  
Senator Foreman, D.J., Adelaide, SA  
Senator MacGibbon, D.J., Brisbane, Qld  
Senator Watson, J., Launceston, Tas

## **APPENDIX 5**

### **Recommendations of Previous Committee**

The House of Representatives Select Committee on Aircraft Noise made 29 recommendations in its report of October 1970. Two of these recommendations have not been implemented at this date. These are recommendations 17 and 21, and are discussed first:

#### **Recommendation 17**

There is a need for research into:

- (a) the effect of meteorological conditions on the propagation of sound near major airports;
- (b) the potential physiological effects of typical exposure to aircraft noise;
- (c) the effect of aircraft noise on sleep and rest;
- (d) whether exposure to aircraft noise is a major factor in reducing work efficiency.

#### **Comment**

##### **Recommendation 17(a)**

An interdepartmental research program into the effects of meteorological conditions on noise propagation around airports was formally commenced in March 1973 and completed in 1978. The research was carried out by the Weapons Research Establishment (Tropospheric Studies Group). A report was prepared by WRE, (WRE - Report - 1563(A)) 'Selected Observations of the Reverse Thrust and Take-off Noise Levels at Sydney Airport' which related the effect of wind on the prediction of surface generated noise, and a paper 'The Propagation of Noise Along a Finite Impedance Boundary' has been presented.

##### **Recommendations 17(b), (c) and (d)**

The Department of Aviation is not an authority on the effects of aircraft noise on health, it has not undertaken any research into this subject. Research on these matters has been, and continues to be carried out overseas. The Department maintains a watching brief on these developments.

#### **Recommendation 21**

Consideration be given to a variable airport charge related to the noise level performance of each aircraft, the specific time of operation and individual runways at each airport separately.

#### **Comment**

The Department of Aviation has investigated this recommendation but has not implemented a variable airport charge related to aircraft noise. Investigation showed that:

- (a) there would be considerable administrative difficulties with some associated cost involved;

- (b) it seems that an excessively high charge for the noisiest aircraft, and/or an excessively low charge for the less noisy aircraft, would have to be made to give adequate incentives to operators to invest in the less noisy aircraft;
- (c) the proposal departs from the principle underlying air navigation charges, that they be related to use of facilities and services provided for the aviation industry by the Commonwealth. Penalty payments associated with aircraft noise are not in accordance with the Government's user pays principle of cost recovery.

The other 27 recommendations which have been substantially implemented are discussed below.

#### **Recommendation 1**

The noise exposure forecast system of the United States of America Federal Aviation Agency be adopted by Australia but used as a guide to noise exposure only. Cautious restraint is necessary when our planning authorities apply the accompanying land use categories to Australian conditions.

#### **Comment**

This recommendation has been implemented. Airport noise exposure charts represent the primary guidance for land use planning around airports. These charts are made available to State and local planning authorities and other interested parties. Such charts are also utilised extensively in the conceptual planning of new airports within the Department of Aviation.

A computer method of preparation of noise exposure charts has been developed and operated for a number of years now, to enable accurate and economical preparation for all airports throughout the Commonwealth.

#### **Recommendation 2**

The wearing of protective equipment by workers exposed to aircraft noise on tarmac and maintenance areas be rigidly enforced where necessary.

#### **Comment**

This recommendation has been implemented. The Department of Aviation, Ansett Airlines of Australia, Trans Australia Airlines and Qantas, each maintain hearing conservation schemes for their own employees. Wherever these employees are exposed to excessive aircraft noise (or, in fact, any other potentially damaging industrial noise), the wearing of hearing protection devices is mandatory. Such employees are also given regular audiometric checks.

#### **Recommendation 3**

The building of hospitals and rest homes beneath flight paths be avoided and that soundproofing should be installed in such buildings in adjacent areas.

#### **Recommendation 4**

Architects and builders concerned with the design and construction of buildings near airports utilise available noise reduction techniques.

## **Comment**

### **Recommendations 3 and 4**

These recommendations are intended as guidance to the numerous individual authorities and organisations responsible for the location of hospitals and rest homes, and the design and construction of buildings near airports. The Commonwealth Government can only act upon these recommendations in so far as Territories of the Commonwealth are concerned and accordingly, the recommendations have been drawn to the attention of the appropriate Commonwealth Departments.

Additionally, these recommendations were referred to State Premiers for action within their jurisdiction. Within the Department of Aviation, Regional Officers maintain a liaison with the various State planning authorities throughout Australia and provide advice in the form of Noise Exposure Forecast (NEF) charts with associated land usage recommendations for the areas near airports.

On 1 June 1977, the Standards Association of Australia published AS2021, the Australian Code of Practice for Building, Siting and Construction against Aircraft Noise Intrusion. The Standard was prepared by the SAA to provide guidance for organisations and persons associated with:

- (a) urban planning and building production;
- (b) the location and construction of new buildings;
- (c) the acoustical adequacy of existing buildings in areas near airports.

The Department of Transport, which at that time was responsible for aviation, was a member of the SAA Working group which prepared the Standard.

### **Recommendation 5**

The Department of Air and the Department of Civil Aviation institute an extensive investigation of complaints into the effects of overflying aircraft on structures so as to establish the cause of damage.

## **Comment**

In response to this recommendation the Department's research laboratory undertook a study and made measurements of aircraft noise induced vibrations in three buildings located under flight paths near Sydney Airport. The main object of the investigation was to obtain data from Australian buildings to allow a comparison to be made with extensive data available from overseas reports, particularly those results from the United States National Aeronautics and Space Administration's (NASA) reports on the subject.

The Department's Laboratory Report No. 1021 'Measurement of Noise Induced building Vibration — Sydney 1979', established that there is a correlation between the Australian findings and the NASA findings that the noise induced vibration levels in building structures caused by overflying aircraft are less than that generated by other household activities such as jumping, walking or slamming of doors, and is below a level which may cause structural damage such as cracked plaster and broken windows.

Based on these findings the Department does not accept that vibrations induced in buildings by aircraft noise are of such magnitude as to cause structural damage.

### **Recommendation 6**

Education authorities pay great regard to the interference caused to classroom instruction when planning buildings in noise sensitive areas.



### **Comment**

The comments made in respect of Recommendations 3 and 4 also apply to this recommendation.

### **Recommendation 7**

Airline operators investigate the feasibility of minimising disturbance of church services by a rearrangement of flight schedules on Sunday.

### **Comment**

The Department of Aviation has taken up this recommendation with all airline companies, but there are great difficulties associated with its implementation.

The scheduling of aircraft on regular services is a very complex matter because any variation affects the whole pattern of services for twenty-four hours or more. This is particularly difficult for international services as their time of arrival and departure at other airports around the world are related to the operating times in Australia.

However, alleviation of noise during church services is obtained by routing aircraft along optimum flight paths from a noise point of view. It must be appreciated that there are a number of churches within a few miles of some important airports, e.g. in Sydney there are more than 800 churches within sixteen kms and 361 churches within eight kms of the airport.

It is considered that this recommendation has been implemented as much as is practicable.

### **Recommendation 8**

There is a need for a social survey in Australia to obtain factual data on the magnitude of unrest and disturbance attributable to aircraft noise. It is recommended that this should be conducted in the areas surrounding Sydney Airport as being the area of greatest exposure.

### **Comment**

The Department, in conjunction with the Department of Defence, has just completed a project to investigate the social effect of aircraft noise in communities near Australian airports. A major aim of the project was to evaluate the noise exposure measurement system used in Australia (the Noise Exposure Forecast System) and to assess its accuracy for predicting the community reaction of Australian populations to aircraft noise. The system was developed in the United States and its applicability to Australia has not previously been fully validated.

The project was carried out by the National Acoustic Laboratories of the Commonwealth Department of Health, assisted by the Australian Bureau of Statistics, under guidance of an inter-departmental working group. A social survey of about 3500 residents around Sydney, Perth and Adelaide Airports and Richmond RAAF Base was undertaken.

### **Recommendation 9**

The Department of Air and the Department of Civil Aviation introduce a standard method of recording complaint information as outlined in the text.

### **Comment**

This recommendation has been implemented, form No CA1789 is used for this purpose.

### **Recommendation 10**

The Department of Civil Aviation and, where appropriate, the Department of Air, pay continuing attention to the administrative arrangements as set out in the text.

