SUBMISSION BY DR. ERIC ANCICH TO THE DEPARTMENT OF INFRASTRUCTURE, TRANSPORT. REGIONAL DEVELOPMENT, COMMUNICATIONS AND THE ARTS IN RELATION TO THE AVIATION GREEN PAPER 2023

The Terms of Reference (ToR) for the White Paper were released on 7 February 2023. Stakeholders were invited to make initial submissions on the Terms of Reference by 10 March 2023. A total of 192 submissions were received by the Department with 110 provided by organisations and 82 submissions from the general public with 63 of the 192 public submissions received in relation to the ToR concerned with aircraft over-flight noise.

On 7 September 2023, the Government released the *Aviation Green Paper – Towards 2050*. The Green Paper will examine the Government policy and economic reforms necessary to promote efficiency, safety, sustainability and competitiveness of the aviation sector out to 2050. The Green Paper notes that the Australian Noise Exposure Forecast (ANEF) system has been a tool to guide land-use planning surrounding airports for almost 40 years. However, it is becoming increasingly recognised that relying solely on ANEF contours is insufficient for portraying noise and its impact. The Green Paper seeks stakeholder views on options to improve noise metrics. Whilst the body of the Green Paper only considered submissions in general terms, specific areas of interest were set out in Appendix A – Summary of questions.

In relation to Chapter 6 – Airport development planning processes and consultation mechanisms, areas to be considered include:

- Do you have comments on how the operation and effectiveness of the Noise Complaints Information Service could be improved?
- How could the Australian Noise Exposure Forecast, and use of the ANEF in Government planning processes, be improved?
- What are appropriate, modern noise metrics that should be used to communicate aircraft noise impacts?
- How can governments better communicate with potential purchasers of properties which will be affected by aircraft noise in the future?
- How can new and different types of noise impacts from projected growth in drone use best be managed?
- Do these processes provide sufficient opportunity for impacts on the community to be identified and taken into account? How can they be improved?
- What can be done to proactively mitigate noise impacts by better informing residents and land-use planners?
- What else can airlines and airports do to support better management of aircraft noise?
- What can be done to facilitate increased adoption and implementation of the National Airports Safeguarding Framework principles for land planning to optimise land-use activity and reduce community impacts?
- Could governance arrangements for the Aircraft Noise Ombudsman be improved to provide greater independence, including publishing its findings and reports?

- Are there opportunities to improve transparency by publishing information about other decisions made by CASA, Airservices or airports around flight paths, and how aircraft approach and depart airports?
- How can the flight path design principles be improved?
- How can the existing consultation framework be improved to facilitate efficient planning and development, while preventing environmental harm and ensuring continued access for aviation users?
- Are Community Aviation Consultation Groups (CACG) working for the community? What are good aspects, and what can be improved?
- How could the Australian Government improve regulation to facilitate efficient planning and development while preventing environmental harm and protecting airports for aviation use?
- Is a monetary threshold still an appropriate mechanism for determining a 'major airport development' requiring a Major Development Plan (MDP)? What other significance tests could the Australian Government consider?
- Do current master planning processes adequately account for climate risks and if not, how could they be improved?
- Do the current master planning processes support all airport users, including general aviation?

This submission will be confined to addressing these questions.

Questions and Answers

Question 1. *Do you have comments on how the operation and effectiveness of the Noise Complaints Information Service could be improved?*

The role of Airservices Australia (AsA) in handling aircraft noise complaints appears to have been formalised on 22 July 2010 [1]. In this document, the group within AsA responsible for this function was the Noise Enquiry Unit (NEU). Presumably, the NEU is now known as the Noise Complaints Information Service (NCIS). The document further notes that AsA are responsible for handling noise enquiries, comments and complaints concerned with aircraft operations in accordance with the Airports Act 1996 and Ministerial Directions of 29 May 1996 and 3 May 1999 (M37/99) that are made in accordance with the Air Services Act 1995.

The AsA Annual Report for 2021-22 indicates that the total number of contacts the NCIS received in 2021-22 was 30,865. This was 5,289 more than the 25,576 recorded in 2020-21 (a 20% increase in contacts Australia wide). What is not known is whether the 30,865 contacts received by NCIS were only initial complaints or whether it included subsequent complaints from the same person. It is considered that the initial complaint by a person and any subsequent complaint (relating to a different flight on the same or different days) should be treated as new and separate complaints.

[1] Airservices Australia, "Procedures for Aircraft Noise Enquiries/Complaints", Issue No. 1.0, July 2010

In their submission in relation to the ToR [2], the Aircraft Noise Ombudsman (ANO) noted that complainants often express confusion when trying to find out who is responsible for regulating aircraft noise and anger at what appears to be a general lack of regulation.

Whilst the Commonwealth Ombudsman is appointed by the Governor-General, the Aircraft Noise Ombudsman is effectively an agency of AsA. Many in the community see the reporting arrangements for the ANO as neither transparent nor independent. The inclusion of aircraft noise into the suite of responsibilities of the Commonwealth Ombudsman would solve this perceived lack of transparency and independence.

