

9 October 2025

Simon Ash
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Dear Simon,

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FTAA – 2503 -1039 Response to invited parties

I, Jon Styles, Director and Principal of Styles Group confirm that this memo was prepared in accordance with the Environment Court Practice Note 2023 (Code of Conduct for Expert Witnesses). Details of my qualifications and relevant experience has been provided to the Expert Panel previously.

Styles Group have been asked to respond to the comments from invited parties on Winton Land Limited's substantive application under the Fast-Track Approvals Act 2024 (FTAA) for the Sunfield development.

This advice addresses comments on noise effects received from Auckland Council (**Council**) and Ardmore Airport (**Ardmore**), including comments as they specifically relate to the *Assessment of Noise Effects* prepared by Styles Group dated 8 February 2025 (the **Styles Group Assessment**).

1.0 Comments from Auckland Council

I have reviewed the following information from Council:

1. The Auckland Council Specialist Memo of Andrew Gordon- Noise and Vibration (Annexure 20) dated 4 August 2025 (the **Specialist Memo**)
2. The Memorandum of Strategic and Planning Matters for Auckland Council dated 4 August 2025 (the **Strategic and Planning Memo**)

1.1 The Specialist Memo

The Specialist Memo finds general agreement with the Styles Group Assessment and the way that future land use activities inside the relevant aircraft noise control boundaries have been designed to align with Chapter D24 of the Auckland Unitary Plan- Operative in Part (**Unitary Plan**), including the proposed use of acoustic treatment (and use of mechanical ventilation and air conditioning) to achieve compliance with the internal noise levels set out in Chapter D24.

The Specialist Memo finds:

“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.”

The Specialist Memo records general support for the application, despite the residual noise effects that may arise when:

- a) Occupants of ASAN are outdoors; and
- b) Occupants of ASAN elect to open windows and doors of buildings.

The Specialist Memo finds:

“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.”

The Specialist Memo agrees that the acoustic design criteria in Chapter D24 are designed to deliver a reasonable level of amenity when residents are indoors, to avoid the potential for adverse health effects and to protect ASAN from potential sleep disturbance effects.

The Specialist Memo agrees with the assessment of outdoor noise effects on ASAN that is contained within the Styles Group Assessment.

1.2 Specialist Memo- Recommended Conditions

The Specialist Memo generally supports the proposed conditions to manage aircraft noise effects on ASAN within the relevant aircraft noise control boundaries.

The Specialist Memo recommends the following changes:

1. Modifying Condition 142 to adopt the mechanical ventilation and air conditioning specifications set out in Standard E25.6.10(3).

I support this modification as it is consistent with the recommendation within the Styles Group Assessment.

and

2. Including a new condition to preclude dwellings between the 65 dB L_{dn} (ANB) and the 60 dB L_{dn} contour, thereby limiting ASAN to visitor accommodation, education facilities, tertiary education facilities, hospitals, and healthcare facilities with an overnight stay facility.

I support this change and note that it is consistent with the recommendation within the Styles Group Assessment and the Sunfield Masterplan which forms the basis of the Sunfield FTAA substantive application.

1.3 Zoning and density

The Specialist Memo confirms that Policy D24.3(3)(a) provides a two-fold requirement for ASAN to be avoided between the 55-65 dB L_{dn} noise contours, unless the effects can be adequately

remedied or mitigated through acoustic treatment **and** restrictions on the numbers of people to be accommodated through zoning and density mechanisms.

The Styles Group Assessment does not comment on the use of “*restrictions on the numbers of people to be accommodated through zoning and density mechanisms*” as these are planning considerations that are outside the expertise of an acoustics expert. The Specialist Memo agrees with this.

The Strategic and Planning Memo addresses zoning and density. These comments are addressed by Tattico.

2.0 Comments from Ardmore Airport

I have reviewed the following information from Ardmore:

1. The letter prepared by Ardmore’s Chief Executive Officer, Dave Marcellus, dated 4 August 2025
2. The comments on behalf of Ardmore Airport prepared by Rachel Morgan from B&A, dated 4 August 2025
3. The “Comments on Aircraft Noise Effects” prepared by Marshall Day Acoustics dated 4 August 2025 (the **MDA Review**).