### **Comment**

Implemented.

### **Recommendation 11**

At Sydney, during the hours of curfew (11 pm to 6 am), movements be confined to operations over Botany Bay except in cases of emergency.

### **Recommendation 12**

Criteria authorising jet movements in curfew hours be applied more stringently to ensure the preservation of the original intention of the regulation.

### **Comment**

### **Recommendations 11 and 12**

The majority of movements take place over Botany Bay. Noise abatement procedures at Sydney Airport and at other noise sensitive airports, including curfew restrictions on jet operations, are detailed in the Aeronautical Information Publication — 'Terminal Area Procedures' (AIP-TMA).

### **Recommendation 13**

The Department of Civil Aviation thoroughly examine flight patterns within a five mile radius of airports in order to avoid residential districts by directing aircraft over water, open spaces or industrial areas, whenever possible.

### **Recommendation 14**

The Air Co-ordinating Committee examine the feasibility of reallocating airspace to facilitate the rerouting of flight paths to minimise noise over residential areas.

### **Comment**

### **Recommendations 13 and 14**

Preferred flight paths for departing aircraft are detailed in the Standard Instrument Departures (SIDs) section of the AIP-TMA. SIDs are promulgated to take into account the navigational factors of ATC separation standard, safety and noise abatement requirements. Preferred flight paths for arriving aircraft are also detailed in AIP-TMA. Airspace is allocated by the Air Co-ordinating Committee who take noise abatement into account.

### **Recommendation 15**

Pilots of heavy aircraft on visual landing approaches be required to conform to a glide slope no less than T-VASIS for the particular runway.

### **Comment**

Pilots are instructed not to make approaches to land below the visual or electronic glide paths for the runway in use. This instruction is in AIP-TMA.

**Recommendation 16**

As a noise abatement measure, the glide slope at Australian airports should be standardised at 3° wherever possible.

**Comment**

The program to raise glide path angles at all Australian airports to a standard 3° for noise purposes was completed in 1980.

**Recommendation 17**

Covered at start of section.

**Recommendation 18**

For the evaluation of community exposure to aircraft noise, the concept of EPNL seems most appropriate.

**Comment**

This recommendation has been implemented. The complex aircraft noise measurement unit, the EPNL, is utilised by the Department of Aviation for:

- (a) comparative analysis of aircraft noise measurements;
- (b) the basis of the Noise Exposure Forecast technique;
- (c) noise certification of aircraft.

**Recommendation 19**

Monitoring of aircraft noise should be introduced in Australia with Sydney Airport as first priority.

**Comment**

The Sydney Airport Aircraft Noise Monitoring System was operationally commissioned in early 1973. It is a computer based data acquisition system which continuously reports noise levels from eleven fixed locations and one mobile facility in the vicinity of Sydney Airport. The system has provided a large amount of data to the Department of Aviation regarding noise levels of aircraft around Sydney Airport. No permanent noise monitoring facilities have been introduced at other airports, nor at this stage are any planned. However, manned noise monitoring can be done at any airport, as required.

**Recommendation 20**

The responsibility for operating monitoring installations must rest with the Department of Civil Aviation.

**Comment**

The Department of Aviation continues to operate the Sydney Airport Aircraft Noise Monitoring System.

**Recommendation 21**

Covered at start of section.

**Recommendation 22**

Australia should be represented on the ICAO body being established to formulate future developments in aircraft noise certification.

**Comment**

Australia continues to be actively represented on the ICAO Committee on Aircraft Noise (CAN).

**Recommendation 23**

The Department of Civil Aviation should press for the reduction of aircraft noise certification limits and pursue a relentless course of imposing restrictions on any airline whose aircraft repeatedly exceed acceptable noise standards.

**Comment**

The work of the ICAO Committee on Aircraft Noise includes, inter alia, the establishment of noise certification standards for all types of aircraft (subsonic and supersonic aircraft, STOL/VTOL aircraft, light aircraft etc.) and the investigation of all ways and means to encourage reduction of noise at the source. The ICAO Committee is aware of the need for the noise certification limit to be reduced as and when this is practicable and the Department of Aviation representatives on this committee continue to support the terms of this recommendation. The noise limits were, in fact, reduced in 1977.

**Recommendation 24**

An appropriate land-use policy is the most likely prospect for reducing noise nuisance.

**Comment**

With the exception of Territories administered by the Commonwealth Government, land-use policy is a responsibility of State and local Governments. The Department of Aviation is in close touch with these authorities. It has also set up noise abatement committees at major airports on which local and State Government are represented. The Department of Aviation continues to be active in passing information to planning authorities to assist in the planning of land-use, taking into account the aircraft noise problem.

**Recommendation 25**

Each planning authority in Australia will need to develop its own land-use classification.

**Comment**

In developing this recommendation, the Committee emphasised that the associated land use classifications, which are related to the NEF technique, are based on an American concept and are only meant as a guide for planning. It emphasised that the classifications only reflect relative sensitivity to aircraft noise exposure and that they define, by coarse graduation, the use of land for varying purposes.

Since there is a variation amongst the public in the tolerance of noise, the Committee saw the possible need for differing classifications, location by location, and felt that respective planning authorities should develop their own land use classifications, based on the appropriate NEF.

The attention of the State Premiers has been drawn to this recommendation, as in the case of Recommendations 3 and 4.

**Recommendation 26**

Land use zoning should have the statutory basis of State Government enactment and not be subject to unco-ordinated change by local authorities.

**Comment**

This recommendation was previously referred to all State Premier's Offices for their appropriate action.

**Recommendation 27**

Local Government Councils in airport neighbourhoods should issue warnings to persons seeking permission to build and include suitable noise insulation techniques in building codes.

**Comment**

This recommendation was previously referred to all State Premiers for appropriate action.

The SAS Code of Practice for Building, Siting and Construction against Aircraft Noise Intrusion (referred to under the comments for Recommendations 3 and 4), provides guidelines for use by local councils, or others such as architects and builders.

**Recommendation 28**

Proceedings on Airport Noise Abatement Committees should not be on a confidential basis, and the Committees should remain relatively small in composition. On matters concerning airport development, the Committees can serve in a useful consultative capacity.

**Comment**

Numerous local Government bodies and aviation organisations are represented on Noise Abatement Committees and because of this, all proceedings are usually open.

The Committees themselves, have been asked to decide which matters, because of their nature, should be kept on a confidential basis. There are about thirteen Councils represented on the Sydney Noise Abatement Committee but working groups have been formed, where appropriate, to reduce the task to manageable proportions.

**Recommendation 29**

Accurate and regular records of monitoring, where carried out, should be supplied to the relevant Airport Noise Abatement Committees for information and comment.

**Comment**

This recommendation has been implemented. Summaries of records of the Sydney Aircraft Noise Monitoring system are available to the Sydney Noise Abatement Committee.

*Source:* Department of Aviation

## APPENDIX 6

### Air Pollution — Adelaide

**Comparison of Estimated Air Pollution Emissions at Adelaide Airport from Aircraft Operations with Total Emissions to the Adelaide Airshed (Tonnes/Year)**

	<i>Carbon Monoxide</i>	<i>Hydrocarbons</i>	<i>Nitrogen Oxides</i>
Aircraft Emissions 1976	267	27	114
1980	262	76	108
1990 <sup>(1)</sup>	386	114	212
Total Emissions 1976	249 000	71 000	28 900

<sup>(1)</sup> Based on existing aircraft engine emission characteristics. New criteria to be introduced in the US in 1985 are more stringent and are expected to lead to a reduction in total pollutant emissions.

Source: South Australian Government Submission

## APPENDIX 7

### Air Pollution — Melbourne

**Emission Inventory for Melbourne Airports and Other Selected Areas**

<i>Description of area (3km x 3km grid)</i>	<i>NOx (as NO<sub>2</sub>)</i>		<i>Daily emissions in areas described</i>	
			<i>(kg)</i>	<i>CO</i>
Tullamarine Airport (grid with maximum aircraft emissions)	131	(108)	372	(337)
Essendon Airport	429	(51)	6 900	(256)
Camberwell/Box Hill (MASS grid number 193)	297		9 800	
Prahran (includes SE freeway) (MASS grid number 169)	487		21 500	
CBD	1 070		30 000	

*Note:* Figures in parenthesis are aircraft emissions only

*Source:* Victorian Government Submission

## APPENDIX 8

### Analysis of Pollution Deposits

#### DEPOSIT ON LEAVES

At a public meeting called by the Committee at Essendon a member of the public submitted for analysis leaves covered with a black sooty deposit. It was claimed to be caused by jet aircraft operations at Essendon Airport. The results of the analysis of the leaves is as follows:

The specimen offered for comment is from a citrus bush.

