

Sunfield Fast-track

Auckland Council Specialist Memo

Annexure 20:

Noise and vibration

Andrew Gordon

4 August 2025

Noise and Vibration Memo

Prepared by: Andrew Gordon, Senior Specialist, Contamination, Air and Noise Team, Auckland Council

Dated: 4 August 2025

1. This memorandum addresses potential aircraft noise effects upon the future occupants of the Sunfield development.

Qualifications and Relevant Experience

2. I am employed as a Senior Specialist by Auckland Council in the Contamination, Air and Noise Team, Specialist Unit in the Planning and Resource Consents Department of Council. I hold the qualifications of Bachelor of Science from the University of Auckland (1987), National Diploma in Environmental Health from Wellington Polytechnic (1989) and Certificate in Noise Assessment and Control from University of Western Sydney (extramural 1991).
3. I am a member of the New Zealand Institute of Environmental Health and Affiliate of the New Zealand Acoustical Society. I have worked as a Specialist focusing on noise and vibration since 2017 and as a Senior Specialist focusing on noise and vibration since 2022, including experience reviewing several applications for new activities or additions/alterations to existing activities sensitive to aircraft noise and subject to D24 Aircraft Noise Overlay for Auckland International Airport, Ardmore Airport, North Shore Airport and Whenuapai Airbase.

Code of Conduct

4. I confirm that I have read the Environment Court Practice Note 2023 – Code of Conduct for Expert Witnesses (**Code**), and have complied with it in the preparation of this memorandum. I also agree to follow the Code when participating in any subsequent processes, such as expert conferencing, directed by the Panel. I confirm that the opinions I have expressed are within my area of expertise and are my own, except where I have stated that I am relying on the work or evidence of others, which I have specified.

Supporting Documents

4. The following application documents have been relied upon when preparing my review:
 - Assessment of Noise Effects dated 8 February 2025 by Styles Group (the **Assessment**)
 - Sunfield – Acoustic Review dated 10 February 2025 by Hegley Acoustic Consultants (the **Review**)
 - Attachment 2 – Sunfield Conditions of Consent dated 31 March 2025 (the **Conditions**).

And the following document (not part of the application);

- Ardmore Airport FY24 Annual Noise Contours dated 26 June 2025 by Marshall Day Acoustics (the **Noise Contours**).

Specialist Assessment

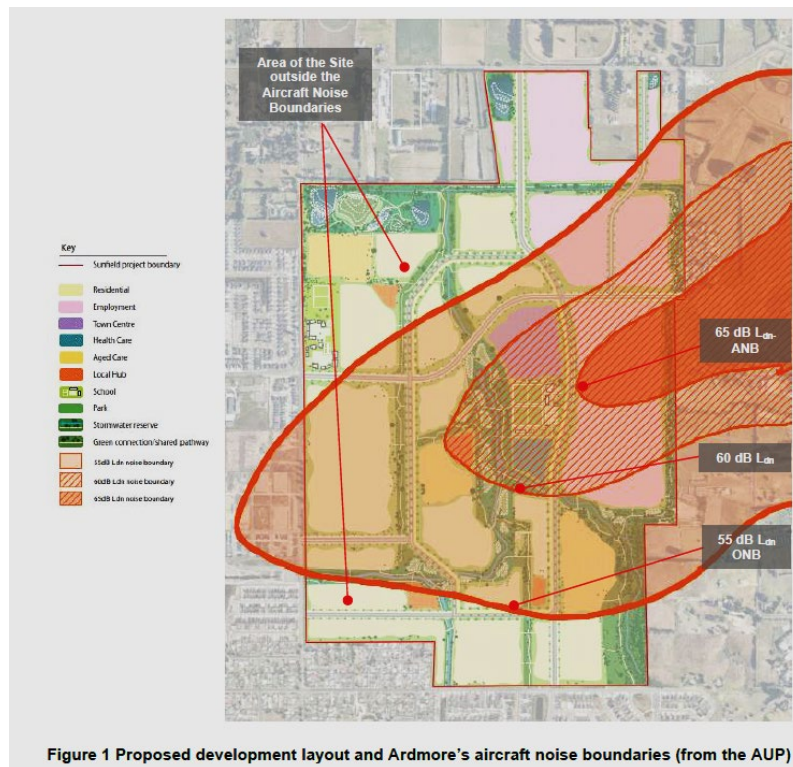
5. As correctly referenced in the Assessment and Review, Chapter D24 Aircraft Noise Overlay applies to this application. The assessment is focused on aircraft noise effects on future residents and demonstrating compliance with relevant D24 requirements given parts of the Site are located with the Aircraft Noise Overlay.
6. I note Policy D24.3 (3) (a) and (5) are particularly relevant and are reproduced below: -