The MDA Review records disagreement with a number of aspects of the Styles Group Assessment. The MDA Review essentially comprises two main themes:

- 1) Commentary on the Styles Group Assessment including agreements and disagreements; and
- 2) Its own assessment of noise effects.

This response deals with these two main themes of the MDA Review.

I disagree with a number of matters raised in the MDA Review. I consider that a number of the assertions made in that review are erroneous and / or lack an evidential basis.

In my view, many of the individual issues within the MDA Review are then incorporated as part of their conclusions and overall views. I consider that this means that the overall conclusions and views become confounded.

I have set out the main issues I see with the MDA Review below. I consider that there is also a range of lesser and mostly technical issues with the MDA Review that also contribute to the conclusions and views being confounded. I have not addressed these minor issues in detail in this advice.

2.1 Involving non-acoustical factors in the assessment of noise effects

I consider that the MDA Review involves or gives weight to factors that are not within an acoustic experts’ area of expertise. I consider that the conclusions of the MDA Review are confounded by involving these factors.

These non-acoustic factors include:

- 1) Numerous references to and assessments of a possible increase in fears for safety due to low flying aircraft. The fact that aircraft might be flying low is already captured in the aircraft noise contours and the noise effects of this can be readily evaluated from the predicted noise levels. However, the MDA Review includes the possible fears for safety from low flying aircraft as an additional effect¹. In my experience, a residents' perception of risk from low flying aircraft is not an acoustical factor that is within the expertise of a noise expert to evaluate.

The MDA Review even states in its Section 4 that, *"Non-acoustical factors are all other aspects such as an individual's attitude towards the noise source, safety concerns, sense the noise is necessary or fair, personal sensitivity etc."*

I consider that any mention of safety concerns in the MDA Review should be ignored. Unfortunately, it is not possible to 'extract' the weighting of this factor from the conclusions reached in the MDA Review.

- 2) An assessment of whether Ardmore Airport offers any benefits to the future residents. The MDA Review states in Section 2 that *"Ardmore Airport, as the noisemaker, will not provide any tradeable benefit to Sunfield Residents."* This is not an acoustical factor. It has been written as part of an assertion that the Styles Group Assessment *"attempts to rationalise the need to trade-off acoustic amenity for other benefits such as access to transport in urban areas and that this might somehow warrant the proposal."* The Styles Group Assessment makes no such claim or assertion.
- 3) Incorporating assumptions about lifestyle preferences. Section 5 of the MDA Review states, *"People generally prefer to open their windows and sliding doors rather than live in air-conditioned spaces for a number of reasons including fresh air, connection with the surrounding environment and lower running costs."*

I consider that these are not acoustics issues and should not be a factor that is weighed by a noise expert. I am not disputing that such effects may arise and some people may consider them adverse, but they should be weighed by an appropriate person such as a planner or decision maker – not an acoustics expert.

- 4) Drawing a direct link between the potential adverse noise effects on people and a reverse sensitivity effect on Ardmore Airport. Section 1 of the MDA Review includes the following statement:

"In summary, my position on the Sunfield proposal is that from a noise effects and reverse sensitivity management perspective, the development of large scale and intensive residential and aged care accommodation on a greenfield site within the Ardmore Airport noise boundaries is not supportable."

I consider that this statement means that the MDA Review does not support the proposal because of the noise effects and because of the reverse sensitivity effects.

¹ Sections 1, 3, 4 and 7 of the MDA Review

It is my experience that potential reverse sensitivity effects are not an acoustics matter. Rather, they are a matter for a suitably qualified person such as a planner or decision maker to consider. Based on my experience, the term reverse sensitivity needs to be contextualised and defined in the particular circumstances before any evaluation can be made, and then the causal nexus between the noise effect and the potential for an actual reverse sensitivity effect needs to be carefully considered.