The heavy black coating is one of the two sooty moulds common on citrus. It is either *Aitchia glomerulosa* or *Capnodium salicium*, more specific identification is not available through this office.

The sooty mould is gaining its food from a sugary exudate given off by a scale insect which is clearly visible on the stems and undersides of the leaves of the specimen.

Control is effected by eradicating the scale. This is best done by using clear white oil mixed with Malathion. A number of applications may be necessary in this case.

*Analysis:* Department of Territories and Local Government

#### DEPOSIT ON BUILDING

A resident of Windsor forwarded a sample of deposits taken from his home which he claimed was the result of pollution from aircraft. The Committee had the sample analysed and the results of this analysis are outlined as follows:

Essentially the deposits supplied to Materials Research Laboratories for analysis consisted of dust with the following features:

- (a) the particles were generally small;
- (b) there was a low content of mineral fragments;
- (c) most particles were of biological/organic origin;
- (d) the types of fungal spores present indicated outdoor origin;
- (e) there was a low content of carbon/soot particles;
- (f) there was a low content of human skin scales.

Many inferences can be drawn regarding the origin of the deposits and the location in which they settled but the only ones relevant to the inquiry are that the samples are representative of urban 'dust'. There is no evidence that aircraft could have contributed significantly to the samples examined.

*Analysis:* Materials Research Laboratories



## APPENDIX 9

### Noise Insulation Research Project

#### THE EFFECTIVENESS OF SPECIAL BUILDING ELEMENTS DESIGNED TO REDUCE AIRCRAFT NOISE INTRUSION

##### Project

1. The Australian Government would purchase a dwelling typical of those badly affected by aircraft noise. The most suitable location would be under the flight path of aircraft landing on and taking-off from the east-west runway at Kingsford-Smith Airport, preferably in the Mascot/Botany area, away from main traffic routes.

The advantages of such a location are:

- (a) Both landing and take-off conditions can be assessed;
  - (b) The Department of Aviation's aircraft noise monitoring system could be used to obtain precise details of individual aircraft flight procedures;
  - (c) It is conveniently located with respect to the University.
2. The University research team will set up its existing acoustic instrumentation outside and inside the rooms of the building. The aircraft noise reduction of the original building will be determined for different aircraft and different building conditions. The building will then be modified to improve aircraft noise reduction. Care will be taken to monitor the costs associated with each of the building modifications and their practicality.
3. At the same time, the effect of building modifications on ventilation and temperature inside the building will be measured, using appropriate instrumentation and methodology.
4. Since there is a number of distinct domestic building types adversely affected by aircraft noise it is necessary to determine the aircraft noise attenuation provided by more than one type. It is proposed that approximately ten different dwellings (including multi-storey flats) be investigated over sequential two-week periods. Since the presence of occupants would severely limit the opportunities for acoustic and thermal measurements it is proposed that short-term leases of these dwellings be obtained. (There is also a possibility that some may need to be available for similar measurements for short periods of time.)
5. A comprehensive report will be prepared which will provide guidelines for 'sound insulation packages' for typical domestic buildings affected by aircraft noise.
6. The original dwelling purchased by the Australian Government and modified as a result of this research project would be available firstly as a demonstration building and then for re-sale or lease-back to the public.

##### Time Scale

1. Approximately one month after obtaining vacant possession of the dwelling the instrumentation systems would be in place and liaison established with the Department of Aviation's monitoring system.
2. Approximately one month to establish the acoustic and thermal performance of the building in its original condition.
3. Approximately ten months to determine the acoustic and thermal performance of the dwelling with different modifications installed. Simultaneously a further ten different dwelling types would be measured and assessed.

4. Approximately six weeks for preparation of final report and guidelines.  
If the project could be commenced by October 1985 (i.e. vacant possession obtained) the most critical conditions for thermal assessment can be monitored.

### Personnel

1. *Chief Investigator:*  
Associate Professor A.B. Lawrence, M.Arch, B.Arch., FRAIA, MAAS Graduate School of the Built Environment
2. *Associate Investigators:*  
Associate Professor J.A. Ballinger, B.Arch., FRAIA School of Architecture  
Mrs M.A. Burgess, BSc, MSc (Acoustics), MAAS School of Architecture
3. *Research Assistants:*  
Mr R. Rosenberger, BE, Professional Officer  
*Plus:*  
(a) Full-time research assistant to be appointed  
(b) Casual research assistant to be appointed

### Budget

1. Purchase of dwelling by Australian Government (to be recouped on resale or lease-back at end of project)	\$
2. Research Assistant Grade 1 for one year	21 000
3. Casual Research Assistant, approximately one day/week for one year	6 000
4. Materials and labour for building modifications; ventilation units; telephone link to airport; thermal condition monitoring	28 000
5. Rental of approximately ten different dwelling units for two weeks each	3 000
6. Maintenance, security, insurance, etc.	4 000
TOTAL	62 000

*Source:* University of New South Wales

## APPENDIX 10

### Variation in Flight Paths of Boeing 727

	<i>Temp.</i>	<i>Wind Knots</i>	<i>Aircraft Mass '000lb</i>	<i>Aircraft Speed Knots</i>	<i>Distance to reach 800 feet (from brakes release point) '000 feet</i>	<i>Height reached at 3 nautical miles (from brakes release point) feet</i>	<i>Radius of turn (when turn commenced at 800 feet)</i>
Case 1	10°C	15 headwind	135	145	6.5	3 800	6 505
Case 2	30°C	5 tailwind	192	171	17.5	880	10 944

*Note 1* The information given above shows the variation in the ground track of an aircraft caused by a change in the take-off mass of an aircraft and different weather conditions. The two cases selected are near to the extremes likely to be encountered and it is extremely improbable that any two successive aircraft would show such a wide variation in tracks.

*Note 2* The information was based on Boeing Report 06-42145-5 titled Community Noise of Boeing 727 advanced 200 with dash 17R Engines (this is a propriety document). It was assumed that the aircraft climbed at  $V_2 + 10$  knots. The turn was based on maintaining  $V_2 + 10$  knots and using a bank angle of 15 degrees. The information is tabulated in an accompanying Table and is only valid when all the stated conditions are applicable.