(3) Avoid establishing residential and other activities sensitive to aircraft noise at:

(a) airports/airfields except for Auckland International Airport: within the area between the 55dB L_{dn} and 65dB L_{dn} noise contours, unless the effects can be adequately remedied or mitigated through **restrictions on the numbers of people** to be accommodated through zoning and **density mechanisms** and the **acoustic treatment** (including mechanical ventilation) of buildings containing activities sensitive to aircraft noise excluding land designated for defence purposes;

(5) **Manage residential intensification and activities sensitive to aircraft noise** within areas identified for accommodating urban growth in a way that avoids reverse sensitivity effects as far as practicable, including reverse sensitivity effects between those land uses and such effects on Auckland International Airport, Ardmore Airport, Whenuapai Airbase and North Shore Airport, and that avoids, remedies or mitigates adverse aircraft noise effects on people and communities.

7. The proposal comprises a large-scale community development covering 244 hectares.
8. I confirm Figure 1 (reproduced below) correctly shows the location of the projected noise contours as shown on Council's GEOMAPS. Styles Group have marked up the contours to identify the 65 dB L_{dn} contour (or Air Noise Boundary), 60 dB L_{dn} contour and 55 dB L_{dn} contour (or Outer Noise Boundary) related to the site.



9. As background, L_{dn} is the day/night weighted average noise exposure and is used to measure aircraft noise. Regarding effects, it is generally recognised that:
 - >65 dB L_{dn} is unsuitable for residential
 - 55 – 65 dB L_{dn} is marginal for residential
 - <50/55 dB L_{dn} is suitable for residential.
10. The Noise Contours report confirms the projected noise contours shown on the planning maps are currently being met within the Site. This is based on calculated annual aircraft noise contours during the 2024 financial year. Therefore, I confirm the above contours should inform appropriate land use planning controls.
11. I confirm the proposal considers the above noise contours when determining future land use to ensure that adverse effects are avoided, remedied or mitigated, for example:
 - land inside the Air Noise Boundary at the 65 dB L_{dn} noise contour is proposed to be developed for Employment activities (i.e. activities sensitive to aircraft noise will be prohibited)
 - land between the ANB and the 60 dB L_{dn} noise contour is proposed to be developed for Employment, Town Centre, Health Care and Local Hub activities (potential for specific building acoustic design)
 - land between the 60 dB L_{dn} noise contour and Outer Noise Boundary at the 55 dB L_{dn} noise contour is proposed to be developed for Employment, Town Centre, Residential and Aged Care activities (subject to specific building acoustic design)
 - land outside the 55 dB L_{dn} noise contour is proposed to be developed for Residential, Aged Care and Employment activities (specific building acoustic design not required).

