BEFORE THE INDEPENDENT HEARING COMMISSIONERS IN CHRISTCHURCH

TE MAHERE Ā-ROHE I TŪTOHUA MŌ TE TĀONE O ŌTAUTAHI

IN THE MATTER OF Resource Management Act 1991

AND

IN THE MATTER of the hearing of submissions on Plan Change 14 (Housing and Business Choice) to the Christchurch District Plan

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JOINT STATEMENT OF AIRPORT NOISE EXPERTS

7th November 2023

INTRODUCTION

1. This joint witness statement relates to expert conferencing on the topic of **Airport Noise.**

2. The expert conferencing was held on **24 October 2023,** facilitated by **Mr Paul Thomas via a video-conference.**

3. Attendees at the conference were:

   (a) **Mr Christopher Day** for **Christchurch International Airport Limited**.

   (b) **Ms Laurel Smith** for **Christchurch International Airport Limited**.

   (c) **Mr Jon Styles** for **Kāinga Ora - Homes and Communities**.

   (d) **Professor John-Paul Clarke** for **Miles Premises Limited and Equus Trust**.

   (e) **Dr Stephen Chiles** for **Waka Kotahi – New Zealand Transport Agency**.

CODE OF CONDUCT

4. This joint statement is prepared in accordance with sections 9.4 to 9.6 of the Environment Court Practice Note 2023.

5. We confirm that we have read the Environment Court Practice Note 2023 and agree to abide by it.

PURPOSE AND SCOPE OF CONFERENCING

6. The purpose of the conferencing was to identify, discuss, and highlight points of agreement and disagreement on **airport noise** issues relevant to Plan Change 14. In particular, conferencing covered the following topics:

6.1 Land use planning for safeguarding airports and managing noise effects;

6.2 World Health Organisation Guidelines 2018;

6.3 Noise exposure effects within the 50dB Ldn contour;

6.4 Reverse sensitivity effects on airports;

6.5 Acoustic treatment of dwellings to mitigate effects;

6.6 Significance of outdoor living environments; and

6.7 Noise contour remodelling assumptions.

7. Conferencing generally proceeded in line with the draft agenda which was circulated in advance of the conferencing.

8. All attendees reviewed the relevant s32 reports, evidence and s42A reports, in advance of the conferencing.

9. **Annexure A** records the agreed issues, areas of disagreement and the reasons, along with any reservations.

Date: 7th November 2023

Chris Day

Laurel Smith

Jon Styles

Professor John-Paul Clarke

Dr Stephen Chiles

ANNEXURE A – EXPERT CONFERENCING ON AIRPORT NOISE

Participants: Chris Day (CD), Laurel Smith (LS), Jon Styles (JS), John-Paul Clarke (JPC), Stephen Chiles (SC).

Issue	Agreed Position	Disagreements or reservations, with reasons
Land use planning for safeguarding airports and managing noise effects.	All agreed that land use planning is one of the tools that can be used to manage the effects of noise on people. Agreed that other tools include: • Source noise reduction • Operational flight procedures and • Operational restrictions, eg curfews. Agreed that NZS 6805 provides a general and flexible approach but that international research has advanced considerably since 1992.	SC and JS consider that land use planning should be part of a portfolio of tools to manage noise effects. SC and JS consider that alternatives to using a separation approach should be assessed, and the tradeoff for protection evaluated taking into account background and other noise. SC and JS support a qualitative approach as opposed to just assessment of "highly annoyed" population. CD considers that LUP (including density controls) is a highly effective tool for reducing the number of people affected by aircraft noise and is fundamental to the approach recommended by NZS6805.
World Health Organisation Guidelines 2018, and Noise exposure effects within the 50dB Ldn contour.	Agreed that understanding is advancing on how noise affects health. However, NZ data on exposure response functions is limited. Agreed that the WHO guidelines are important information for the panel but should not be used in isolation to quantify effects.	There was disagreement on what methods should be used to quantify noise effects. CD supports the WHO trigger threshold of 10% highly annoyed by noise. JPC, SC, JS consider guideline thresholds should sit between 10-25% highly annoyed depending on the noise context. SC and JS consider there is a complex range of effects that can't all be quantified. Need to take account of other variables including other noise sources. They