*Source:* Department of Aviation

## APPENDIX 11

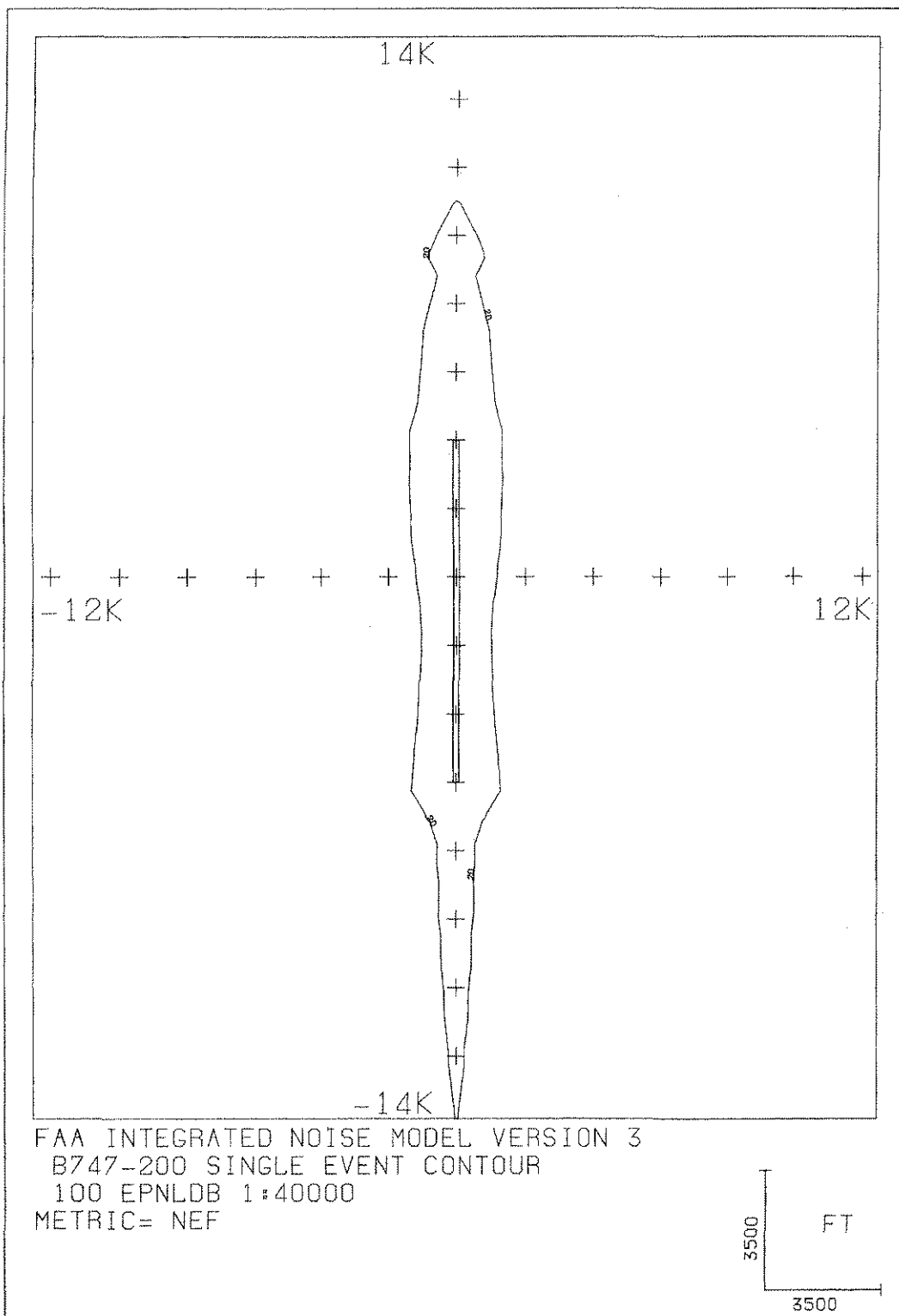
### Single Event Contours

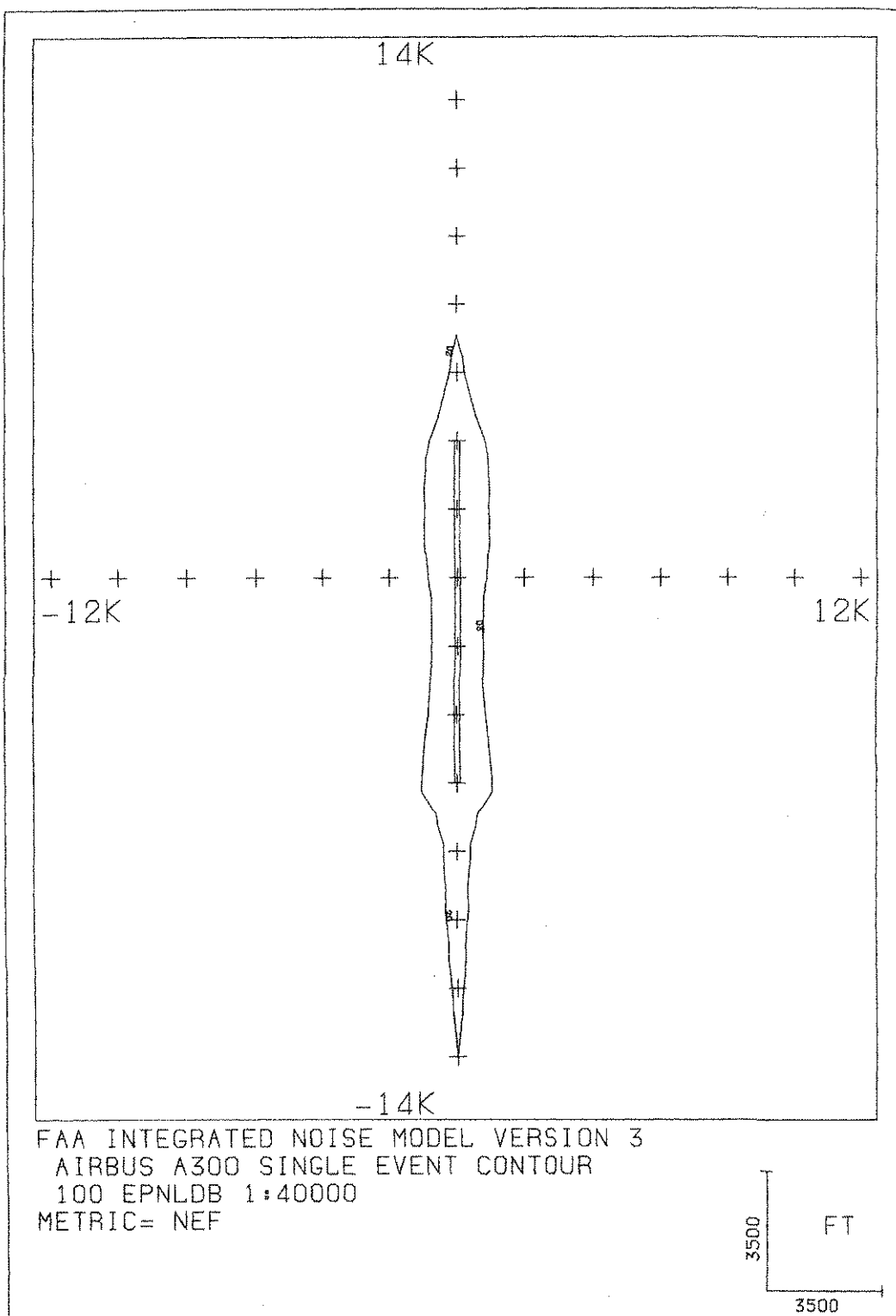
A single event contour is a line joining points of equal noise level of a single aircraft either taking-off or landing or both. The attached single event contours are for an aircraft both landing and taking-off. The unit is the Effective Perceived Noise Level in Decibels (EPNdB). This unit is used by the International Civil Aviation Organisation for the noise certification of aircraft and by the Department of Aviation in Australian Noise Exposure Forecasts. It includes correction terms for the duration of the noise and for the presence of audible pure tones (such as the whine of a jet engine). The particular noise level shown in the contours is 100 EPNdB.