In my view, the MDA Review makes generalised and broad statements about reverse sensitivity effects without defining reverse sensitivity, explaining the way that such effects might arise on Ardmore Airport and creating a clear link between the two.

Overall, it is my experience that an evaluation of reverse sensitivity effects in a relatively complex case such as this is not within the expertise of an acoustics expert.

2.2 Degree of acoustic insulation for new ASAN between the 55dB L_{dn} and 60dB L_{dn} contours

The MDA Review states the following in section 2 (emphasis added):

“With respect to the acoustic insulation standards in the AUP, the Styles Group report does not clearly identify that under D24.6.2 there are two performance standards applied to new ASAN and alterations to existing ASAN. One standard is the indoor design level of 40 dB L_{dn} (D24.6.2(1)). The additional standards D24.6.2(3) and D24.6.2(4) require that ASAN are constructed to achieve a noise reduction of at least 25 dBA for habitable rooms and sleeping areas or rooms for convalescing and learning. The AUP appears to be remiss as this additional standard does not apply to new ASAN between 60 and 65 dB L_{dn}, only alterations, however it does apply to new and altered ASAN between 55 and 60 dB L_{dn}. The Styles Group report and the proposed conditions (Condition 142 advice note) reference D24.6.2(1) and D24.6.2(5) as being the applicable standards.”

It appears that the MDA Review is critical of the Styles Group Assessment (and the proposed conditions) for not including the requirements of D24.6.2(4) which requires a 25dB outside-to-inside noise level reduction (**NR**).

However, section 5.0 of the Styles Group Assessment states:

“A20 and A21 of Table D24.4.2 specifies a restricted discretionary activity status for ASAN between the 60 dB L_{dn} noise contour and the ONB where buildings containing ASAN are designed and constructed in compliance with standards D24.6.2(1), D24.6.2(4) and D24.6.2(5).”

The Styles Group Assessment is clear that all of the relevant acoustic insulation components of D24 are proposed to be met, except the provisions for mechanical cooling and ventilation which I recommend are improved.

Proposed condition 142 requires all of D24.6.2 is complied with, including the 25dB NR requirement. However, I do note that the advice note to that condition contains a typo where it says specifies D24.6.2(1) and D24.6.2(5) of the AUP. This is a typo and should read D24.6.2(1) to D24.6.2(5).

This means that only the advice note contained a small error. The Styles Group Assessment and proposed condition 142 are clear and correct and require that all parts of D24.6.2 are complied with (or bettered in the case of mechanical cooling and ventilation).

I therefore consider that this criticism in the MDA Review is unfounded.

2.3 Construction of new houses between the 55dB L_{dn} and 60dB L_{dn} contours

I consider that the erroneous assertions made in the MDA Review set out above have a consequential effect on other points made in the MDA Review. The MDA Review states in several places that the houses in Sunfield will be constructed the same as any other house (from an acoustics perspective). This is stated in a number of places throughout the MDA Review, but perhaps most clearly stated in section 5:

“However, it is important to understand that these houses will be constructed the same as standard houses and therefore will not reduce noise any more than standard houses. It is also important to understand that the indoor design criterion of 40 dB L_{dn} is an average noise level and individual aircraft noise events will still be audible.”

This is incorrect. The Styles Group Assessment and proposed Condition 142 make it clear that new houses in the Sunfield development will need to comply with all relevant parts of D24.6.2, including the need to reduce aircraft noise by 25dB. This means that for houses right on the 60dB L_{dn} contour, the internal noise level will be 35dB L_{dn} . For houses at or about the 55dB L_{DN} contour, the internal noise level will be 30dB L_{dn} . This is 5-10dB lower than the 40dB L_{dn} level that is incorrectly assumed in the MDA Review. A 5dB difference will be clearly noticeable to occupants and a 10dB difference will mean that aircraft noise is subjectively half as loud as the 40dB L_{dn} level assumed in the MDA Review.

I therefore consider that the statement from the MDA Review quoted above, all others like it and all statements and conclusions that are based on Sunfield houses achieving the same indoor noise environment as any other house (not under airport noise contours) is incorrect.

