Before an Independent Hearings Panel of Wellington City Council

In the matter	of the Resource Management Act 1991 (the **Act**)
And	
In the matter	of hearing of submissions and further submisssions on the Wellington City Proposed District Plan (**PDP**)

Statement of Rebuttal Evidence of
Darran Humpheson (Noise) for Wellington International Airport Limited

Dated: 25 July 2023

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1. INTRODUCTION

1.1 My full name is Darran Humpheson. I am a Technical Director of Acoustics at Tonkin & Taylor Ltd. I have over 30 years of experience as an acoustic specialist.

1.2 I have prepared a statement of evidence for Hearing Stream 5 – NOISE, dated 18 July 2023, which sets out my qualifications and experience.

1.3 I confirm my obligations in terms of the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2023. I confirm that the issues addressed in this brief of evidence are within my area of expertise. I confirm that I have not omitted to consider material facts known to me that might alter or detract from the opinions I express in my evidence.

2. SCOPE

2.1 I have prepared this statement of rebuttal evidence for Wellington International Airport Ltd (WIAL). This statement addresses the evidence on the noise chapter (**NOISE**) of the Wellington City Proposed District Plan (**Proposed Plan**) provided by:

(a) Kāinga Ora (submitter 391):

(i) Jon Styles (noise); and

(ii) Matthew Lindenburg (planning).

(b) Waka Kotahi & KiwiRail (submitters 370 and 408 respectively):

(i) Stephen Chiles (noise); and

(ii) Cath Heppelthwaite (planning).

2.2 I have not considered the corporate evidence provided by these submitters.

2.3 My rebuttal statement addresses three themes that are common to each set of evidence:

(a) Need for sound insulation;

(b) External noise amenity; and

(c) Reverse sensitivity effects.

2.4 I have also addressed a minor matter raised in the evidence of Mr Styles.

2.5 Where appropriate I reference my statement of evidence and the evidence of Malcom Hunt, noise expert for Wellington City Council.

3. SOUND INSULATION

3.1 Mr Styles and Dr Chiles have different opinions on the suitability of NOISE-S4 and NOISE-S5.

Mr Styles

3.2 Mr Styles supports the Proposed Plan's relative sound insulation performance standards of NOISE-S4 and NOISE-S5 (paragraph 8.4). He disagrees that a standalone set of absolute sound insulation controls proposed by WIAL is justified (paragraph 8.4). Mr Styles does not provide any explanation for his support of the Proposed Plan's sound insulation standards or why he does not agree with the relief sought by WIAL.

3.3 Mr Styles states at paragraph 4.4 that the dBA method, which I favour but is considered by Mr Hunt to be flawed, is commonly used in district plans. He then goes on to say at paragraph 4.6 that both the relative (Dtr) and absolute (dBA) approaches have their own pros and cons, which are based on the character, level and variability of the noise source (paragraph 4.8). Mr Styles does not provide any further reasoning why these factors are important.

3.4 He provides no further evidence as to why the relative approach of NOISE-S4 and NOISE-S5 should be adopted in the Proposed Plan rather than the fixed internal

limit sought by WIAL. Mr Styles does not consider the approach of the Operative Plan or that of the Quieter Homes Programme. I disagree with Mr Styles on this matter for the reasons explained in my evidence in Section 5 (mainly paragraphs 5.11, 5.26 and 5.33).

3.5 In Section 8 of his evidence, Mr Styles states that he does not support the relief sought by WIAL but does not provide any further reasoning. For example, at paragraph 8.3 he supports Mr Hunt's evidence without qualifying why he agrees with Mr Hunt. Similar statements are made elsewhere for road-traffic and railway noise.

3.6 Appendix A of Mr Styles evidence is very helpful to explain the range of likely costs associated with the design and acoustic treatment of buildings (sound insulation). I consider that Mr Styles' costs for sound insulation are appropriate but are likely to be at the low end of the scale. For example, I have recently specified the sound insulation of a new build adjacent to a busy road in Christchurch. Although only one façade needed to be treated (3 rooms), the build cost increased by approximately $25,000 for the sound insulation and a further $12,000 for the ventilation. NOISE-S4 and NOISE-S5 require all habitable rooms to achieve the same performance standard (35/30 dB $D_{tr,2m,nT,w}$ + C_{tr}). If the whole house had to be treated then I estimate that the build costs would rise threefold based on the number of habitable rooms. For the reasons I explained in my evidence at paragraph 7.2, NOISE-S4 and NOISE-S4 will mean that unnecessary additional costs will be incurred (treatment of the whole building) compared to the approach of the Operative Plan and that proposed in my evidence.

Dr Chiles

3.7 Dr Chiles in his evidence does not refer to aircraft noise or WIAL's submission as it is not relevant to the noise generated by use of Waka Kotahi's or KiwiRail's infrastructure. However, Dr Chiles does consider the appropriateness of the sound insulation and ventilation requirements of the Proposed Plan in the context of road-traffic and railway noise.

3.8 Dr Chiles at paragraph 6.3 identifies the need to provide thermal comfort to building occupants if doors and windows are to be closed to meet internal sound level requirements. I agree with Dr Chiles that comfort cooling and heating is required.

3.9 Dr Chiles considers at paragraph 8.7 that a fixed internal sound level limit expressed as a dBA is more appropriate than the relative Dtr approach of NOISE-S4 and NOISE-S5. Dr Chiles is of the opinion that achieving consistency across different noise source should not imply that a single common approach is needed. Therefore both Waka Kotahi and KiwiRail seek their own standalone fixed internal limits based on 40 dB LAeq in a similar way that WIAL is seeking a fixed internal level based on 40 dB Ldn. I agree with Dr Chiles that different approaches are valid (paragraph 8.8).