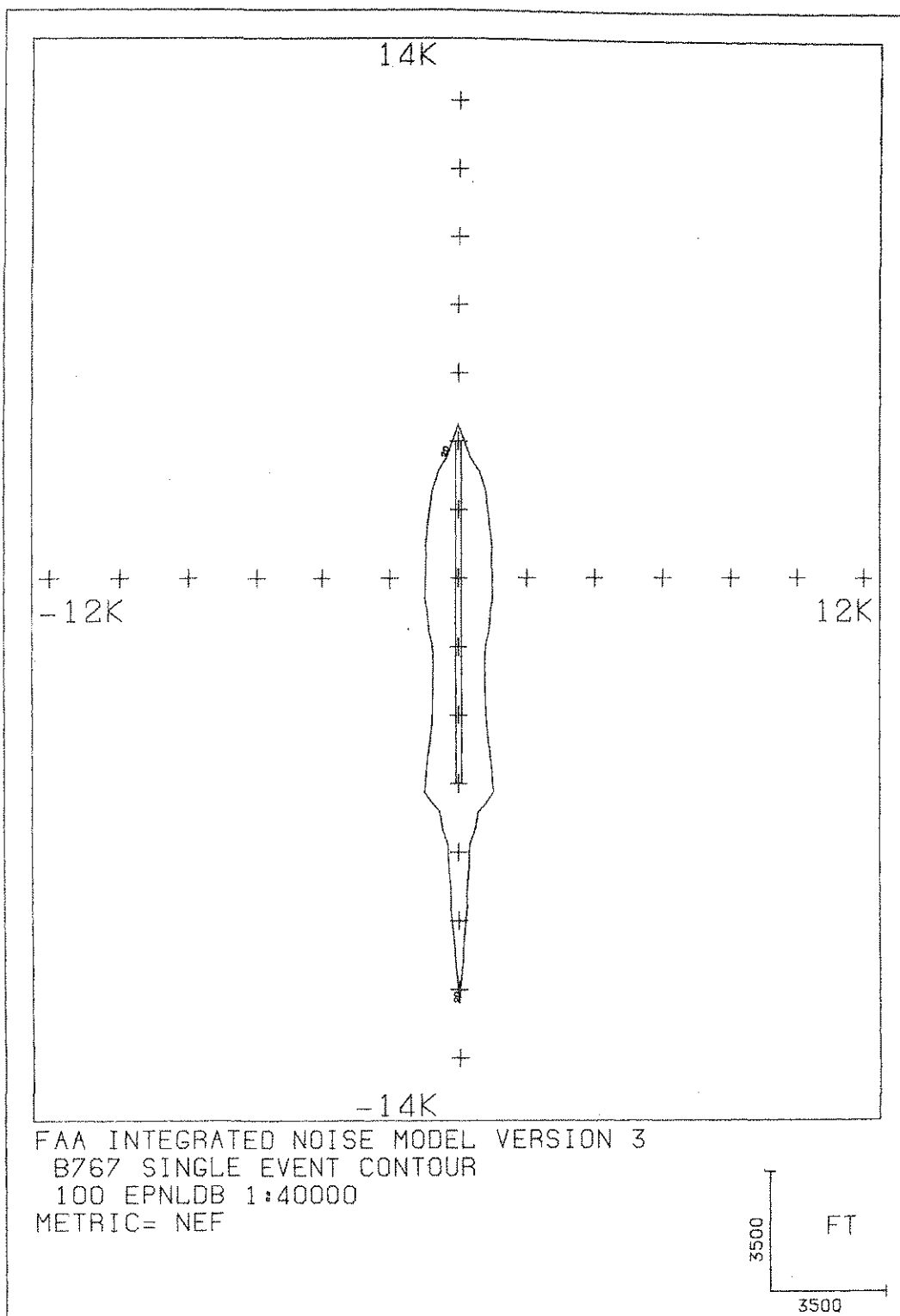
The single event contour is useful for comparing one aircraft with another. The 100 EPNdB contour for a number of aircraft are given on the attached contours. Aircraft which may operate during the curfew are the Citation, the Argosy and the Fokker F27.

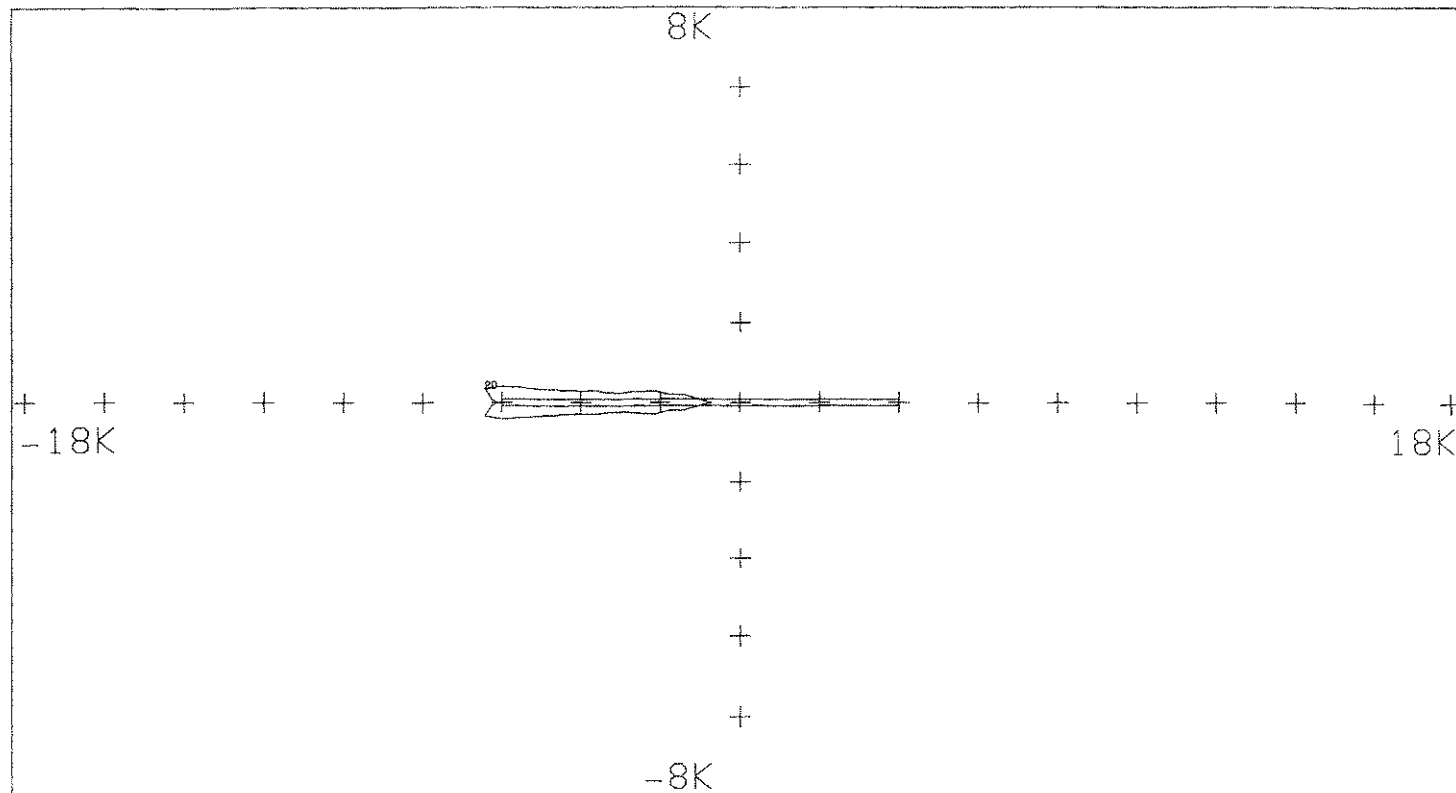
*Source:* Department of Aviation

Aircraft Type		Area enclosed by the 100EPNdB contour (square kilometres)
Second generation international aircraft	Boeing B747-200	4.20
Third generation domestic aircraft (certificated to ICAO Annex 16, Volume 1, Chapter 3)	Airbus A300	2.38
	Boeing B767	1.89
Small business jet aircraft (‘low noise’)	Cessna Citation	0.41
Larger propeller-driven aircraft	Argosy	3.42
	Fokker Friendship F27	1.63





