

**BEFORE INDEPENDENT HEARING COMMISSIONERS
AT RANGIORA / WAIMAKARIRI**

**I MUA NGĀ KAIKŌMIHANA WHAKAWĀ MOTUHAKE
KI RANGIORA / WAIMAKARIRI**

**IN THE MATTER of the Resource Management Act 1991
AND
IN THE MATTER of the hearing of submissions and further
submissions on the Proposed Waimakariri
District Plan**

HEARING TOPIC: Stream 10A – Airport Noise

**STATEMENT OF PRIMARY EVIDENCE OF JON ROBERT STYLES
ON BEHALF OF KĀINGA ORA – HOMES AND COMMUNITIES**

ACOUSTICS

2 FEBRUARY 2024

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1. EXECUTIVE SUMMARY

- 1.1 My full name is Jon Robert Styles. I have been engaged by Kāinga Ora - Homes and Communities (**Kāinga Ora**) to provide evidence on the Waimakariri Proposed District Plan (**PDP**) provisions relating to airport noise and activities sensitive to aircraft noise within the 50dB LDN noise level contour of Christchurch International Airport.
- 1.2 I was involved in Hearing Stream 5 (Te orooro – NOISE). I prepared evidence and attended the hearing, and I participated in expert conferencing and was a signatory to the Joint Witness Statement of Acoustic Experts dated 24 October 2023 (the **HS5 JWS**). My evidence for HS5 included some brief analysis of the provisions for managing airport noise, even though that particular topic has been shifted to HS10A. The HS5 JWS did not address any provisions relating to aircraft noise.
- 1.3 I am also engaged by Kāinga Ora to advise on the development of Plan Change 14 of the Christchurch City District Plan (**PC14**) in 2023 and continuing into 2024. Among other things, PC14 deals with the way that development is managed inside the Christchurch International Airport Limited's (**CIAL**) airport noise contours, including the 50dB L_{dn} contour. I have produced evidence for PC14 and I was a signatory to the Joint Witness Statement of Acoustic Experts (**PC14 JWS**) in the same process. The PC14 JWS was signed by acoustic experts for a variety of submitters including two acoustic experts engaged by CIAL. The PC14 JWS dealt with many of the same fundamental acoustic issues that are relevant to HS10A.
- 1.4 NOISE-R17 manages development inside the 50dB L_{dn} contour for CIAL. The PDP controls extending to CIAL noise levels below 55dB L_{dn} and down to 50dB L_{dn} outside residential zones are lower / more onerous than any similar provisions I am aware of in New Zealand. I am only aware of acoustic treatment controls in New Zealand extending as low as 55dB L_{dn}. As an example, the acoustic treatment controls for activities sensitive to aircraft noise surrounding Auckland International Airport are only required at noise levels of 60dB L_{dn} or higher.

- 1.5 I consider that a level of 50dB L_{dn} is too low to justify such acoustic controls, and that they should only begin to apply when aircraft noise levels reach 55dB L_{dn} .
- 1.6 I consider that the application of acoustic insulation controls for houses outside of residential zones and exposed to noise levels between 50dB and 54 dB L_{dn} is not required (NOISE-R17). These houses will achieve the indoor design sound levels without any specific treatment, so there is no need for the PDP to set specific controls. Doing so places unnecessary cost on homeowners.
- 1.7 Notwithstanding, I note that the provisions of NOISE-R17 do not apply in the Residential Zone and will therefore have a very limited application.
- 1.8 I have suggested a range of relatively minor amendments to NOISE-R14, R17 and NOISE-1 to improve technical accuracy and to remove any reference to LAE.
- 1.9 Overall, I generally support the position of the Council, subject to the minor amendments that I have suggested.

2. INTRODUCTION

- 2.1 My full name is Jon Robert Styles. I am an acoustic consultant and director and principal of Styles Group Acoustics and Vibration Consultants. I lead a team of 8 consultants specialising in the measurement, prediction and assessment of environmental and underwater noise, building acoustics and vibration working across New Zealand and internationally.
- 2.2 I have approximately 23 years of experience in the acoustics and noise control industry. For the first four years I was the Environmental Health Specialist – Noise at the Auckland City Council, and for the latter 19 years I have been the Director and Principal of Styles Group Acoustics and Vibration Consultants. I have a Bachelor of Applied Science (EH) majoring in Environmental Health.

- 2.3 I am the past-President of the Acoustical Society of New Zealand. I completed two consecutive two-year terms as the President from 2016 to 2021. I have been on the Council of the Society for approximately 15 years. Styles Group is a member firm of the Association of Australasian Acoustical Consultants (AAAC) and I am on the Executive team of the AAAC. My role on the Executive is to oversee the development of guidelines for acoustical consultants to follow in their day-to-day work and to participate in the governance of the AAAC generally.
- 2.4 Most recently I have advised Kāinga Ora on similar noise-related issues (noise from road, rail and airports) in the review of the Wellington, Selwyn, Porirua, Waikato, Western Bay of Plenty, Tauranga, New Plymouth, Christchurch and Central Hawkes Bay District Plans.
- 2.5 I been directly advising the Gore District, Kaipara District, Napier City Council, Taupō District Council and Whangarei District Council through District Plan review processes. I assisted Auckland Council through the development of the Auckland Unitary Plan and continue to provide advice to Auckland Council on both Council initiated and private plan change requests. I have also assisted many private clients through plan change and review processes across New Zealand.
- 2.6 In preparing this evidence I have read the Section 42A reports prepared by the Council Officers.
- 2.7 I have worked closely with Mr Lindenberg in areas where the technical noise issues overlap with planning considerations.
- 2.8 The recommended amendments to the provisions under consideration in HS10A that are included in Attachment B to Mr Lindenberg's statement of evidence include my input and recommendations.