It is noted that a not dissimilar observation was made in the 2010 report of the Senate into AsA [3]. Recommendation 5 of that Report was as follows:

> *"6.28 The committee recommends that the Aircraft Noise Ombudsman must be established independently of Airservices Australia and report publicly and directly to the Minister for Infrastructure, Transport, Regional Development and Local Government and to the Australian Parliament."*

Recommendation 5 would, presumably, include appointment by the Governor-General and, it is recommended that this change be implemented as soon as practicable.

Question 2. *How could the Australian Noise Exposure Forecast, and use of the ANEF in Government planning processes, be improved?*

The "*Falling on Deaf Ears?*" Report [4] and the 2018 report by Emeritus Prof. Andrew Hede [5] both question the reliance on the ANEF metric as an indicator of likely adverse community reaction to aircraft over-flight noise. Similar observations have been made to the Melbourne Airport Environs Safeguarding Standing Advisory Committee (MAESSAC) by DITRDC [6] and Rob Bullen Consulting [7].

[2] Aircraft Noise Ombudsman (2023), Submission to Aviation White Paper, Department of Infrastructure, Transport, Regional Development, Communications and the Arts website

[3] The Senate Rural and Regional Affairs and Transport References Committee, "The effectiveness of Airservices Australia's management of aircraft noise", Canberra, ACT, June 2010.

[4] Falling on Deaf Ears? Report of the Senate Select Committee on Aircraft Noise in Sydney, Parliament House, Canberra, 1995

[5] Hede A. "Review of International Research on Community Reaction to Aircraft Noise Report No.1: Overview of Aircraft Noise Metrics, 2018" Commissioned by the Sydney Airport Community Forum (SACF)

[6] Department of Infrastructure, Transport, Regional Development and Communications (Submission 17)

[7] Bullen R. "Melbourne Airport Environs Safeguarding Standing Advisory Committee: Description of Noise Metrics and Impacts", Report No. 20113-1, Prepared for Minter Ellison, December 2020.

Similar observations have also been made in other Forums. The Canadian House of Commons [8] found serious limitations on the use of NEF contours (N.B. Basically the same as ANEF contours except Australia has changed its time-of-day weightings to better reflect responses of a survey of residents near major airports). Ancich [9] noted the almost religious reliance on the ANEF metric as an indicator of likely adverse community reaction to aircraft over-flight noise.

The preparation of ANEF contours for use in Major Development Plans (and, presumably Environmental Impact Studies) in mandated by Section 91 (f) of the Airports Act 1996 for the management of aircraft noise intrusion in areas forecast to be subject to exposure above the **significant ANEF levels** (emphasis added). Section 5 of the Act defines "Significant ANEF levels" as a noise above 30 ANEF levels. This is, arguably, a requirement that has outlived its usefulness. A 20 ANEF requirement would better serve the needs of land use planning in the vicinity of new and existing airports. However, it is acknowledged that the Foreword to AS2021:2015 [10] advises:

> "*Exposure prediction below 25 ANEF may be significantly inaccurate, and therefore caution should be exercised in the evaluation of locations outside the 25 ANEF contour. In addition, the extent of noise reduction required for a building may depend in part on the amount of noise from sources other than aircraft. Because of these factors and of the special acoustic requirements of certain types of building, it will sometimes be necessary to undertake supplementary noise measurements so that a sufficiently representative prediction of the noise exposure at the site under evaluation can be obtained. This is also true for aerodromes at which a significant number of training circuits occur. Such measurements should be performed only by personnel appropriately qualified in acoustics*"

It is strongly recommended that the use of ANEF contours be abandoned or strictly limited to land use planning. It is considered that the use of N-above contours would much better serve the interests of communities surrounding new or existing airports.

Question 3, *What are appropriate, modern noise metrics that should be used to communicate aircraft noise impacts?*

International Aircraft Noise Metrics

In the US, the Federal Aviation Administration (FAA) regulates the maximum noise level that individual civil aircraft can emit through requiring aircraft to meet certain noise certification standards. These standards designate changes in maximum noise level requirements by "stage" designation. The U.S. noise standards are defined in the Code of Federal Regulations (CFR) Title 14 Part 36 – Noise Standards: Aircraft Type and Airworthiness Certification (14 CFR Part 36). The FAA says that a maximum day-night average sound level (L_{dn}) of 65dBA is incompatible with the wellbeing of residential communities. Communities in affected areas may be eligible for mitigation such as soundproofing.

[8] "Assessing the Impact of Aircraft Noise in the Vicinity of Major Canadian Airports". 28th Report of the Standing Committee on Transport, Infrastructure and Communities, March 2019.

[9] Ancich E. "Submission to the Senate Finance & Public Administration References Committee relating to the Planning, Construction & Management of the Western Sydney Airport project", February 2021 (Submission 44).

[10] Standards Australia AS 2021-2015, "Acoustics—Aircraft noise intrusion—Building siting and construction", Sydney, 2015.

Based on work undertaken by Burgess et al. [11], a maximum day-night average sound level (L_{dn}) of 65 dBA in Australia would be similar to ANEF 30. It is noted that for Sydney Airport, assistance with the sound insulation of residences, within the 30 ANEF contour, was provided.