12. As recommended by Styles Group, activities sensitive to aircraft noise located between the 65 dB Ldn and 60 dB Ldn noise contour will be generally excluded, however, facilities such as healthcare activity including an overnight stay will be subject to building acoustic design.
13. Further, activities sensitive to aircraft noise between the 60 dB Ldn noise contour and the 55 dB Ldn noise contour will be established subject to suitable building acoustic design to enable compliance with the D24 internal noise level.
14. I confirm new buildings containing activities sensitive to aircraft noise will include appropriate acoustic treatment to enable compliance with the internal noise level set out in D24. Acoustic treatment will include ventilation or air-conditioning measures to enable occupants to remain adequately ventilated and thermally comfortable when windows are shut to mitigate aircraft noise. I agree mechanical ventilation or air conditioning systems are a fundamental part of the overall acoustic design to ensure that a reasonable indoor noise environment is achievable, particularly during summer months.
15. Overall, the acoustic treatment of buildings containing activities sensitive to aircraft noise will provide a reasonable level of indoor amenity and avoid potential for adverse health effects such as sleep disturbance.
16. It is reported that a no-complaints covenant is proposed on all titles. The use of covenants and/or consent notices to ensure all prospective buyers are made aware the site is subject to noticeable aircraft noise. This will influence the decision making for noise sensitive people. Further, similar covenants would be necessary to ensure that additions or alterations to buildings (once constructed) do not compromise the acoustic insulation performance.
17. It is noted that acoustic design to achieve the D24 requirements does not remedy all the aircraft noise annoyance concerns when residents open their windows and, it does not mitigate noise to outdoor living spaces. It is reasonable to expect residents may prefer open windows rather than living in a sealed mechanically ventilated room and will want to make use of outdoor spaces (including balconies), which means people may be annoyed by aircraft noise despite the building being acoustically treated.
18. Regarding outdoor noise effects, specifically between the 60 dB Ldn noise contour and the 55 dB Ldn noise contour, I generally support the Assessment comments namely:

'Exposure outside is generally only an issue when amenity expectations are high, such as during passive recreation or when socialising in a residential setting. Exposure during outdoor activities such as commuting or at work is generally not an issue.'

'The effects on people outdoors can be described as the 'residual' effects. The residual effects will generally be experienced as hearing the regular noise of aircraft overhead – and especially during the day. Based on our experience of the area, we expect that the noise level of aircraft overhead will range subjectively from being inaudible at times or

distant but noticeable, through to close and loud enough to affect outdoor conversation, especially if the distance between people talking is more than a few metres.'

19. In my opinion the review conclusions are consistent and align with the Assessment conclusions.
20. Overall, from a technical acoustic perspective, I support the application because the Assessment adequately addresses D24 criteria and confirms it will be practicable to design the development to ensure that aircraft noise effects on future occupants are mitigated as far as practicable through acoustic treatment and that reasonable indoor levels will be achieved.
21. However, I note that Policy D24.3(3)(a) requires that effects within the 55-65 dB Ldn noise contours can be adequately remedied or mitigated through both acoustic treatment AND restrictions on the numbers of people to be accommodated through zoning and density mechanisms. While I can confirm that the acoustic treatment requirements can be satisfied, the adequacy of zoning and density restrictions falls outside my acoustic expertise and I understand that the Strategic and Planning Memo addresses this policy requirement further.
22. I confirm that there has been no engagement with the applicant or the applicant's consultants.
23. I visited the subject site and surroundings in May 2025 and I viewed from the surrounding road network.

Comment on Proposed Conditions

24. I generally support proposed conditions namely:
 - 141 – prohibiting activities sensitive to noise inside the 65 dB Ldn noise contour
 - 142 – requiring acoustic treatment for all buildings containing activities sensitive to noise between the 55 dB and 65 dB Ldn noise contours to comply with D24 requirements
 - 143 – covenant registration on individual titles.
25. Regarding condition 142, there may be inconsistencies between ventilation requirements specified in b and c. I suggest c is deleted and mechanical ventilation or air conditioning systems are designed to comply with E25.6.10 (3) as recommended in the Assessment.
26. I recommend one new condition to manage activities sensitive to aircraft noise between the 65 dB Ldn (ANB) and the 60 dB Ldn noise contour. The Assessment reports '*We understand that the proposed development arrangements will generally preclude ASAN between the 65 dB Ldn and 60 dB Ldn noise contours.*' Therefore, a new condition should specify that activities sensitive to noise are restricted to visitor accommodation, education facilities, tertiary education facilities, hospitals, and healthcare facilities with an overnight stay facility (i.e. no dwellings).

27. It is noted that other conditions, which I consider are appropriate, comprise:

- 14 –17, 102, 103, 104 and 105 for construction noise and vibration
- 144 - operational limit for business activity aligned to standard E25.6.5.