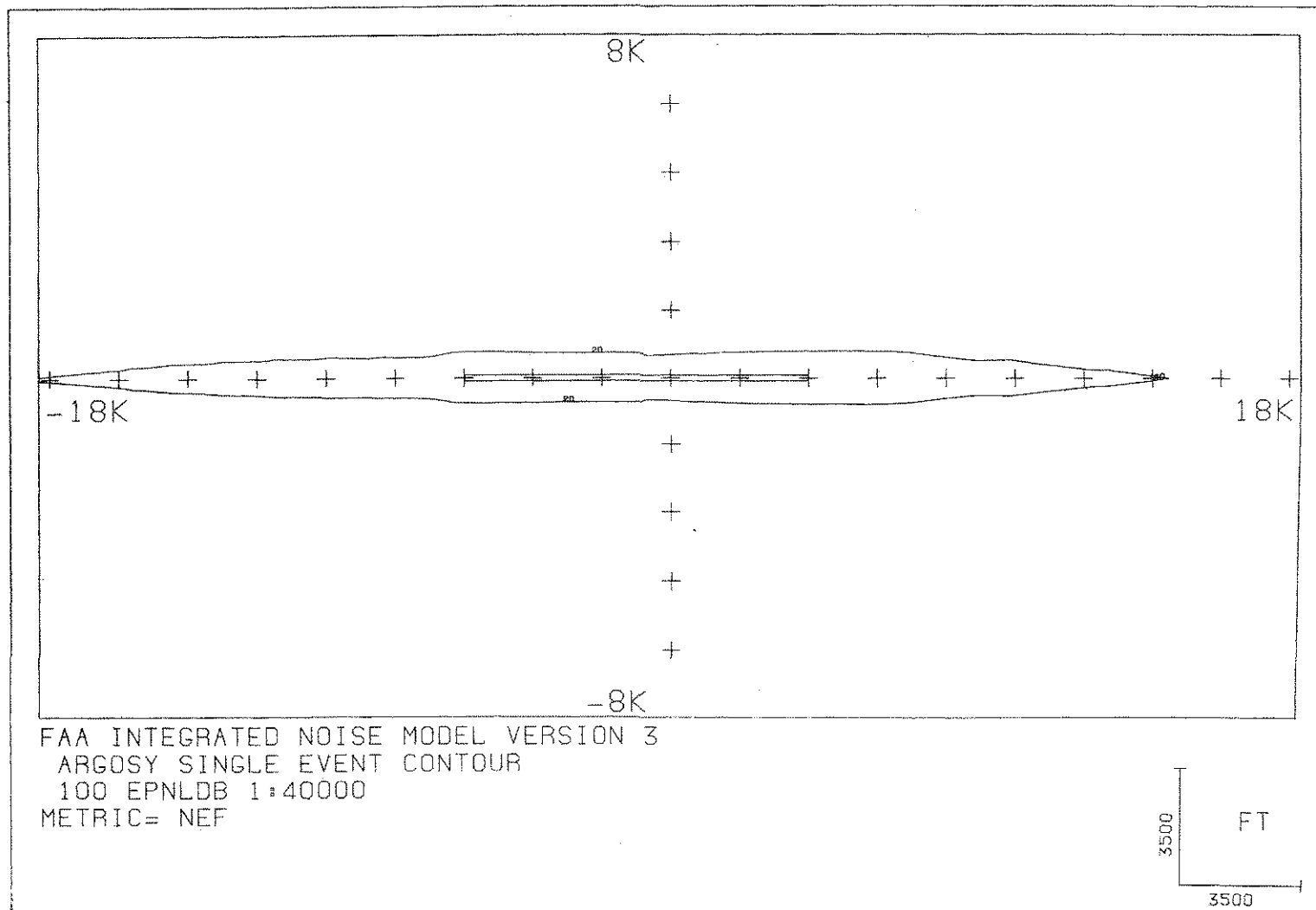


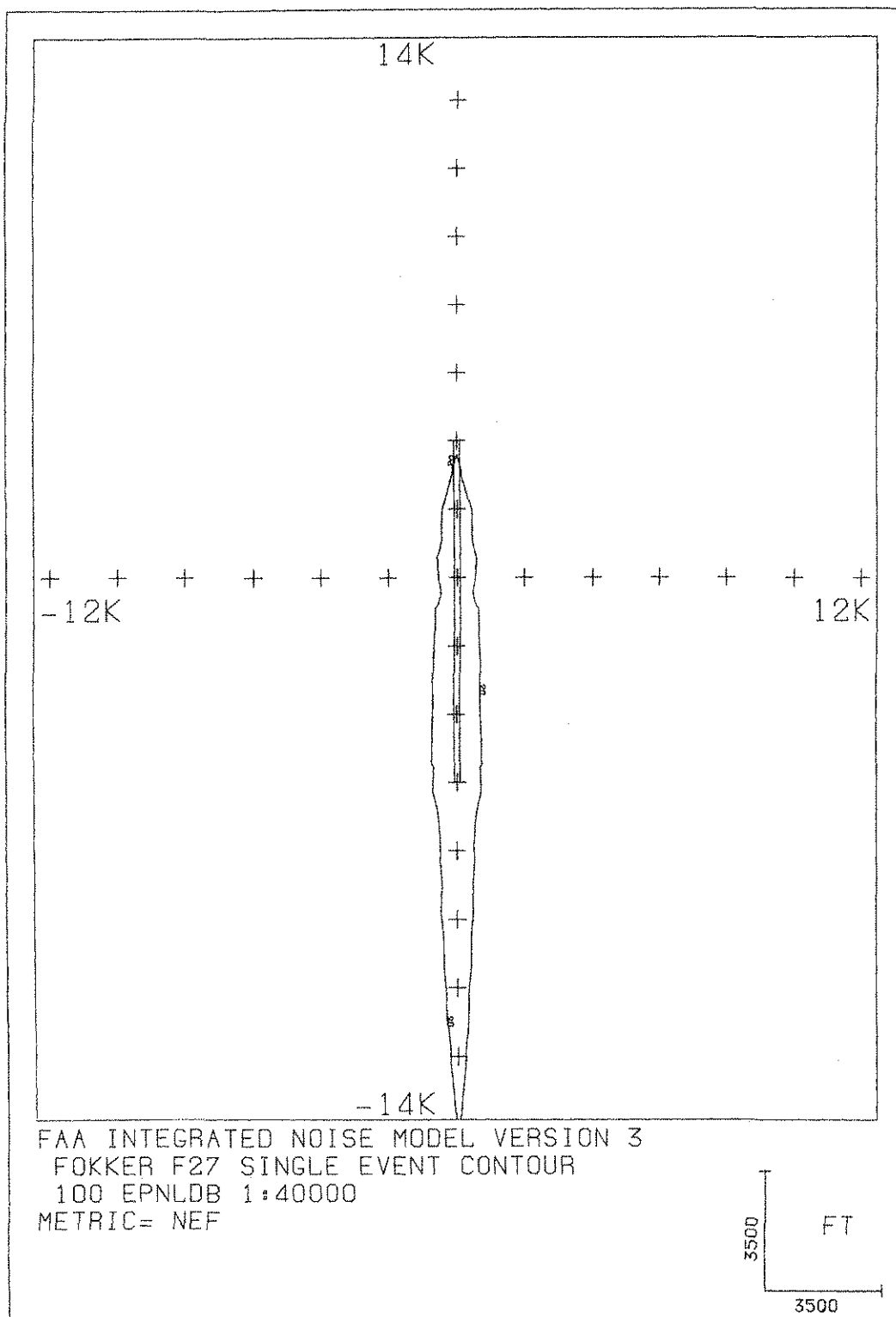


FAA INTEGRATED NOISE MODEL VERSION 3  
CITATION SINGLE EVENT CONTOUR  
100 EPNLDB 1:40000  
METRIC= NEF

3500  
FT  
3500







## APPENDIX 12

### International Civil Aviation Organisation Noise Certification Standards

The provisions of ICAO Annex 16, Volume 1 apply to different classes of aircraft. Different provisions apply to the different classes of aircraft and within each class different provisions apply to aeroplanes built at different times, with lower noise levels for later aeroplanes. The noise levels vary with the mass of the aircraft; aeroplanes with a lower mass having smaller noise levels.

Chapter 2 applies to all subsonic jet aeroplanes of what are generally known as second generation aircraft, eg. the later models of the B747, B727-200. The earlier or first generation eg. the B707, DC8, B727-100, were designed before Annex 16 was developed and are generally classed as uncertificated (unless they have been modified).

Chapter 3 applies to the latest subsonic jet aeroplanes. They are generally known as third generation aircraft and include such aircraft as the B767, B757. Although an aircraft may only be required to meet the Chapter 2 standards it may be certificated to the later Chapter 3 standards, e.g. the A300.

For Chapter 2 and 3 aircraft the maximum noise levels are measured at three specified locations, one beneath the take-off flight path, one beneath the landing flight path and one to the side of the runway. The Chapter 3 maximum noise levels are between 2 and 8 EPNdB less than the Chapter 2 maximum noise levels.

Chapter 5 applies to the latest large propeller-driven aircraft. For example a new aircraft type built within the last five years. Earlier aircraft are not required to be certificated although later derived versions of earlier types must meet the Chapter 2 noise levels.

The noise levels are measured at the same points as defined for Chapter 3 and are similar to those for Chapter 3 aeroplanes.

Chapter 6 applies to the latest smaller propeller-driven aircraft (where smaller means less than 5700kg maximum take-off mass). The noise level is measured when the aircraft is flying at a height of 300 metres.

*Source:* Department of Aviation

## APPENDIX 13

# Aviation Industry Advisory Council Proposed New Curfew Policy

## INTRODUCTION

The restrictions set out in this document are applicable to all aircraft operating in Australia and are effective from (date x).

Aircraft are divided into two groups; paragraph 6.3.2 gives the definition of each group and the applicable restrictions.