The US seek to describe the effects of environmental noise in a simple, uniform and appropriate way and, to achieve this, the day-night average sound level (L_{dn}) noise metric is used. L_{dn} is a metric that reflects a person's cumulative exposure to sound over a 24-hour period, expressed as the noise level for the average day of the year on the basis of annual aircraft operations. All the factors are calculated for the entire area surrounding an airport. An entire year's worth of flights from the airport is examined using sophisticated aircraft noise modelling programs such as the Aviation Environmental Design Tool (AEDT). An aircraft's weight, trajectory, flight path, and many other characteristics are input into the program. To account for a higher sensitivity to noise exposure at night (occurring between 22:00 and 07:00), L_{dn} calculations add a 10 dBA penalty for each night-time flight, equivalent to each night-time event being measured as if ten daytime events had occurred. The Draft 2023 Environmental Impact Statement for Western Sydney International (Nancy Bird-Walton) Airport [12] advises that:

> *"...However, in projecting into the future using noise modelling must rely on assumptions, which are either averaged or simplified for modelled purposes. They cannot replicate actual operations for every aircraft on every day. Actual operating conditions and human factors means that no 2* (sic) *aircraft on any day will follow the exact flight paths (vertical and lateral extents). The precise flight path will differ due to variations in altitude, thrust, payload, environmental conditions or other operational or human factors…"*

This advice confirms that noise modelling is not "*reality*" but only an approximation of reality.

Europe uses a similar approach with the day-evening-night noise level (L_{den}). Here, the L_{den} (Day Evening Night Sound Level) or CNEL (Community Noise Equivalent Level) is the average sound level over a 24 hour period, with a penalty of 5 dBA added for the evening hours of 19:00 to 22:00, and a penalty of 10 dBA added for the night-time hours of 22:00 to 07:00. Both the L_{dn} and the L_{den} noise metrics are easily calculated using L_{Aeq} noise levels measured over a typical continuous 24-hour period.

Adverse Health Effects

A large-scale statistical analysis of the health effects of aircraft noise was undertaken in 2010 on behalf of the German Federal Environment Agency (Umwelt Bundesamt) [13]. The health data of over one million residents around the Cologne airport were analysed for health effects correlating with aircraft noise.

[11] Burgess M., Cotton M. and Butler K. "Residential Insulation Scheme Around Sydney Airport". 29th International Congress and Exhibition on Noise Control Engineering, August 2000, Nice, France.

[12] Department of Infrastructure, Transport, Regional Development, Communications and the Arts. "Draft Environmental Impact Statement for Western Sydney International (Nancy Bird-Walton) Airport – Technical paper 1: Aircraft Noise", Canberra, ACT, September 2023.

[13] Greiser, E., and Greiser C., "Risikofaktor nächtlicher Fluglärm Abschlussbericht über eine Fall-Kontroll-Studie zu kardiovaskulären und psychischen Erkrankungen im Umfeld des Flughafens Köln-Bonn " (Nighttime aircraft noise risk factor: Final report on a case-control study on cardiovascular and mental illnesses Surroundings of Cologne-Bonn Airport), Umwelt Bundesamt, Dessau-Roßlau, Germany, 2010 (in German).

The results were then corrected for other noise influences in the residential areas, and for socioeconomic factors, to reduce possible skewing of the data. The German study concluded that aircraft noise clearly and significantly impairs health. For example, a day-time average sound pressure level of 60 dBA increased coronary heart disease by 61% in men and 80% in women. As another indicator, a night-time average sound pressure level (L_{dn}) of 55 decibels increased the risk of heart attacks by 66% in men and 139% in women. Statistically significant health effects did, however, start as early as from an average sound pressure level of 40 dBA.

A study by Masche [14] concluded that the German Federal Environment Agency recommendation of a noise rating levels of 65 dBA for the day and 55 dBA for night-time, was appropriate but only as a **short-term goal** (emphasis added).

In the medium term, noise rating levels of 60/50 (day/night) should be reached and noise rating levels of 55/45 should be targeted in the long term.

Huss [15] found that people exposed to high levels of noise from aircraft were at increased risk of dying from myocardial infarction. The association was strongest in those who had lived at the same highly exposed location for at least 15 years. In addition, for mortality from myocardial infarction, the authors compared highest ($\geq$60 dBA) with lowest (<45 dBA) levels of exposure to aircraft noise.

For aircraft noise, the World Health Organisation (WHO) [16] recommends a maximum day-time noise level of 45 L_{den} and a maximum night-time noise level of 40 L_{night}. Greiser et al. [17] found that night-time aircraft noise increases the prevalence of prescriptions for anti-hypertensive and cardiovascular drugs, especially when prescribed in combination with and in conjunction with anxiolytic medication.

Denison et al. [18] concluded that their study showed that the proposed expansion of Melbourne International Airport would lead to significant increases in the percentage of the population that are highly annoyed by aircraft noise. They add that it has also been shown that there will be a significant increase in sleep disturbance in the exposed community which may lead to increases in health effects such as cardiovascular disease, anxiety and depression. They note that the WHO (2018) guidelines are exceeded across the areas within the ANEF 20 and ANEF 25 contours indicating that there is an increased risk of adverse health effects within the exposed population.