Code of Conduct

- 2.9 Although this is a Council hearing, I confirm that I have read the Expert Witness Code of Conduct set out in the Environment Court's Practice Note 2023. I have complied with the Code of Conduct in preparing this evidence and agree to comply with it while giving evidence.

2.10 Except where I state that I am relying on the evidence of another person, this written evidence is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed in this evidence.

3. SUMMARY OF THE COUNCILS' APPROACH

3.1 Mr Lindenberg summarises the Council's approach to managing aircraft noise in section 6 of his evidence. I repeat his summary below:

(a) *For any development within the 55dBA noise contour for Christchurch International Airport (proposed 'Rule NOISE-R14') there are no restrictions on numbers of dwellings / residential density, but compliance is required to be achieved with a permitted activity standard relating to acoustic insulation and ventilation requirements; and*

(b) *For any development within the 50dBA noise contour for Christchurch International Airport (proposed 'Rule NOISE-R17') there are no restrictions / permitted standards applying to any activity located within a Residential Zone (i.e. residential development is Permitted, with no controls / standards applying in relation to the 50dBA contour).*

3.2 Of particular note is the Council's position that there should be no specific controls in NOISE-R17 for managing development in residential zones inside the 50dB L_{dn} aircraft noise contour. I agree with the Council's position on this.

3.3 I also agree with the Council's position in respect of the acoustic treatment controls for noise sensitive activities inside the 55dB L_{dn} contour.

4. NOISE-R17 NOISE SENSITIVE ACTIVITIES WITHIN THE 50dB L_{dn} AIRCRAFT NOISE CONTOUR

4.1 NOISE-R17 manages development inside the 50dB L_{dn} aircraft noise contour. It requires that noise sensitive activities within the 50dB L_{dn} contour meet the internal design sound levels in NOISE 1, unless the

noise sensitive activity is in a Residential Zone, in which case no controls apply.

- 4.2 The PDP controls extending to aircraft noise levels below 55dB L_{dn} and down to 50dB L_{dn} in non-residential zones are lower / more onerous than any similar provisions I am aware of in New Zealand. I am only aware of operative acoustic treatment controls in New Zealand extending as low as 55dB L_{dn} .
- 4.3 I consider that a level of 50dB L_{dn} is too low for such acoustic controls, and that they should only begin to apply when aircraft noise levels reach 55dB L_{dn} .
- 4.4 In addition, the Indoor Design Sound Levels in NOISE-1 state that the lowest indoor noise level that needs to be achieved is 40dB L_{dn} in bedrooms. This only requires a maximum of 14dB noise reduction (at the 54dB L_{dn} contour) from outside to inside. In my experience, just about any new house will achieve this level of noise reduction with no modifications and with windows ajar for ventilation¹. I therefore see no meaningful reason to implement a new process to require new noise sensitive activities to demonstrate compliance with internal design noise levels that they will almost certainly comply with even with no additional effort. For these reasons, I consider that NOISE-R17 could be deleted.
- 4.5 Notwithstanding, I note that the provisions of NOISE-R17 do not apply in the Residential Zone and will therefore have a very limited application.
- 4.6 I agree with Mr Lindenberg's proposed new requirement in NOISE-R14(2) for noise sensitive activities inside the 55dB L_{dn} contour to comply with the ventilation controls recommended by Mr Jimmieson to allow people to remain comfortable in rooms where windows have to be closed.

¹ Consistent with the Christchurch PC14 JWS

5. AMENDMENTS TO NOISE R14, R17 AND NOISE-1

5.1 I recommend that some changes are made to NOISE-R14, R17 and NOISE-1. These changes are to deliver consistency with the planning maps and noise effects in the Waimakariri District and for technical accuracy.

5.2 I have worked with Mr Lindenberg on these amendments and they are incorporated into the marked up version of the chapter attached to Mr Lindenberg's evidence as Appendix B.

5.3 In summary, my proposed amendments include:

- (a) Deleting the “A” from “dBA” where noise levels or contours are referred to using the L_{dn} descriptor. The L_{dn} descriptor is calculated using A-weighted sound levels already. The correct terminology according to NZS6801:2008 is “dB L_{dn} ”.
- (b) Removal of any reference to the term “LAE” in the text of all rules, and in the table NOISE-1. The LAE descriptor is generally used to quantify and manage single-event noise from loud aircraft. Single-event noise levels high enough to warrant any control using the LAE descriptor would typically only be very close to the airport itself. In my view, the single-event noise levels from CIAL received in the Waimakariri district would be too low to warrant any control using the LAE descriptor. Additionally, there are no LAE noise contours in the PDP or in the Christchurch District Plan that could be used to apply the rules in R14, R17 and NOISE-1 where they mention LAE. The use of LAE in these rules and NOISE-1 is therefore redundant.
- (c) I have made several other very minor amendments to the title of NOISE-1 and the headings of the tables simply to make them technically correct.

6. CONCLUSION

6.1 Overall, I agree with the Council's position on the management of aircraft noise. I consider that there should be no controls applying to

noise sensitive activities outside of the 55dB L_{dn} contour. I consider that the controls applying inside the 55dB L_{dn} contour are generally appropriate, including the requirement for noise sensitive activities to comply with the ventilation controls recommended by Mr Jimmieson to allow people to remain comfortable in rooms where windows have to be closed.

Jon Styles
2 February 2024