2.4 Comparison of Ardmore noise levels to published guidance

Section 4 of the MDA Review includes the following statement:

“The recommended average noise exposure limit of 45 dB L_{den} is equivalent to 45 dB L_{dn} which is 10 dB lower than the NZS 6805 threshold for managing aircraft noise effects.”

This is not correct. L_{den} and L_{dn} are different descriptors and are calculated differently.

For an airport with no or very limited night flights such as Ardmore but with flights permitted throughout the evening period (7pm to 10pm), the L_{den} level will generally be 0.5dB to 1.5dB higher than the L_{dn} on any given day. The variation depends on the number of flights in the evening period.

The difference between the descriptors in this case is small but I consider that such a technical error is indicative of a number of small but incorrect generalisations and assumptions in the MDA Review that become important when considered collectively.

2.5 Nighttime flights at Ardmore

Section 2 of the MDA Review states the following (emphasis added):

The Styles Group report disregards any sleep disturbance effects and incorrectly states that the airport designation conditions include a night-time curfew on flights to avoid night-time noise effects. In fact, there are some night-time restrictions but not a total curfew on flights. Some specific operations are restricted at night, for example circuit training is not permitted after 10pm (10:30pm during daylight saving) Monday to Saturday. Since a large component of operations at Ardmore is flight training, which requires a certain amount of night flying, this activity may impact residents who sleep early particularly children and elderly.

The MDA Review goes on to assess the noise from Ardmore against guidelines and research that is based on airports that have a mix of operations, including at night and before 7am.

However, Condition 5 of the Ardmore Designation states the following:

The following restricted flight hours apply to specific aircraft operations from Ardmore Airport:

- a. Circuit training and scheduled flights are not permitted between the hours of 10pm (extended to 10.30pm in daylight savings) and 7am New Zealand Local Time (NZLT) Monday – Saturday and between the hours of 8pm Sunday night and 7am Monday morning;*
- b. Ex Military Jet Aircraft operations are not permitted between the hours of 8pm and 7am New Zealand Local Time (NZLT);*
- c. Jet aircraft that do not meet the International Civil Aviation Organisation noise standard contained in ICAO Annex 16, Volume 1, Chapter 3 or the equivalent 'Stage 3' United States Federation Aviation Administration noise limits contained in CFR 14 Part 36, are not permitted to operate between the hours of 10pm and 7am New Zealand Local Time (NZLT);*
- d. Except as permitted by Condition 9 Aerobatic Flight over the Airport shall be limited to a maximum of 12 hours per annum and shall be conducted between the hours of 9am to 4pm Monday to Saturday and 9am to 12 noon on Sunday New Zealand Local Time (NZLT);*
- e. Hover training practice shall only take place between the hours of 8am and 7pm Monday to Friday and 9am and 1pm on Saturdays New Zealand Local Time (NZLT) provided that hover training may take place on Saturdays between 1pm and 5pm NZLT and on Sundays between 9am NZLT and 4pm NZLT where the activity takes place no closer than 150m from any external boundary of the Airport. Notwithstanding the above, no hover training practice shall take place on Public Holidays; and*

f. Variations to the restricted hours on night training under clause a. of this condition may be approved under limited circumstances by the Ardmore Airport Noise Consultative Committee, but in any event, operation will not be permitted after 11pm New Zealand Local Time (NZLT).

These conditions permit very few flights after 10pm (and 10.30pm during daylight savings time) and none after 11pm. Flights cannot commence before 7am the next day.

The explanation to this condition states the following:

This condition has been included after extensive consultation between the Airport Authority and local residents in order to minimise disturbance during noise sensitive hours. This condition together with Conditions 3 and 4 and the Noise Management Plan will have the effect of minimising noise from aircraft during noise sensitive hours.

In my view, these conditions effectively comprise a curfew. I consider that the noise effects need to be considered with this in mind.