## REQUIREMENTS

Brisbane, Sydney Airports

### Group A

(a) Aircraft that meet the requirements of ICAO Annex 16, Volume 1, Chapter 3, 5 or 6 comprise Group A.

(b) Group A aircraft may not operate at Brisbane or Sydney Airports between 11pm and 6am (local time) except on the following runways:

Brisbane: Land, runway 22; take-off, runway 04

Sydney : Land, runway 34; take-off, runway 16

### Group B

(a) All aircraft that do not meet the requirements of Group A comprise Group B.

(b) Group B aircraft may not operate at Brisbane or Sydney Airports between 11pm and 6am (local time).

(c) As an exemption to Group B, international aircraft whose noise level at the approach reference noise measurement point can be shown by analysis to meet the requirements of ICAO Annex 16, Volume 1, Chapter 3, 5 or 6 as applicable (analysis to be subject to Department of Aviation approval, based on acoustical and engineering data and may be for weights and flap conditions less than maximum certified) may operate as follows:

#### *Sydney*

(a) Delayed scheduled aircraft may land runway 34 until midnight but no more than Y movements in any one calendar year.

(b) Land runway 34 after 5am for the period between the end of daylight saving in NSW and the start of summer (northern hemisphere) scheduling season, but no more than Z movements in any one day during this period.

(c) Off schedule aircraft arriving early may land runway 34 after 5.30am but no more than W movements in any one calendar year.

#### *Brisbane (existing Airport)*

(d) Delayed scheduled aircraft may land runway 22 until midnight but no more than P movements in any one calendar year.

(e) Off schedule aircraft arriving early may land runway 22 after 5.30am but no more than Q movements in any one calendar year.

*Note 1:* The number of movements permitted in (a), (b), (c), (d) and (e) above will be set each year and allocated to airlines in proportion to their yearly movements. For the first year the following are proposed:

(a) Y = 100; (b) Z = 4 a day; (c) W = 100; (d) P = 30; (e) Q = 30.

*Note 2:* Daylight saving ends in NSW at 2am on the first Sunday in March and the summer (northern hemisphere) scheduling season starts on 1 April.

### **PROPELLER-DRIVEN AIRCRAFT REGISTERED BEFORE (Date x)**

Propeller-driven aircraft entered on the Australian aircraft register before (date x) may operate for a further period of 14 years, until (date x + 14 years), these aircraft may not operate at Brisbane or Sydney Airports between 11pm and 6am (local time) except on the following runways:

*Brisbane (existing Airport):* Land, runway 22; take-off, runway 04 (if an aircraft is unable to depart from runway 04 because of excessive crosswind or downwind, then runway 13 may be used for departure).

*Sydney:* Land, runway 34; take-off, runway 16 (if an aircraft is unable to land because of excessive downwind on runway 34 it may land on runway 16). After (date x + 14 years) all propeller-driven aircraft registered before (date x) will be classified as Group A or B and will be required to comply with the appropriate restrictions.

*Note:* If an operator acquires an aircraft after (date x), and  
(1) the aircraft meets the requirements of Group A aircraft, and  
(2) an aircraft of the same type was registered to that operator on (date x),  
then that aircraft may operate under the same curfew conditions that apply to the aircraft registered on (date x).

*Adelaide Airport:* No turbo-jet aircraft may operate at Adelaide Airport between 11pm and 6am.

*Essendon Airport:* No turbo-jet aircraft may operate at Essendon Airport between 11pm and 6am (local-time), propeller-driven aircraft may operate. The curfew at Essendon is subject to review.

*Melbourne and Perth Airports:* Australian registered non-noise certificated turbo-jet aircraft may not operate at Melbourne and Perth Airports between 11pm and 6am (local time). Foreign registered non-noise certificated turbo-jet aircraft may not operate at Melbourne and Perth Airports between 11pm and 6am (local time) effective 1 January 1988.

*Avalon Airport:* Aircraft flight training is not permitted at Avalon Airport between 11pm and 6am (local time). Otherwise no restrictions apply.

### **FOREIGN REGISTERED PROPELLER-DRIVEN AIRCRAFT**

Foreign registered propeller-driven aircraft may operate without restriction until 1 January 1988, thereafter they are subject to the conditions applying to group A or B as appropriate.

### **NOISE LEVEL DATA**

The Department of Aviation shall decide, based on data supplied by the operator, whether or not an aircraft meets the noise level requirements listed in paragraph 6.3.2.1.1. Until an aircraft operator has this information it shall be considered to be in Group B. The operator

shall supply the Department with sufficient noise level information to enable it to reach a decision.

### **OPERATIONAL APPLICATION, EXCEPTIONS AND DISPENSATIONS**

The curfew does not apply to an aircraft when operational safety is involved or when it is engaged upon a flight for urgent medical, flood, or fire relief purposes, to an evacuation flight undertaken to save some person from grave or imminent danger or to a flight which has an in-flight medical emergency.

An aircraft subject to a curfew shall not depart from a curfewed airport unless air traffic control has been advised that the aircraft doors are closed or the aircraft has requested a push back or taxi clearance at, or before, the start of the curfew.

An aircraft subject to a curfew, and bound for a curfew airport, shall depart only if the estimated time of arrival will be at, or before, the start of the curfew. However, if the aircraft is subsequently delayed en-route by unforecast headwinds, thunderstorms, operation conditions, traffic, etc, it may continue and land.

Dispensation from the conditions of the curfew require the approval of the Minister for Aviation.

The Minister may, at his discretion, approve operations in the following situations:

- (a) when exceptional passenger hardship is involved;
- (b) for humanitarian reasons;
- (c) for delayed flights by visiting Heads of State, the Governor-General or the Prime Minister;
- (d) at Adelaide Airport, aircraft assessed by the Department of Aviation as 'low noise'.

All curfewed airports may be nominated as alternates provided that:

- (1) the aircraft is not prohibited from operating at the alternate airport by the conditions of the curfew, or
- (2) no other suitable alternate is available.

An aircraft diverting to a curfewed airport may not land during the curfew if it has sufficient fuel to hold until the end of the curfew. Once it has landed at a curfewed airport, a diverted aircraft shall not depart again during the curfew.

*Source: Aviation Industry Advisory Council Submission*

## APPENDIX 14

### Land Use Compatibility Advice by the Department of Aviation for Areas in the Vicinity of Australian Airports

<i>Land Use</i>	<i>ANEF range</i>			
	<i>Below 20</i>	<i>20-25</i>	<i>25-30</i>	<i>Above 30</i>
Residential	Yes	Yes (Note 1)	No	No
Hotels, motels, offices, public buildings	Yes	Yes	(Note 2)	No
Schools, churches	Yes	No	No	No
Hospitals, theatres	Yes	Yes (Note 2)	No	No
Commercial, industrial	Yes	Yes	Yes	(Note 2)
Outdoor recreational (non-spectator)	Yes	Yes	Yes	Yes

*Notes:*

(1) Some people may find the areas within the 20 to 25 ANEF contours to be unsuitable for residential use, and land use authorities may consider it appropriate to incorporate noise control features in the construction of residences in such zones.

(2) An analysis of building noise reduction requirements should be made by an acoustic consultant for such land uses within these ANEF contours and any necessary noise control features included in building design.

(3) The actual location of the 20 ANEF contour is difficult to define accurately, mainly because of variations in aircraft flight paths.

*Source:* Department of Aviation

## APPENDIX 15

### Legal Opinion — Attorney-General's Department

#### ATTORNEY-GENERAL'S DEPARTMENT

ROBERT GARRAN OFFICES  
NATIONAL CIRCUIT  
BARTON ACT 2600

9 August 1984

Mr Peter Milton, M.P.  
Chairman  
House of Representatives Standing Committee  
on Environment and Conservation  
Parliament House  
Canberra ACT 2600

Dear Mr Milton

I refer to your letter to the Attorney-General dated 23 May 1984 and to his reply dated 21 June 1984. You seek advice from this Department on the Commonwealth's powers to regulate aircraft noise. You state that you are particularly interested in the following:

- Powers of the Commonwealth to acquire land surrounding new and existing airports solely to provide "noise buffer" zones;
- Powers of the Commonwealth to regulate land use in areas surrounding airports;
- Powers of the Commonwealth to regulate, using environmental criteria, the acquisition and replacement of aircraft; and
- Comments on the Law Reform Commission's Report Number 14, with particular reference to injurious affection.'

