

The Truth About Aircraft Noise

By Ron Brent – Aircraft Noise Ombudsman

(The Australian Government appointed Ron Brent as Australia's first Aircraft Noise Ombudsman in 2010, to help improve the handling of complaints about aircraft noise, the information about aircraft noise and consultation about changes in air traffic that will alter the impact of aircraft noise. The views expressed in the article below are those of Ron Brent, as Aircraft Noise Ombudsman. They are not necessarily the views of the Government or of Airservices Australia or any other government agency.)

Recent housing developments around some of Australia's busiest airports, and further proposals for such developments have been the catalyst for some heated debate about the impacts of aircraft noise. Unfortunately the heat in the debate often comes at the expense of clarity, leaving the public with little understanding of what the noise will be like. Worse, those buying in these new estates often do so in ignorance of the noise that they will or might have to bear.

I hope to shed a little more light on what the noise will mean. In doing so I do not want to take sides on whether new developments near airports (such as the Tralee proposal near Canberra Airport) should go ahead or not. Rather I want to help those confronting decisions about such developments to have a better understanding of the issues.

The first thing to note is that the experience of aircraft noise (or any noise for that matter) by an individual is highly subjective. Unbearable noise for one person might not be of any concern at all to another. Research in USA has shown that, even in areas below the 'ANEF 20' noise rating up to 45% of the residents are likely to be moderately or severely affected by aircraft noise. The ANEF noise measurement standard is set by Standards Australia (and is currently being considered for review). I discuss this standard later in this article, but I note here that the ANEF standard suggests that outside the ANEF 20, housing construction does not need to be modified due to aircraft noise.

The second important thing about aircraft noise is that it is very different from the noise created by railways or busy roads. The key differences are that aircraft noise will reach a much wider area, cannot be shielded by barriers along the route, and is not restricted to a narrow and predictable path. I will explain each of these differences.

Noise from an aircraft in flight does not fall in a straight line, and is not limited to those directly under the aircraft. It spreads widely over an area that gets wider as the aircraft gets higher. It also gets quieter as the aircraft climbs. This means that the noise can reach more people once the aircraft is further from the airport, yet it can be many kilometres from the take-off point before the noise stops becoming intrusive for most people.

There is much talk about insulating houses under noisy flight paths. Unlike the barriers that you see along busy roads as they pass close to houses, aircraft noise cannot be shielded. Insulating buildings certainly makes a difference (by using noise reducing materials and construction techniques such as double-glazing). Unfortunately there is little that can be done outdoors and even insulated houses can suffer intrusive noise from aircraft. (Double glazing is not effective for those with a preference for leaving windows open.)

Most importantly, aircraft do not fly along precise tracks. Flight paths do not look like roads. The flight paths shown on maps are indicative but the actual tracks will splay over a much wider area. One of the causes of this, the limitations of navigation systems, is changing as more precise technology is introduced (now increasingly based on the satellite technology that is used in the GPS systems we all know from our phones and car navigation devices). On the other hand Air Traffic Control needs to adjust flight paths and deliberately spread aircraft along particular tracks to keep aircraft safely spaced in the sky.

To measure aircraft noise there is an Australian standard, the Australian Noise Exposure Forecast (ANEF). It is a forecast of noise exposure levels around an airport and in many jurisdictions is an input to land use planning decisions. It is also one of few prominent pieces of information available to members of the public seeking information about aircraft noise. Unfortunately, while this tool can provide high-level guidance to those considering the suitability of certain areas for residential or other noise sensitive developments, it does little to help those trying to decide if they can live with the noise at a certain ANEF level.

The ANEF level comes from a complex formula and is not easy to understand or explain. It includes factors such as; how loud the noise is, how frequent it is and the distribution of the noise across the day and the night. It is based on a forecast of aircraft activity (which may or may not bear out) and uses standard noise estimates for known aircraft types. It assumes consistent flight routes (which do not necessarily correspond to how planes fly in reality). The final averaged level will not tell you if you will get occasional loud noises, frequent quieter noises, lots of night noise, or most of the noise between 6 a.m. and 7 a.m. when you hope to sleep in. (The ANEF measure is currently being considered for review by Standards Australia.)

Furthermore, the ANEF level will not tell you how bad things will be on the worst days. In summary, it is impossible to convert an ANEF rating into a description of what the noise will be like. By way of contrast, there are alternative measures. One example is an 'N70 contour' which outlines areas within which there will be a given number of times a day (on average) that will get noise loud enough to disrupt a reasonably loud conversation (i.e. above 70 decibels). With additional information (such as maximum and minimum daily forecasts), this can be a better guide to what the noise may be like in a particular area.

