

---

# SUBMISSION ON AIRCRAFT NOISE POLICY

## EXISTING POLICY

*Noise insulation should be provided for all existing residences in Sydney and Adelaide with aircraft noise exposure exceeding 30 ANEF. All new residences with aircraft noise exposure exceeding 20 ANEF must be appropriately insulated. No new housing is permitted beyond 30 ANEF.*

## PROPOSED ALTERATION TO THE EXISTING POLICY

*The airport operator (at all airports in Australia) is to provide remedial insulation to all non-commercial buildings in existence under a designated Aircraft Noise Shadow. An Aircraft Noise Shadow is the internal area bounded by the 15 ANEF contour. All new residences with aircraft noise exposure exceeding 15 ANEF must be appropriately insulated.*

## RATIONALE

As population density increases, the economic imperative to use and develop land adjacent to Australia's (largely) inner city airports also increases. Repeated studies have shown that existing aircraft noise policy in Australia does not sufficiently address the health and welfare impacts associated with aircraft noise. The existing policy imposes an arbitrary level beyond which noise control is mandatory but the existing policy is applied in an arbitrary and inconsistent manner. New homes are treated differently to existing homes and homes in Sydney and Adelaide are treated differently to homes in any of the other (second class?) cities in Australia.

This submission suggests the uniform application of a noise remediation policy aimed at treating all residences (and schools etc) equally and in a manner which is backed by the research. It is submitted that the proposed policy is a cost-effective long term solution to the difficulty of balancing the commercial needs of the airports (and the community) with the needs of the citizens most directly impacted by those operations.

## THE ANEF

The Australian Noise Exposure Forecast (ANEF) system was developed by the National Acoustics Laboratory (NAL) and is based on the US Federal Aviation Administration's (FAA) Noise Exposure Forecast (NEF) system. The ANEF system has been endorsed by the Australian Government to be used as the basis for land use planning for the areas in the vicinity of Australian airfields and is now documented in the Australian Standard AS2021– 2000 *Acoustics—Aircraft Noise Intrusion—Building Siting and Construction*. ANEF contours represent increased exposure to aircraft noise with increasing value of the contour. The standard identifies suitable land uses within the various ANEF zones.

The ANEF contours are produced by the Integrated Noise Model (INM), a sophisticated computer modelling tool developed by the FAA. Preparation of the input data for the INM requires detailed information regarding aircraft flight tracks, aircraft operational profiles, aircraft noise signatures, aircraft movement numbers on specific flight tracks and time of day of the operations.

There are three different forms of contour maps recognised under the ANEF system:

- ANEFs - These are the official forecasts of future noise exposure patterns around an airport and they constitute the contours on which land use planning authorities base their controls;
- ANEIs - These are contours showing historic noise exposure patterns and are used in environmental reporting and benchmarking; and
- ANECs -These are scenario contours and are used to produce 'what if' contours, for example, in the process of examining flight path options around an airport.

In order to aid clarity the term 'ANEF' is generally used throughout this submission when referring to any of the above three types of contour.