Alternative Aircraft Noise Metrics

The use of N-above (N60/N70) Noise Metrics is an approach that combines aircraft over-flight noise information in a single event noise contour with the ability to consolidate this information into a description of high noise 'zones' is available. Information on the number of noise events is termed the 'Number Above' noise metric.

[14] Maschke C. Cardiovascular effects of environmental noise: Research in Germany. Noise Health 2011;13:205-11.

[15] Huss, A., Spoerri, A., Egger, M, and Röösli, M. "Aircraft Noise, Air Pollution, and Mortality From Myocardial Infarction", Epidemiology, Volume 21, Number 6, November 2010.

[16] Environmental noise. In: Compendium of WHO and other UN guidance on health and environment, 2022 update. Geneva: World Health Organization; 2022 (WHO/HEP/ECH/EHD/22.01). Licence: CC BY-NC-SA 3.0 IGO.

[17] Greiser, E., Greiser, C. and Janhsen, K. Night-time aircraft noise increases prevalence of prescriptions of antihypertensive and cardiovascular drugs irrespective of social class—the Cologne-Bonn Airport study". J Public Health 15, 327–337 (2007). https://doi.org/10.1007/s10389-007-0137-x.

[18] Denison L. and DiGiovine M. "Melbourne Airport Expansion Noise Risk Assessment", Tonkin & Taylor Pty Ltd, Report prepared on behalf of Brimbank City Council, April 2022.

In Australia, this is commonly called the N70 (or N65 or N60) where N70 is the number of aircraft noise events louder than 70 dBA. Thus, residents can be informed in a way that is more intuitive. In other words, how many "noisy" events will be experienced within the illustrated zone? Such 70 dBA events have often been used to categorise an event as 'noisy' as these correspond to an approximate 60 dBA noise level indoors (if windows are open to normal extent), which can disturb conversation or other indoor activities such as watching television.

This system of describing aircraft noise was developed by the Department of Transport and Regional Services (now known as the Department of Infrastructure, Transport, Regional Development, Communications and the Arts) following industry and community consultation and is described by DOTRS [19]. The system is oriented towards providing information in a form that can be understood by interested members of the public, and provides a comprehensive description of the nature of aircraft noise exposure at any point.

The information is presented in terms of a number of descriptors, and is intended to provide sufficient detail to allow members of the public to understand for themselves the likely impact of the noise.

The most commonly-used noise descriptor in this system is N70 – the number of aircraft noise events per day exceeding 70 dBA. (A-weighted decibels (dBA) are an expression of the relative loudness of sounds in air as perceived by the human ear). This noise level is sufficient to disturb conversation, in that a speaker would generally be forced to raise their voice to be understood.

An internal noise level of approximately 60 dBA (from an aircraft over-flight) is likely to also cause some words to be missed in conversation or from a television or radio program. The N70 values indicate the number of times per day when such events would occur.

Whilst this approach has considerable merit, it is potentially flawed as there is currently no national or international standardised approach for determining the number of aircraft noise events per day exceeding 70 dBA (for, say, the N70 metric). There is also no standardised approach for determining the acceptability of particular N-above levels in assessing adverse community reaction. Historically, different approaches appear to have been used.

In the 2015-16 EIS for Western Sydney Airport [20], a procedure for producing N70 contours was described in Section 2.9. A virtually identical procedure is described in the 2021 Melbourne Airport Major Development Plan (MDP) [21]. The MDP is silent with respect to the accuracy of the N-above contours presented as was the 2015-16 Western Sydney Airport EIS.

19] Department of Transport and Regional Services, "Discussion Paper: Expanding Ways to Describe and Assess Aircraft Noise", Canberra, ACT, March 2000.

[20] WSA EIS, Appendix E-1 of Wilkinson Murray Report No. 14168 Version E, "Aircraft Overflight Noise", August, 2016

[21] Melbourne Airport – Third Runway Preliminary Draft Major Development Plan 2022.

In relation to the accuracy of N-above contours, reference is made to the following comment in an AsA report [22] relating to Sydney Kingsford Smith Airport.

> "*...The N70 aircraft noise map provides information on the total number of aircraft noise events that exceeded 70 dB(A) in a grid area that were likely to have interfered with conversation, sleeping and listening to the radio or television inside a house with the windows open. However, it is important to note the limitations with the N70 aircraft noise maps. The* (Integrated Noise Model) *INM does not provide users with a direct way of computing a 'Number Above' chart, unlike the* (Australian Noise Exposure Index) *ANEI and* (Time Above) *TA contours. It is only possible to derive 'Number Above' values on a rectangular grid, which is then processed for importing into the GIS software package. The accuracy of the N70 contours shown in Attachment F is therefore* ***at best*** (emphasis added) *plus or minus 500 metres, the distance between grid points used by INM in the calculations. In addition, the superimposed contours may have incurred errors in the transformation from INM coordinates to the map coordinates that were used in the preparation of the N70 chart...*"

It is understood that the FAA's Aviation Environmental Design Tool (AEDT) model currently in use in Australia has the same constraints as the now superseded INM model.