So what does all this mean for housing developments near airports? There is no doubt that many people live very happily in close proximity to busy airports and can cope with lots of aircraft noise. There is also no doubt that, no matter how close to an airport houses are, there will be those who move into them unsuspecting about the aircraft noise they will experience or how it might affect them.

It is easy to criticise those people who buy or rent close to an airport for not realising what they are letting themselves in for – 'buyer beware'. On the other hand, it is easy to understand why people can feel misled. References to the 'ANEF' can make it seem as though the noise is acceptable, but the experience of noise is such a subjective and personal matter that there can be no standard of 'acceptable' (other than silence) that will meet every individual's notion of acceptable. The experience of my office bears this out.

It is easy to suggest that people who want to move to an area near an airport only need to park at the property for a while to make their own judgments about the noise. Unfortunately the noise will vary by time of day, day of the week, season, wind direction, local weather generally, and weather at remote airports. (For example, on this last point, a storm at Sydney Airport can affect traffic levels at every other major airport in Australia.) Short of spending a year or two parked there, this is not a reliable guide. Indeed even that won't help given that the aviation sector is not only growing rapidly, but the mix of planes and technologies is also changing rapidly, which further affects noise.

Currently there are initiatives underway to improve the information that is available about aircraft noise but, until there is a clear unambiguous warning as part of every transaction for houses anywhere near an airport, many buyers will not even think to check out the aircraft noise situation. The warning that is included in the advice from councils to people enquiring about a house purchase is usually in soft form mentioning possible aircraft noise. This form of warning has proved to be too general, and not backed by useful and comprehensible information.

It is important to look at aircraft noise in as many different presentations as possible. This includes maps showing the number of events over a certain loudness (e.g. N70 contours showing average daily events louder than 70 decibels), often broken up by day and night, season, and ideally showing maximum and minimum daily numbers as well as averages.

Some locations have maps showing noise without precise contours but rather shading where the noise fades out. Living just outside a particular noise contour does not necessarily make a noticeable difference. As the loudness drops from 70 to 69 decibels a house may look like it is in a quieter zone, but in reality most people cannot detect a change in loudness of less than about 3 decibels.

In the end the best approach would be to avoid building homes or other noise sensitive developments in high noise zones. On the other hand, it can be difficult to argue that people for whom the noise is not a problem should be denied access to homes in convenient locations that suit them.

If there are to be homes in these areas, I would want to see clear statements about the aircraft noise. It is not helpful to point out that the houses are not under a flight path or outside a particular noise level contour if the truth is that the houses are right on the edge of a noise contour, and that they are near enough to a flight path that planes will fly overhead. Even if the aircraft do not fly directly overhead the noise will be no less than when the planes fly over the parkland the other side of the back fence.

The recent debate over the newly approved development at Tralee (near Canberra airport) provides some good examples of the problems that concern me. It has been pointed out that the houses are outside the '20 ANEF'. What has not been pointed out is that the houses go right to the '20 ANEF' line at which point the average person would not be able to hear the difference from being on the other side of the line. Also not discussed was that the airport operators have forecast that most of the houses could potentially have noise at 70 decibels or more as many as 20 times a day on average (on busy days more than this).

At 70 decibels the noise will drown out conversation around the barbecue (where an insulated house will not help). The Airport's forecast suggests that the houses could potentially get up to an average of 100 events a day at 60 decibels, a level that complaints show is intrusive to many people living on the edge of a rural area.

It is also worth pointing out that the ANEF is based on forecasts by the Airport of expected, planned, or hoped for traffic levels. (This is true also of most N70 contours, and indeed any other measures of likely future noise around airports.) These forecasts may or may not be accurate. This raises the question of who should provide the noise information. In the end it is a shared responsibility. I am aware that airports are currently working with Australia's air traffic control provider (Airservices Australia) to provide better information about aircraft noise. Most importantly, for new land developments the developers and the government planning and building control agencies should take responsibility for emphasising (rather than downplaying) potential noise concerns.

As Aircraft Noise Ombudsman I receive many complaints about aircraft noise and only in a minority of cases is there anything that can be done in the short term to reduce the impacts. I would prefer to see high noise corridors left for uses other than residential houses. If developments are to occur in these corridors I would like to see the possible impact of the noise emphasised rather than downplayed so that potential buyers can make an informed decision.

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