		maintain that a broader judgment is required than reliance on a single metric such as percentage highly annoyed. CD considers that the overseas studies considered are valid to NZ where there is insulation in place or not. JPC has reservations about use of WHO Guidelines because it sets a threshold based on health effects which is much wider than just annoyance. He considers it requires a broader judgement. CD considers noise annoyance is one aspect of health effects. JPC considers that the Gjestland 2020 curve is a reasonable compromise. SC, LS and CD prefer use of the 2018 WHO curve, as a reference for aircraft noise annoyance response. JS agrees generally but considers 2018 curve is not readily transposable to Christchurch and the possible range of planned outcomes (including well-insulated dwellings).
Reverse sensitivity effects on Airports.		SC considers that operational restrictions on the airport do not necessarily correlate with acoustics factors (such as exposure of additional people to aircraft noise), and assessment of this potential effect is largely outside acoustics expertise. He is not aware of evidence that stopping or limiting intensification would be an effective or necessary control for this potential effect.

		JS considers that the relationship between a true reverse sensitivity effect on the airport and the way that the population is exposed to noise is complex and involves more than just acoustical expertise. He considers that there are options beyond a simple limitation on density and that these should be considered. LS considers there is evidence that reverse sensitivity can affect airports and result in operational restrictions. LS considers reverse sensitivity effects on airports are generally triggered by aircraft noise and can also be influenced by non-acoustical factors. CD considers that noise initiated operational restrictions on numerous airports are proof that reverse sensitivity is a real issue, that can affect the efficient operation of nationally significant infrastructure. JPC considers that the concept of "reverse sensitivity", being the impacts of newer uses on prior activities occurring in mixed-use areas, is not a universally accepted concept. Further, he considers that the premise that densification will result in a disproportionate increase in the percentage of people annoyed has not been proven. There are many competing factors that drive annoyance, and it is not clear that the relationship between densification and annoyance is both non-linear and increases monotonically.

Acoustic treatment of dwellings to mitigate effects.	Agreed that acoustic insulation could reduce the annoyance response however there is insufficient evidence to quantify this. Agreed that in the noise band (50 to 55 dB L_{dn}) that the current District Plan internal design criterion (40 dB L_{dn}) can be achieved by normal construction methods with open windows - no mitigation is required. Agreed that a disadvantage of insulation options is that windows must be kept shut.	JPC, JS, SC consider that intensification generates the opportunity for higher proportion of buildings being acoustically treated, mitigating noise effects. CD and LS consider this is outweighed by the increase in population affected by noise resulting in higher annoyance levels. JS and SC consider a different planning response to separation should be considered that involves managing building typologies, acoustic insulation and ventilation and cooling as an alternative to limiting intensification. CD disagrees with this statement. LS considers acoustic insulation and ventilation is a compromise rather than a solution. CD and LS consider that insulation and ventilation do not solve noise effects on outdoor living areas and noise effects via open windows. SC, JS consider that the need to keep windows shut is less of an issue in a more dense urban context and it has the potential to considerably improve exposure to noise at night.
Significance of outdoor living Environments.		SC and JS consider that different forms of housing with different forms of outdoor spaces result in different responses in terms of amenity expectations and time spent outdoors.

		CD and LS disagree and consider there is no evidence to support different levels of noise annoyance with different types or sizes of outdoor spaces. LS considers intensification would result in a greater number of people affected by outdoor noise.
Noise contour remodelling assumptions.		SC and JS consider that assumptions for modelling should have considered all other management options for reducing noise and a cost benefit evaluation. JPC considers that re modelling should have adopted an assumption on new aircraft fleets having improved noise performance based on historical trends as well as improved flight tracking accuracy. CD and LS consider the contours are based on currently available data rather than speculative adjustments. Future changes (to quieter or noisier aircraft) will be incorporated as evidence emerges through the ten yearly review of the noise contours. On Outer Envelope v Annual Average. CD considers either approach is valid. JS, CD and SC agree that the Annual Average approach does not adequately account for seasonal changes resulting in greater use of the cross runway. JS and SC consider that annual average should be used but with a factor included to address this issue. JS and SC consider such a factor should not extend to the outer envelope.

Existing adverse health effects from noise.		JS and SC consider that airport management policies and practices should have regard to existing effects on communities and how these can be mitigated to achieve a balanced outcome taking into account costs and benefits of alternative approaches which might result in reduced current and future exposure. They also consider this is relevant to the airports duty to avoid unreasonable noise (s16 RMA) CD and LS do not consider current noise levels are within the scope of PC 14 however if the panel determine that it is, then they will consider the matter further.