The Melbourne Airport MDP [21] is also silent with respect to the accuracy of the N-above contours shown. The accuracy and reliability of the N-above contours presented in the MDP is seriously questioned as, it appears, the L_{Amax} data used to generate the N-above contours are based on average rather than instantaneous data. And, in a similar manner to the 2015-16 WSA EIS, the method used for averaging the L_{Amax} data is neither defined nor disclosed.

It is considered to be of paramount importance that the L_{Amax} data used to produce all N-above noise contours are instantaneous maxima as defined by the international Civil Air Navigation Services Organisation [23] and the UK Civil Aviation Authority [24].

N70 noise contours are also gaining acceptance internationally. The approach is currently used in Austria, Belgium, Sweden and the UK. Extensive use of N60, N65 and N70 contours was made for the Brussels-National Airport [25].

Question 4. *How can governments better communicate with potential purchasers of properties which will be affected by aircraft noise in the future?*

Under current arrangements, the use of ANEF contours is effectively the only means of informing residents and land-use planners of the likely changes around new or existing airports. As was shown earlier [4,5,6,7,8,9], ANEF contours are an imperfect metric for communicating with potential property purchasers that will be affected by aircraft noise currently or in the future.

[22] Airservices Australia, "Sydney Airport, N502 Australian Noise Exposure Index 1 January 2017 to 31 March 2017", 2017.

[23] Managing the Impacts of Aviation Noise (A Guide for Airport Operators and Air Navigation Service Providers), Civil Air Navigation Services Organisation, Amsterdam, The Netherlands, 2015.

[24] Jones K. and Cadoux R. "Metrics for Aircraft Noise", ERCD Report 0904, Environmental Research and Consultancy Department, Directorate of Airspace Policy, Civil Aviation Authority, London, UK, 2009.

[25] Anon."Étude Définitive Relative Aux Incidences De L'Exploitation De L'Aéroport De Bruxelles-National Sur L'Environment, Pour Ce Qui Concerne Les Nuisances Sonores, Chapitre 3 : Nouvelle cartographie et scénarios alternatifs", (Definitive Study Relating to the Impacts of Operation of Brussels-National Airport on the Environment, For What Concerns Sound Nuisances, Chapter 3: New Mapping and Alternative Scenarios), Report prepared by Envisa for Federal Public Service, Mobility and Transport, May 30, 2022 (in French).

Emeritus Professor Andrew Hede is commonly regarded as the developer of the ANEF metric (see Hede, AJ, & Bullen, RB. 1982, *Aircraft Noise in Australia: A Survey of Community Reaction*, National Acoustic Laboratories Report No. 88, Australian Government Publishing Service, Canberra). However, in his 2018 report commissioned by the Sydney Airport Community Forum *(SACF)* [5], Prof. Hede notes that:

> *"The land-use planning application of the ANEF metric relates mainly to the Australian Standard on aircraft noise (ref., Standards Australia, AS2021, 2015). This standard lists the ANEF cut-offs approved for building siting. Specifically, the Standard provides a table prescribing that areas exposed to less than 20 ANEF are considered 'acceptable' for such listed building types as 'house', 'school', and 'hospital' (see Standards Australia, 2015, Table 2.1, p12).*
>
> *This standard uses the term 'acceptable' only to mean acceptable for specified land uses (e.g., 'less than 20 ANEF' is rated as 'acceptable' for new residential development). However, public officials and community members often* ***misinterpret this*** (emphasis added) *to mean that 'less than 20 ANEF' is an 'acceptable' amount of aircraft noise and by implication, that this amount of noise is 'insignificant' or 'negligible' not only for residential land use but also for 'permissible' human reaction".*

In practical terms, the ANEF metric is useless for potential property purchasers. The Victorian MAESSAC Inquiry [26] found that "*...The ANEF does not readily translate to an understandable noise level in decibels – the standard measure for how 'loud' something is...*" The most understandable metric for the lay-person is the N70 metric. It is useful to the lay-person, as it is an arithmetic indicator. All other things being equal, if the number of aircraft movements over an area doubles, the N70 doubles, which is a different outcome to logarithmic indicators such as the ANEF, which are relatively insensitive to such change.

However, it is noted that N70 contours are not favoured by some Local Government Authorities as they have the potential to effectively quarantine large areas of land around an airport that could otherwise be rezoned for residential use. Whilst, for practical purposes, the ANEF metric is effectively opaque, N70 (and similar) contours are more transparent and easily understood. Predicted (modelled) N70 (and similar) contours are easily validated using simple noise measurements.

Question 5. *How can new and different types of noise impacts from projected growth in drone use best be managed?*

Informed comment is not offered as the subject matter is outside the writer's area of expertise.

Question 6. *Do these processes provide sufficient opportunity for impacts on the community to be identified and taken into account? How can they be improved?*

[26] Melbourne Airport Environs Safeguarding - Standing Advisory Committee Issues and Options Paper - 23 April 2021.

The answer to this question is effectively the same as Question 14 following. Community consultation is a misnomer when the evidence of the FoWSA chair to a Senate Committee is considered [27]. Being "*merely a communications piece*" does not satisfy Senate Committee Recommendation 2 [28].