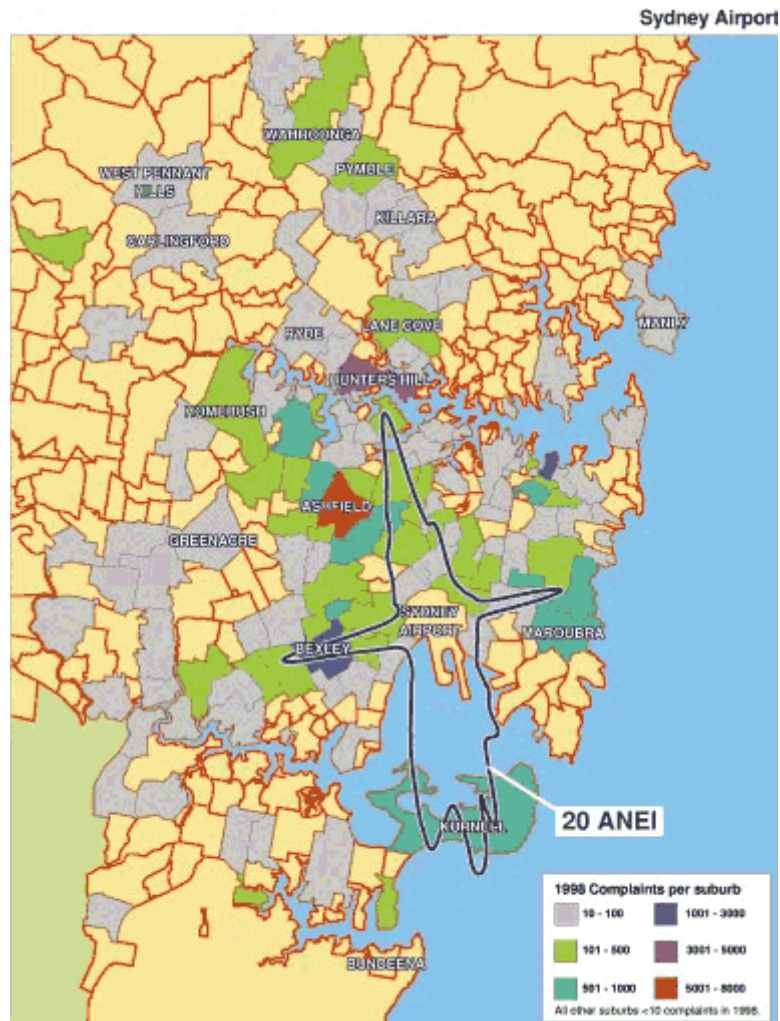
Obviously ANEF is only used in Australia, however there are comparable systems in place in most countries. The table below compares planning controls in a sample of countries with similar urban profiles to Australia (after translating approximately between the systems).

Noise Exposure ANEF	Australia	United States	Netherlands	France	Canada	Germany
> 40	No housing	No housing	No housing	No new Housing	Housing not Recommended	No new Housing
30 - 40	No new housing; insulation of existing housing at Sydney and Adelaide	No new housing; insulation of existing housing	No new housing; insulation of existing housing	Limited new housing	Housing not Recommended	Limited new housing
25 - 30	No new housing	<b>No restrictions</b>	No new housing	<b>No restrictions</b>	New housing with insulation	Restrictions in some States
20 - 25	New housing with insulation	<b>No restrictions</b>	No new housing	<b>No restrictions</b>	<b>No restrictions</b>	Restrictions in some States
< 20	<b>No restrictions</b>	<b>No restrictions</b>	<b>No restrictions</b>	<b>No restrictions</b>	<b>No restrictions</b>	<b>No restrictions</b>

Australia is fortunate in that (aside from Sydney and Adelaide), there is not significant population in residence within much of the 20 ANEF (or the 15 ANEF), meaning that the cost of remediation (should it ever be done) is significantly lower (and requiring significantly less political willpower) than in the comparable jurisdictions listed above. The extreme cost for remediation in those other jurisdictions leads the observer to the conclusion that restriction levels are being set with an eye to the cost rather than the health dangers associated with any particular ANEF level.

## IS 20 ANEF AN APPROPRIATE CUT-OFF?

Most aircraft noise complaints throughout Australia come from people living in areas which the ANEF system indicates are suitable for residential development - that is outside the 20 ANEF. At Sydney Airport during 1998 approximately 90% of the complaints came from residents of areas outside the 20 ANEF (ANEI on the graphic) contour.



**FIGURE 1 - WHERE NOISE COMPLAINTS COME FROM - 90% COME FROM OUTSIDE THE 20 ANEF**

In the areas outside the 20 ANEF noise contour, the standard assumes that noise exposure is not of significant concern. However, as detailed in the NAL report itself, noise does not drop off at this contour. As the graph below clearly shows, there is no sudden increase in satisfaction at the 20 ANEF. In fact, more than 2 out of 5 people are still affected by noise at that level.<sup>1</sup>

<sup>1</sup> Another problem with the 20 ANEF is that the actual location of the contour is difficult to define accurately, because of variations in aircraft flight paths, pilot operating techniques and the effect of meteorological and terrain conditions on noise propagation. For that reason, the 20 ANEF contour is shown as a broken line on ANEF plans.