The biggest implication is that the sleep disturbance during typical sleep hours (10pm-7am) and short nights (for uninterrupted sleep) will not be a feature for Sunfield residents, except for a low number of flights between 10pm and 10.30pm during daylight savings and very few flights between 10.30pm and 11pm and only when approved by the Ardmore Airport Noise Consultative Committee.

In my experience and based on my reading of the relevant international guidance (including the 2018 WHO guidelines), the potential adverse health effects are heavily influenced by the effects on people's quality of sleep.

The effective curfew at Ardmore means that the potential effects on sleep disturbance during normal sleeping hours will be minimal.

2.6 Single event noise levels

Section 3 of the MDA Review includes an assessment of single event noise levels. Figure 3 includes a chart with a note added by MDA that states that "Very high noise events are common." This note is referring to approximately 1 event where the L_{Amax} level is over 100dB.

Ardmore Designation condition 6 limits the flights of ex-military jets that generate the very high noise events, so they are very infrequent, except for one airshow per year. Aside from the one airshow, only 170 ex-military jet movements are permitted per year and only 10 in any day. The landings are generally much quieter than the take-offs, so the highest noise levels will only occur for around half of these numbers, and less again when considering that a reasonable proportion of those take-offs will be to the east away from Sunfield. The MDA Review states in section 3 that departures over Sunfield might occur 70% of the time. So the highest noise levels will only occur for approximately 70% of 50% of the movements permitted by Condition 6. That equates to approximately four per week and approximately 60 per year.

I consider that this makes very high noise events over Sunfield very uncommon.

2.7 Use of WHO Guidelines and NZTA Research Report 727

The MDA Review makes extensive use of a range of published research and guidelines to quantify the potential adverse noise effects.

The Styles Group Assessment makes it clear that caution should be applied when considering such guidance for two main reasons:

- 1) Many of the international studies that are represented in the well-known guidance have 24 hour operations, whereas Ardmore is subject to a clear curfew; and
- 2) Many of the studies that are represented in the well-known guidance are based on people living in a mix of acoustically treated and untreated dwellings, whereas the residents of Sunfield will be living in houses where aircraft noise levels indoors are at least 5-10dB lower than the generally accepted indoor noise standard of 40dB L_{DN}.

The MDA Review does not agree with these assumptions for the reasons set out below. I have added my own commentary below each point:

- *Many of the international airports included in the studies have night-time curfews.*

This might be true, but the results are aggregated and include the responses from communities that are exposed to 24-hour airport operations. It is therefore not possible to compare the effects at Ardmore to guidance that integrates the results of numerous studies of communities next to airports operating 24 hours per day.

- *Ardmore Airport does not have a night-time curfew. Only some operations are restricted after 10 pm (10:30pm during daylight saving). I do agree that Ardmore does not have what might be termed a 24-hour operation.*

As I have already set out, Ardmore effectively has a curfew in place.

- *Acoustically untreated dwellings with windows closed achieve the same internal noise levels as the proposed Sunfield dwellings (i.e. for outdoor aircraft noise levels of 55 – 60 dB L_{dn}, standard building construction achieves the indoor design criterion of 40 dB L_{dn}).*

As I have already set out, this is incorrect. The residents of Sunfield will be living in houses where aircraft noise levels indoors will be 30-35dB L_{DN} and at least 5-10dB lower than the generally accepted indoor noise standard of 40dB L_{DN}.

- *The Waka Kotahi study has a very similar response curve to the WHO 2018 curve. The three airports surveyed in the Waka Kotahi study were Auckland, Rotorua and Queenstown. Queenstown and Rotorua airports include general aviation activity and do not have night-time operations. All three airports have acoustic insulation requirements and retrofit acoustic treatment programmes. Also, as mentioned above, the untreated dwellings between 55 and 60 dB L_{dn} around these airports achieve the same indoor noise environment as the proposed Sunfield dwellings when windows are closed.*

I agree that Queenstown and Rotorua airports have curfews that preclude flights for most of the nighttime period. However, the results of the Waka Kotahi / NZTA study integrate the results with

those of people around Auckland Airport which does include 24-hour operations. The exposure-response curve from the NZTA study therefore includes the response from communities exposed to airport noise 24 hours a day, and the effect of this cannot be extracted from the curves. I therefore consider that it is incorrect and inappropriate to evaluate the potential effects at Ardmore to the exposure-response function from the NZTA study.