The ability to make representations to Government is fundamental and this requires a "*decision making*" capability, otherwise there is only the pretext of consultation.

Question 7. *What can be done to proactively mitigate noise impacts by better informing residents and land-use planners?*

Refer to answer provided for Question 4.

Question 8. *What else can airlines and airports do to support better management of aircraft noise?*

Informed comment is not offered as the subject matter is outside the writer's area of expertise.

Question 9. *What can be done to facilitate increased adoption and implementation of the National Airports Safeguarding Framework principles for land planning to optimise land-use activity and reduce community impacts?*

NASF Guideline A: Noise has been comprehensively addressed in the answers to Questions 2 and 3.

Question 10. *Could governance arrangements for the Aircraft Noise Ombudsman be improved to provide greater independence, including publishing its findings and reports?*

Whilst the Commonwealth Ombudsman is appointed by the Governor-General, the Aircraft Noise Ombudsman is effectively an agency of AsA. Many in the community see the reporting arrangements for the ANO as neither transparent nor independent. The simple inclusion of aircraft noise into the suite of responsibilities of the Commonwealth Ombudsman would solve this perceived lack of transparency and independence.

It is noted that a not dissimilar observation was made in the 2010 report of the Senate into AsA [3]. Recommendation 5 of that Report was as follows"

> *"6.28 The committee recommends that the Aircraft Noise Ombudsman must be established independently of Airservices Australia and report publicly and directly to the Minister for Infrastructure, Transport, Regional Development and Local Government and to the Australian Parliament."*

Recommendation 5 would, presumably, include appointment by the Governor-General.

[27] The Senate Finance and Public Administration References Committee "The planning, construction and management of the Western Sydney Airport project", Canberra, ACT, June 2022.

[28] The Senate Rural and Regional Affairs and Transport References Committee, "The effectiveness of Airservices Australia's management of aircraft noise", Canberra, ACT, June 2010.

It is recommended that the office of the Aircraft Noise Ombudsman be merged into the existing suite of responsibilities of the Commonwealth Ombudsman as this would solve the perceived lack of transparency and independence. Alternatively, it is considered that the implementation of Recommendation 5 of the Senate Report [3] would be equally effective.

The Aircraft Noise Ombudsman should be required to publish its findings and reports, without review or alteration by the executive staff of AsA, within as short a time period as possible, but certainly not longer than one month.

Question 11. *Are there opportunities to improve transparency by publishing information about other decisions made by CASA, Airservices or airports around flight paths, and how aircraft approach and depart airports?*

Informed comment is not offered as the subject matter is outside the writer's area of expertise.

Question 12. *How can the flight path design principles be improved?*

Informed comment is not offered as the subject matter is outside the writer's area of expertise.

Question 13. *How can the existing consultation framework be improved to facilitate efficient planning and development, while preventing environmental harm and ensuring continued access for aviation users?*

The answer to this question is effectively the same as Question 14 following. Community consultation is a misnomer when the evidence of the FoWSA chair to the Senate Committee is considered [28]. Being "*merely a communications piece*" does not satisfy Senate Committee Recommendation 2 [29]. The ability to make representations to Government is fundamental and this requires a "*decision making*" capability, otherwise there is only the pretext of consultation.

Question 14. *Are Community Aviation Consultation Groups (CACG) working for the community? What are good aspects, and what can be improved?*

Aircraft over-flight noise is a significant environmental noise issue and would appear to be the major environmental noise issue in communities surrounding major airports. In Brisbane, the Brisbane Flight Path Community Alliance was formed after the new parallel runway at Brisbane Airport became operational in 2020. In his submission to the Victorian Government's Melbourne Airport Environs Safeguarding Standing Advisory Committee (MAESSAC) inquiry related to Melbourne Airport, Bullen [29] reported a significant increase in noise complaints at Brisbane Airport. This was demonstrated in his Figures 3 and 4 which show the number of complaints around Brisbane Airport before and after the opening of its new parallel runway in July 2020. He emphasised that it should be remembered that total operations at the airport during this period were significantly reduced due to the COVID pandemic.

In addition to the Brisbane Flight Path Community Alliance, there are active community groups in Sydney, Melbourne, Gold Coast and the Sunshine Coast with significant concern in relation to aircraft over-flight noise. There is also the nationwide Community Aviation Alliance Australia (CAAA).

[29] Bullen R. "Melbourne Airport Environs Safeguarding Standing Advisory Committee: Description of Noise Metrics and Impacts", Report No. 20113-1, Prepared for Minter Ellison, December 2020.

This is a network of Australian community stakeholder groups, whose aims are to ensure the impact of the aviation industry on Australian communities, including aircraft noise, is given appropriate consideration in flight path, airport, and policy development.

On the webpage for the Forum on Western Sydney Airport (FoWSA), established and managed by the Department of Infrastructure, Transport, Regional Development, Communications and the Arts, their mission statement appears to be:

> *"The Forum on Western Sydney Airport (FoWSA) links the community, the Government and WSA Co during planning and construction of Western Sydney Airport and provides a consultative forum for the exchange of information and ideas. FoWSA members have a responsibility to inform their communities about planning and progress of the airport project and share information on a range of issues relating to the broader airport development. In turn, members will raise community concerns to be discussed at FoWSA meetings."*

There have been 21 FoWSA meetings but only three (2 June 2018, 7 September 2019 and 18 March 2023) have been open to the public. It is fair to say that FoWSA meetings are shrouded in secrecy. Minutes are eventually published on the website but sometimes months after the meeting.