3.10 Dr Chiles does raise a good observation that for buildings affected by road-traffic and railway noise it is usually only one façade that is affected. NOISE-S4 and NOISE-S5 apply similar sound insulation requirements to the whole building even if only one façade is affected. As I stated earlier, and in my evidence at paragraph 7.2, this will result in overdesign and result in significant and unnecessary costs for the developer/homeowner. For Wellington Airport a similar situation will arise for buildings close to the sides of the runway, as generally one side of the building will be affected more than the other. A fixed internal sound level design standard avoids the unnecessary costs of overdesigning properties by targeting treatment to affected rooms.

Mr Lindenburg for *Kāinga Ora*

3.11 Mr Lindenburg at paragraph 9.2(b) requests that homeowners have the ability to undertake minor alterations (less than 25 m^2 gross floor area) without the need to include the sound insulation standards of NOISE-S4 or NOISE-S5. If this minor alteration is a bedroom for example, then there is the possibility that the internal noise environment may be compromised if the design does not consider the external noise environment – especially if within the Inner Air Noise Overlay. From my experience, an extension of less than 25 m^2 that is constructed according to the

New Zealand Building Code and in particular the thermal requirements will likely achieve an internal level of 40 dB Ldn, but is unlikely to achieve the requirements of NOISE-S4 (35 dB $D_{tr,2m,nT,w} + C_{tr}$). The internal noise environment may therefore be compromised if the relief sought by Mr Lindenburg is allowed.

4. EXTERNAL NOISE AMENITY

4.1 I am surprised as to the lack of discussion relating to outdoor noise amenity by Mr Styles and Dr Chiles. While suitable indoor living and sleeping environments can be provided in a well-insulated building, there must be consideration of outdoor noise and the affects that it may have on noise amenity. I considered this issue in my evidence at paragraphs 4.23, 5.2, 5.4 and 6.13 to 6.15. It is a key consideration when managing reverse sensitivity.

4.2 Ms Heppelthwaite's Table 2 at attachment C does include an outdoor amenity level of 57 dB LAeq(24h) for road traffic noise.[1] However this requirement is not included in the relief sought by Waka Kotahi. For the reasons I have explained in my evidence (paragraphs 6.13 to 6.16), outdoor amenity has a key role to play when considering reverse sensitivity.

5. REVERSE SENSITIVITY EFFECTS

5.1 Mr Styles states he has a good understanding of the issues associated with Wellington Airport as he was involved in the mediation proceedings for the two recent designations (WIAL4 and WIAL5). An important issue is the topic of reverse sensitivity and Mr Styles makes no mention of this issue.

5.2 Mr Lindenburg's planning evidence does discuss the issue of reverse sensitivity, but only that he prefers the term 'incompatible use and development' in the Proposed Plan (paragraph 6.3b). He does not consider the need to manage reverse sensitivity effects.

[1] Waka Kotahi, Assessment of Plan Provisions to Provide for Human Health and Amenity in accordance with section 32 of the Resource Management Act. October 2021

5.3 At paragraphs 8.0 and 8.10 he disagrees that WIAL should have affected party status when considering new or altered development. I disagree with Mr Lindenburg for the reasons I have set out in my evidence, i.e. the need to consider the scale, nature and use of the proposed development (my paragraphs 6.13 to 6.16).

5.4 As I have already stated, none of the noise and planning experts have considered the importance of outdoor amenity. The issue of outdoor amenity is important when considering reserve sensitivity. Whether these spaces are for primary use, e.g. garden areas, or secondary use, such as communal spaces or small spaces such as balconies, will likely result in different expectations of the building occupier as to the value they place on outdoor amenity (my paragraph 6.13).

5.5 I agree with Dr Chiles at his paragraph 5.2 that land use controls to avoid or manage adverse noise effects on new sensitive activities or alterations to such activities are critical in protecting sensitive activities from adverse noise effects. He states that such controls, in turn, are fundamental to managing the potential for both health impacts and reverse sensitivity effects. The relief sought by WIAL is to have affected party status for development requiring a resource consent within the Air Noise Overlay. For example, depending on the level of noise exposure and location of the application site, affected party status would allow WIAL to provide constructive feedback on the layout, orientation and design of buildings.

5.6 In my view, Kāinga Ora is dismissive of reverse sensitivity effects[2]. As provided in the evidence of Cath O'Brien for BRANZ, there is a need to protect airports against reverse sensitivity effects. Ms O'Brien provides a number of airport examples of reverse sensitivity in play.

5.7 I too have firsthand experience of reserve sensitivity and the impact on aircraft operations. I was involved in the Environment Court's declaration on engine testing at RNZAF Base Auckland (Whenuapai). In summary, a land developer sought and was successful in restricting engine testing operations through their inclusion within the aircraft noise contours of the designation that relates to a facility that

[2] Corporate evidence for Kainga Ora – Brendon Liggett paragraph 4.7

has been in operation since the 1940s. I can confirm that reverse sensitivity effects are ongoing at Whenuapai through the intensification of the surrounding area.

6. OTHER MATTERS

6.1 NOISE-S4 and NOISE-S5 requires acoustic design certificates to be signed by an acoustic engineer. Mr Styles explains in his Section 5 why the term 'Suitably qualified and experienced acoustic expert' is more appropriate. I personally do not have an engineering qualification as my qualifications are science based and I am indifferent whether I am referred to as an acoustic specialist, acoustic engineer or just acoustician. To ensure an appropriate level of technical rigour I agree with Mr Styles that the term 'Suitably Qualified and Experienced Acoustic Expert' is used, as design certificates need to be correctly authorised.

Darran Humpheson

25 July 2023