Whilst all three airports have acoustic insulation programmes, none require the airports to fund or partially fund any acoustic treatment beyond the 60dB contour, and the degree of acoustic insulation of houses exposed to noise levels between 55dB and 60dB L_{dn} is unknown.

This bullet from the MDA Review also states that houses around those airports will achieve the same indoor noise environment as the houses around Sunfield. For the reasons I have already covered, this is incorrect. The noise levels inside houses at Sunfield will be at least 5-10dB lower.

The MDA Review then goes on to set out a range of statistics and estimations of the number of people annoyed.

For the reasons set out above, I consider that these estimations and statistics are unreliable.

2.8 Conclusion on issues with MDA Review

The list of issues set out above is not exhaustive but covers the main issues in the MDA Review that I disagree with. I consider that these issues are fundamental components of the overall conclusions and views set out in the MDA Review. I consider that these issues are significant confounders of their overall conclusions and views.

2.9 Agreement with the MDA Review

The MDA Review records agreement with the Styles Group Assessment in a number of places, and there are a number of additional points in the MDA Review that I agree with.

2.9.1 Outdoor noise effects

I consider that the primary and fundamental point of agreement is that the outdoor environment will be subject to aircraft noise effects that cannot be mitigated by physical measures (such as acoustic treatment).

However, the magnitude of these outdoor effects is not agreed.

The Styles Group Assessment states that the noise from aircraft overhead will be heard regularly throughout the day and that it will range in level from low or inaudible to disrupting conversation.

The MDA Review quantifies the outdoor effects by several methods, several of which I have demonstrated to be confounded.

2.9.2 Other agreements

The MDA Review includes various facts and figures describing airport growth, flight paths and aircraft altitude over Sunfield.

I generally agree with the factual analysis of these matters as set out in the MDA Review.

3.0 Conclusion

The Councils' Specialist Memo largely agrees with the Styles Group Assessment but recommends two minor changes to the proposed conditions. I agree with these changes.

I consider that several of the main assessments in the MDA Review are confounded, and some seriously. I consider that this affects the overall conclusions and views in the MDA Report.

I do however agree with MDA that there will be adverse noise effects on the proposed development. I agree with MDA that the outdoor noise effects on people cannot be mitigated using physical measures. The outdoor noise levels will typically be between 60-65dB L_{Aeq} on busy days as Ardmore approaches its maximum flight allowance (when the air noise boundaries are reached) at or near to the 60dB L_{dn} contour.

I agree that there will be a degree of adverse noise effects on ASANs generally. However, I disagree with the MDA Review that these effects can be quantified using the NZTA Research Report 727 or WHO 2018 exposure-response curves. I consider that these exposure-response curves have been based on people living in different situations and represent a 'worse' living situation than will be the case for Sunfield residents.

As set out in the Styles Group Assessment, I am not aware of any published guidance on aircraft noise effects that is directly relevant to the situation at Ardmore where there is effectively a nighttime curfew and where ASAN are acoustically treated to reduce noise levels by 25dB indoors (so the levels will be 30-35dB L_{dn}). I expect that the adverse effects at Sunfield will be somewhat less than what is described in the MDA Review.

I consider that the MDA Review has adopted a narrow or rigid approach that is aimed at avoiding or fully mitigating the noise effects. My reading of Chapter D24 is that fully avoiding the noise effects is not required. Rather, Chapter D24 requires that the noise effects are "avoided, remedied or mitigated"² and "adequately remedied or mitigated"³, (as examples). Accordingly, I consider that an assessment that is broader than just the noise effects is required.

Yours sincerely,



Jon Styles, MASNZ
Director and Principal

² Objective D24.2(2)

³ Policy D24.3(3)(a)