It does not appear that members have raised any significant community concerns to be discussed at FoWSA meetings even though groups like Residents against Western Sydney Airport (RAWSA) have publicised major concerns.

It is noted that all FoWSA members, including the Chair, are determined by the Minister for Urban Infrastructure (Terms of Reference, Section 3) and this can scarcely be described as "*Community Engagement*" as it clearly lacks any independence. Until 2022, the membership of FoWSA was seriously deficient as the Federal Member for Macquarie had not been offered membership even though the electorate encompassed the Blue Mountains and the Hawkesbury, and included areas that will be directly impacted by Western Sydney International Airport. It is understood that the Member for Macquarie is now a member of FoWSA.

The current Chair of FoWSA (Ms Lee de Winton) gave evidence to the Senate Committee on 29 April 2021. In her evidence, she disclosed that FoWSA was not a decision-making body; but merely a communications piece [28] Being "*merely a communications piece*" does not satisfy Senate Committee Recommendation 2 following. The ability to make representations to Government is fundamental and this requires a "*decision making*" capability.

A potential lack of independence and objectivity observation was made in the 2010 report of the Senate into AsA [29]. Recommendation 2 of that Report was as follows"

> *"6.14 The committee recommends that a Community Aviation Advocate position should be funded and established where significant or extensive changes to the management of aircraft noise or airspace are proposed to assist and represent local communities."*

The Senate Report further recommended (Recommendation 3) that:

> *"6.19 The committee recommends that the Aircraft Noise Ombudsman undertakes a review of the Airservices Australia's Communication and Consultation Protocol to determine the extent to which the protocol:*
>
> *• was developed in consultation with Australian communities and will be subject to regular ongoing review;*
> *• clearly articulates the roles and responsibilities of all stakeholders and the minimum standards of consultation which communities can anticipate, and*
> *• commits Airservices Australia to providing readily available, easily understood and pertinent information (such as environmental noise assessments) to community consultation forums."*

This is an aspect requiring a major upgrade in accessibility and transparency. Not just for WSI but for all Australian Airports.

Question 15. *How could the Australian Government improve regulation to facilitate efficient planning and development while preventing environmental harm and protecting airports for aviation use?*

As was noted earlier [12], it is probably fair to say that no two airlines (or their pilots) operate their aircraft identically. Indeed, at Brisbane Airport, there is a Noise Abatement Departure Procedure that requires higher initial thrust settings to gain earlier climb and altitude due to leaving the wing flaps extended until 3000 ft. AsA has confirmed that it is regular practice for long-haul heavy aircraft to request cancellation of the Standard Instrument Departure (SID) procedure over the city, due to an inability to meet the current published climb gradients and/or speed requirements. It is believed that similar procedures and cancellation requests occur nationwide. As long as there is an "*opt out*" facility available to airlines, it is unlikely that efficient planning and development can take place whilst preventing environmental harm and protecting airports for aviation use.

Question 16. *Is a monetary threshold still an appropriate mechanism for determining a 'major airport development' requiring a Major Development Plan (MDP)? What other significance tests could the Australian Government consider?*

Informed comment is not offered as the subject matter is outside the writer's area of expertise.

Question 17. *Do current master planning processes adequately account for climate risks and if not, how could they be improved?*

Informed comment is not offered as the subject matter is outside the writer's area of expertise.

Question 18. *Do the current master planning processes support all airport users, including general aviation?*

Informed comment is not offered as the subject matter is outside the writer's area of expertise.

Conclusion

The US Federal Aviation Administration (FAA) describes the effects of environmental noise in a simple, uniform and appropriate way and, to achieve this, the day-night average sound level (L_{dn}) noise metric is used. L_{dn} is a metric that reflects a person's cumulative exposure to sound over a 24-hour period, expressed as the noise level for the average day of the year on the basis of annual aircraft operations. All the factors are calculated for the entire area surrounding an airport. An entire year's worth of flights from the airport are examined using sophisticated aircraft noise modelling programs such as the Aviation Environmental Design Tool (AEDT). An aircraft's weight, trajectory, flight path, and many other characteristics are input into the program. To account for a higher sensitivity to noise exposure at night (occurring between 22:00 and 07:00), L_{dn} calculations add a 10 dBA penalty for each night-time flight, equivalent to each night-time event being measured as if ten daytime events had occurred.

Europe use a similar approach with the day-evening-night noise level (L_{den}). Here, the L_{den} (Day Evening Night Sound Level) or CNEL (Community Noise Equivalent Level) is the logarithmic average sound level over a 24 hour period, with a penalty of 5 dBA added for the evening hours of 19:00 to 22:00, and a penalty of 10 dBA added for the night-time hours of 22:00 to 07:00. Both the L_{dn} and the L_{den} noise metrics are easily calculated using L_{Aeq} noise levels measured over a typical continuous 24-hour period.