#### *Previous Advice*

2. I understand that the Department of Administrative Services has already made available to your Committee (as an attachment of the Department's submission to the Committee) a copy of this Department's memorandum of advice dated 30 November 1983 on the constitutional powers of the Commonwealth in relation to control of aircraft noise in the vicinity of airports ('the Departmental advice'). For ease of reference, a copy of the Departmental advice is attached.

3. Paragraphs 5-9 of the Departmental advice indicate the main sources of Commonwealth power to legislate in this area.

#### *Acquisition of 'Noise Buffer' Zones*

4. Paragraph 10 of the Departmental advice explains the Commonwealth's power to acquire a 'sound buffer' zone around Commonwealth airports. I assume it is not envisaged



that the Commonwealth should acquire land around airports other than Commonwealth airports.

#### *Regulation of Land Use in Areas Surrounding Airports*

5. The Commonwealth could regulate land use in privately owned areas surrounding Commonwealth airports only to the extent that such regulation was truly incidental to the exercise of specific Commonwealth powers. It is, in my view, clear that the Commonwealth could, for example, prohibit the erection, on land in the vicinity of an airport, of a structure that would impede access to the airport. Regulation of land use to provide 'noise buffer' zones is, arguably, different in that the purpose could be seen as protecting persons in the 'buffer' zones rather than facilitating use of the airport. In my view, however, regulation of land use in areas surrounding Commonwealth airports, in order to avoid or minimise adverse consequences of aircraft noise, would be 'incidental' to the effective exercise of the relevant Commonwealth powers.

#### *Regulation of the Acquisition and Replacement of Aircraft using Environmental Criteria*

6. The available powers are referred to in paragraphs 6-9 of the Departmental advice. I understand that aircraft in respect of which noise is a problem are, in practice, imported. The 'trade and commerce' power (constitution, s. 51(i), which enables the Commonwealth to prohibit the importation of aircraft that do not comply with environmental requirements, would therefore seem to be the most effective power for this purpose.

#### *Injurious Affection*

7. The submission of the Department of Administrative Services to the Committee notes that the implications of the proposals concerning 'injurious affection' in Report No. 14 of the Law Reform Commission, 'Land Acquisition and Compensation', were examined by a Departmental working party and the submission draws attention to the conclusion of that working party. This Department was represented on the working party. On the question of the Commonwealth's powers, I note that it is recommended in Report No. 14 that there ought to be a general right to recover compensation given to owners of land which is diminished in value by reason of an injurious factor resulting from the existence of anything constructed on Commonwealth land or the use of Commonwealth land. One injurious factor proposed to be specified is noise. I think that the Commonwealth Parliament could validly enact a law providing for the payment of compensation to persons whose interest in land is diminished in value by reason of the noise generated by aircraft operating at Commonwealth airports. As noted in paragraph 11 of the Departmental advice, the Commonwealth can make payments for any purposes whatsoever subject only to some possible exceptions not relevant here (*Victoria v. The Commonwealth* (1973) 134 C.L.R. 338, at pp.366-369, 391-396, 417-421).

8. Officers of this Department would be available to supplement this advice orally if the Committee thought that desirable.

(ERNST WILLHEIM)  
*for Secretary*

ATTORNEY-GENERAL'S DEPARTMENT

ROBERT GARRAN OFFICES  
NATIONAL CIRCUIT  
BARTON ACT 2600

30 November 1983

The Secretary  
Department of Administrative Services  
G.P.O. Box 1920  
Canberra ACT 2601

ATTENTION: Mr N.G. Whelan

**Aircraft Noise Inquiry**

I refer to your undated memorandum received on 28 October 1983 seeking advice on a number of questions for the purpose of the preparation by your Department of a submission to the Inquiry into Aircraft Noise by the House of Representative Standing Committee on Environment and Conservation.

2. This memorandum will deal with your constitutional questions which are as follows:

'What are the Commonwealth's powers to

- take steps to abate the impact of noise on property owners around airports;
- acquire land for the purpose of abating noise impact around airports;
- compensate for injurious affection or other damages to property and persons adjacent to airports resulting from aircraft activities'.

3. In the light of discussions with officers of your Department, I understand that at this stage you wish mainly to have some general guidance as to the scope of the Commonwealth's powers to deal with the problem of noise created by aircraft operating at, or in the vicinity of, Commonwealth-owned airports. In particular, you wish to be advised as to the scope for the Commonwealth to acquire land in the vicinity either of existing Commonwealth airports or of land the Commonwealth intends to acquire for the purpose of a Commonwealth airport. However, I shall also deal briefly below with constitutional powers in respect of other airports.

**LAW PROHIBITING EXCESS NOISE**

4. The Commonwealth has no specific power to legislate with respect to aircraft noise as such or, for that matter, aviation or air navigation as such.

**Commonwealth places**

5. However, so far as concerns Commonwealth airports established on land that has been acquired by the Commonwealth for public purposes, the Commonwealth Parliament can legislate under s. 52(i) of the Constitution to control noise made by aircraft at or in the vicinity of these airports.

**Overseas and inter-state aviation**

6. Furthermore, the Commonwealth Parliament may, pursuant to s. 51(i) of the Constitution, legislate with respect to noise caused by aircraft engaged in commercial

inter-state and international flights. Reasonable measures to control and regulate noise made by aircraft engaged in inter-state flights would probably not be regarded as infringing s. 92 of the Constitution. Section 51(i) also enables the Commonwealth Parliament to control the importation of aircraft by requiring that aircraft should, at the time of importation, satisfy certain requirements as to reduction or limitation of noise whether the aircraft be intended for intra-state or inter-state services.

#### **External affairs power**

7. In addition, the judgements of the majority of the High Court in the *Tasmanian Dam Case* (1983) 46 A.L.R. 625, establish that Commonwealth legislation can, by virtue of s. 51(xxix) of the Constitution, validly impose requirements relating to air navigation that are in conformity with an Annex adopted by the International Civil Aviation. You may wish to consult the Department of Aviation concerning the extent of obligations imposed on Australia under Annex 16 to the Chicago Convention dealing with aircraft noise.

#### **Corporations power**

8. Furthermore, the Commonwealth's corporations power in s. 51(xx) of the Constitution would enable the Commonwealth (subject to s. 92) to prohibit noise above specified levels by any aircraft operated, at least for commercial purposes, by any corporation whose 'trading' activities (by way of the supply of airline services or otherwise) were a substantial part of its total activities (*Tasmanian Dam Case*) (above).

#### **'Incidental' powers**

9. Each of the legislative powers referred to in the preceding paragraphs 'carries with it authority to make such provisions as are incidental to the effectuation of the purpose described by the express words of the power': *Federated Ironworkers' Association of Australia v. The Commonwealth*, (1951) 84 C.L.R. 265 at p. 277. there is also the express 'incidental' power in s. 51 (xxxix) of the Constitution.

#### **ACQUISITION OF LAND**

10. Land can be acquired by the Commonwealth (either by compulsory process or by voluntary sale or gift to the Commonwealth) for any 'purpose in respect of which the (Commonwealth) Parliament has power to make laws' (see s. 51(xxxi) of the Constitution). The Commonwealth could, of course, acquire land for the actual operations of aircraft within the Commonwealth's various powers mentioned above, including the 'incidental' powers. But it could also, in my view, acquire a 'sound buffer' zone around such airports, in order to prevent the occupation of that area by persons who might be harmed or unduly annoyed by the aircraft noise.

#### **COMPENSATION FOR HARM OR ANNOYANCE**

11. This Department takes the view that, unless and until a majority of the High Court decides otherwise (and it is most unlikely that, as presently constituted, it would do so), the Commonwealth can make payments for any purposes whatsoever subject only to some possible exceptions not relevant here (*Victoria v. The Commonwealth* (1975) 134 C.L.R. 338, at pp. 366-369, 391-396, 417-421). Accordingly, the Commonwealth could meet expenses incurred by property owners in sound-proofing their premises, or could pay 'compensation' (in a colloquial sense, not a legal one) for the annoyance caused by aircraft noise.

12. This advice has necessarily been in very general terms. If you require further advice on any aspects please let me know.

(Dennis Rose)  
for Acting Secretary