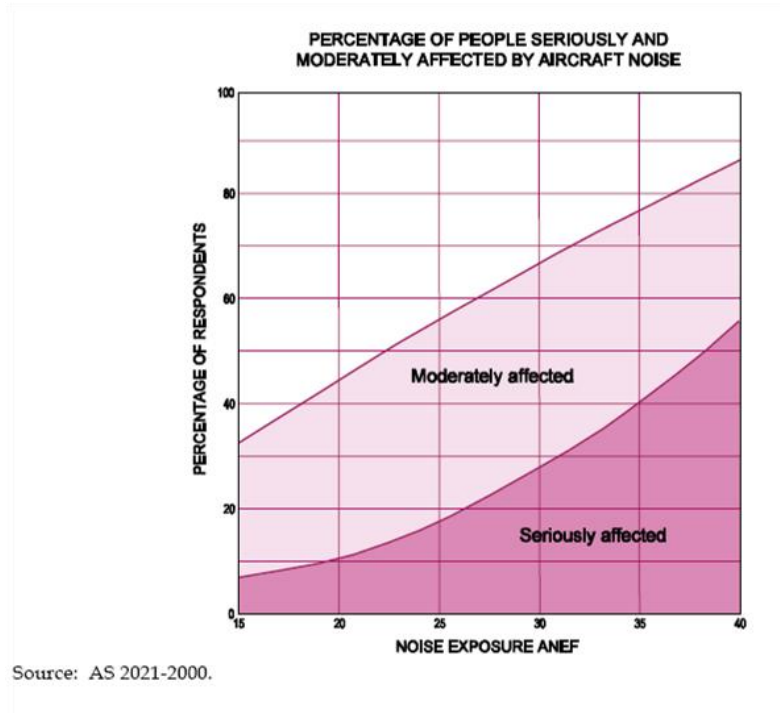


FIGURE 2 - MORE THAN 2 IN 5 PEOPLE ARE STILL AFFECTED BY NOISE AT THE 20 ANEF

Clearly there are people who consider themselves badly affected by noise at levels much lower than 20 ANEF. This is not inconsistent with the findings of the NAL study (the foundation for the existing standard) which showed that **over 40 per cent** of residents just outside this level of exposure are at least moderately affected by aircraft noise, and **over 10 per cent** are severely affected.

The NAL figures were confirmed in the Environmental Impact Statement for a proposed second Sydney Airport, quoting AS2021, where an extensive study found that at ANEF 15, **13% of residents will be seriously affected** and **50% will be moderately affected** by aircraft where those residents are newly exposed to aircraft noise. Given this, some airports (including Canberra) have been advocating that land use planning restrictions on residential development be extended to the 15 ANEF.

## CONCLUSION

If 15 ANEF is an appropriate restriction for new development (as advocated by the airports themselves), then it is my submission that is also an appropriate criteria for remediation works. It is for this reason that I believe the appropriate land-use planning tool to ameliorate the effects of the environmental issue of aircraft noise around airports is the 15 ANEF contour. All existing residences (and community buildings such as schools) within the 15 ANEF (a relatively small number in Australia), should be remediated with sound-proofing (not just those in Sydney and Adelaide) at the expense of the airport operators. Development within the 15 ANEF should require appropriate sound-proofing as a condition of land-use (at the expense of the developer).

## ABOUT THE AUTHOR

David Gillespie, B.Com, LLB., LLM is a former lawyer and veteran of the Australian Technology Industry. He has also served as the president of the Cannon Hill State School (CHSS) for the last four years. CHSS is directly affected by significant levels of aircraft noise as it is positioned within the 20 ANEF on the main approach to Brisbane Airport.