The use of N-above (N60/N70) Noise Metrics is an approach that combines aircraft over-flight noise information in a single event noise contour with the ability to consolidate this information into a description of high noise 'zones' is available. Information on the number of noise events is termed the 'Number Above' noise metric.

In Australia, this is commonly called the N70 (or N65 or N60) where N70 is the number of aircraft noise events louder than 70 dBA. Thus, residents can be informed in a way that is more intuitive. In other words, how many "noisy" events will be experienced within the illustrated zone? Such 70 dBA events have often been used to categorise an event as 'noisy' as these correspond to an approximate 60 dBA noise level indoors, which can disturb conversation or other indoor activities such as watching television.

It is considered prudent that Australia gives careful consideration to the use of the European standard L_{den}. This noise metric would better reflect the 24 hour operation of the majority of Australian airports. The adoption of the L_{den} (or L_{dn}) noise metric would also aid in addressing the adverse health effects of aircraft noise particularly with respect to children.

It is considered to be of paramount importance that the L_{Amax} data used to produce all N-above noise contours are instantaneous maxima as defined by CANSO and the UK CAA [23] [24]. However, it is noted that in Figure 7.2 of the Draft 2023 Environmental Impact Statement for Western Sydney International (Nancy Bird-Walton) Airport [12], L_{Amax} is defined as "*...The maximum A-weighted sound level measured during an aircraft overflight...*" It is further noted that this definition makes no mention of an expressed or implied averaging procedure. To the extent that this observation is correct, the L_{Amax} definition shown in the Draft 2023 Environmental Impact Statement for Western Sydney International (Nancy Bird-Walton) Airport [12] is consistent with instantaneous maxima as defined by the International Civil Air Navigation Services Organisation [23] and the UK Civil Aviation Authority [24].

As noted earlier, N70 contours are not favoured by some Local Government Authorities as they have the potential to effectively quarantine large areas of land around an airport that could otherwise be rezoned for residential use. Whilst this may have an impact on the potential rate income available to local government, it ensures that residents near airports have better protection from aircraft noise.

Aircraft over-flight noise is a significant environmental noise issue and would appear to be the major environmental noise issue in communities surrounding major airports. It is known that there are active community groups in Brisbane, Gold Coast, Hobart, Melbourne, Sunshine Coast and Sydney with significant concern in relation to aircraft over-flight noise.

It is further submitted that what purports to be Community Engagement through the auspices of FoWSA is opaque and unrepresentative of real community views. In selecting FoWSA members, the Minister appears to heavily bias the FoWSA membership with pro-airport representatives. This does not facilitate a representative and balanced discussion of important grass-roots community issues.

It is also considered that Recommendations 2 & 3 of the Senate Report into AsA [3] should be implemented as soon as practicable.

This is an aspect requiring a major upgrade in accessibility and transparency, not just for WSI but for all Australian Airports and reform is strongly recommended.

Whilst the Commonwealth Ombudsman is appointed by the Governor-General, the Aircraft Noise Ombudsman (ANO) is effectively an agency of AsA. Many in the community see the reporting arrangements for the ANO as neither transparent nor independent.

It would also be prudent that the office of the Aircraft Noise Ombudsman be merged into the existing suite of responsibilities of the Commonwealth Ombudsman as this would solve the perceived lack of transparency and independence. Alternatively, it is considered that the implementation of Recommendation 5 of the Senate Report [3] would be equally effective.

Recommendations

Recommendation 1

It is recommended that Australia gives careful consideration to the use of the European standard L_{den}. This noise metric would better reflect the 24 hour operation of the majority of Australian airports. The adoption of the L_{den} (or L_{dn}) noise metric would also aid in addressing the adverse health effects of aircraft noise particularly with respect to children and assist Australia in meeting the WHO recommendation of a maximum day-time noise level of 45 L_{den} and a maximum night-time noise level of 40 L_{night} for communities exposed to aircraft noise.

Recommendation 2

Due to its paramount importance, it is recommended that L_{Amax} data used to produce all N-above noise contours are instantaneous maxima as defined by CANSO and the UK CAA [23] [24].

Recommendation 3

It is strongly recommended that the use of ANEF contours be abandoned or strictly limited to land use planning. The use of N-above contours would much better serve the interests of communities surrounding new or existing airports.

Recommendation 4

Recommendations 2 & 3 of the Senate Report into AsA [3] should be implemented as soon as practicable.

Recommendation 5

To facilitate an objective and balanced discussion of important community issues and to ensure transparency, it is recommended that Ministerial appointed bodies, such as FoWSA, have strong grass-roots community representation which ensures that real community views are addressed. Otherwise, there is only the pretext of consultation.

Recommendation 6

It is recommended that the Aircraft Noise Ombudsman be merged into the existing suite of responsibilities of the Commonwealth Ombudsman as this would solve the perceived lack of transparency and independence. Alternatively, it is considered that the implementation of Recommendation 5 of the Senate Report [3] would be equally effective

Dr Eric Ancich
PhD FIEAust CPEng (Ret.)
Chartered Professional Engineer
[redacted]
M. [redacted]
E. [redacted]