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 Evidence (Summary) of Darran Humpheson

Dated: 7 August 2023

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1. SUMMARY

1.1 My name is Darran Humpheson and I am a Technical Director with Tonkin & Taylor Limited.

1.2 My qualifications, experience and code of conduct statement are set out in my evidence in chief dated 18th July 2023.

1.3 This evidence summarises my response to evidence given by witnesses last week when answering questions from the Panel, in particular the noise evidence of Mr Hunt for Wellington City Council and Mr Styles for Kainga Ora.

1.4 I heard Mr Ashby and Mr Matheson when they discussed NZS 6805:1992 and my views are set out in my evidence. In summary it remains a relevant New Zealand Standard even though it is over 30 years old. Standards New Zealand conducts reviews of aged standards, typically those over 10 years old to see if they are still 'current'. In January this year, Standards New Zealand confirmed that they have no feedback prompted by either users of the standards or industry bodies, to withdraw or prompt a review or revision of any of the noise standards, including NZS 6805. These details were in my evidence in chief.

1.5 There are two technical issues that remain outstanding: acoustic treatment of buildings and reverse sensitivity.

1.6 I agree with Mr Styles summary of the pros and cons of the Dtr v dBA debate last Friday and it appears he agrees with dBA standards for road, rail and aircraft noise but with two tweaks.

1.7 Firstly, the dBA approach needs external noise levels and the airport company have already committed to providing contours in 1 dB intervals as GIS layers, this commitment was referenced in my evidence.

1.8 Secondly, sound insulation calculations need spectral/frequency data to assist with the acoustic design of the building envelope. This frequency data is readily available and would be a composite of jet and turbo-prop data to account for both aircraft

types. It is similar to the data I used in my rebuttal evidence when I gave an example of a sound insulation calculation using a 40 dBA internal design standard, rather than the inbuilt data within a software package such as INSUL.

1.9 I wish to clarify a potential misunderstanding by Mr Hunt when he mentioned last Tuesday that I agreed with the minimum construction requirements of Table 1, which if for an outside to inside sound reduction of 30 dB. My reference to Table 1 is appropriate as no new properties should be constructed within the 70 dB Ldn contour, i.e. 40 dB internal + 30 dB insulation = 70 outside.

1.10 The approach I have adopted is to provide an option to either implement Table 1 or to engage an acoustician. Both approaches result in similar outcomes. Most of the projects I have worked on have involved non-standard building constructions, mainly large expanses of skillion roofing or glazing and therefore bespoke solutions are needed rather than relying on a standard approach which may not be fit for purpose at the end of the life of the District Plan due to changes in construction practices or regulatory requirements (NZBC).

1.11 I heard Kainga Ora's ventilation expert on Friday and I will defer to his expertise when addressing ventilation rates and comfort cooling requirements. I still do not consider it necessary to have a high ventilation rate for aircraft noise as residents can choose to open windows and doors in between aircraft operations. I do note that Mr Lindenberg's NOISE-S6 is one of the most detailed ventilation standards I have seen.

1.12 In my evidence I gave a rather brief but hopefully informative overview of socio-acoustic surveys and health effects, including the implications of the World Health Organisation's 2018 guidelines.

1.13 Intensification of noise sensitive activities within the air noise overlays increases the number of people exposed to noise. Increasing the number of people increases the potential number of people who become highly annoyed.

1.14 Annoyance, impaired well-being as well as self-reported sleep disturbance are classified by the WHO as health outcomes. Annoyance is the most readily measurable and reliable indicator in self-reported social surveys. High annoyance is therefore a precursor to other effects. Annoyance can be likened to an amenity effect that people may initially become disturbed and can then manifest itself depending upon sensitivity of the individual to complaints which can then lead to hypertension and possible negative outcomes on health. Of all the health effects, sleep disturbance, is recognised by the WHO as the key health effect. Managing noise at night is therefore essential and the Wellington Airport curfew period assists with managing this effect as does restrictions with the future use of the East Side Area (ESA). The latest WHO guidelines suggest that communities are becoming more sensitive to aircraft noise across a range of noise exposures, including levels outside the Inner Air Noise Overlay.

1.15 From my experience new people moving into an area are more likely to be annoyed and complain compared to people who have habituated to the noise. This is readily apparent at Whenuapai and I am happy to explain my involvement with Base Auckland and why reverse sensitivity was central to NZDF's concern about the intensification of noise sensitive development.

1.16 This means that increased levels of annoyance can result in increased levels of complaints, which then over time can lead to constraints i.e. reverse sensitivity effects. This is especially relevant if new people come to the 'nuisance'. They are intrinsically linked – it's the potential to constrain the operation of the noise producer by pressure from the community – similar to the examples provided by others and my personnel experience of the likes of Whenuapai.

1.17 The Panel has heard about the Inner and Outer Air Noise Overlays and the relief that WIAL is seeking to have affected party status in both overlays. It is important that the Panel remembers that the Outer Air Noise Overlay covers noise levels between 60 dB and just below 65 dB. The upper of this range is most relevant when managing health, wellbeing, outdoor amenity and reverse sensitivity effects – hence the reason why the relief is being sought.

1.18 Mr Kingston of the Strathmore Residents Association made a number of statements last Thursday relating to the noise contours. The Inner and Outer Noise Overlays are linked. As the annual 65 dB contour changes, the 60 dB contour will also change. Both the Inner and Outer Air Noise Overlays represent a situation in the future – 2050 which includes the use of the ESA. The airport will offer ventilation to existing homes within the future 60 dB Ldn contour – similar to the Quieter Homes Programme rollout - the most affected properties will be treated first at a rate that accords with the growth in the contour over time.

1.19 Finally I want to provide an indication of how noise will change in the future in order to put this into the context of the potential for reverse sensitivity effects. The size of the ANB provided for by the designation is predicted to be smaller in 2050 compared to the ANB in the Operative Plan.

1.20 The ANB in the Operative Plan was produced in the 1990s calculated on a different mix of aircraft and less sophisticated modelling i.e. no terrain was included.

1.21 The updated ANB reflects that current day aircraft are significantly quieter than the aircraft operating in the 1990s. For example, Air New Zealand's Airbus A320 is at least 8-9 dB quieter than the Boeing 737-300 it replaced. This noise reduction is a result of improved engine performance.

1.22 New technology hybrid and electric aircraft will be marginally quieter than the best performing current aircraft, but they will still rely on conventional propulsion systems, e.g. propellers.

1.23 On average, there will be 5-6 dB more noise in 2050 compared to current levels of aircraft noise – this applies equally to the 60 dB Ldn contours and ANB (Outer and Inner Air Noise Overlays).

1.24 Whilst the noise of individual aircraft will not increase, and in most cases will marginally decrease, the frequency of aircraft movements will increase.

1.25 Forecasts show that there will be more scheduled aircraft operating in the future.

1.26 Compared to pre-COVID levels (2019), a 43% increase in movement numbers is forecast in 2050, compared to a 61% increase in 2022, which reflects the ongoing recovery in air transport after the pandemic.

1.27 There will be less respite between aircraft operations. On average there will be 7 extra aircraft movements per hour in 2050 compared to 2019 movements and an extra 9 aircraft movements compared to 2022 movements.

1.28 This equates to an aircraft approximately every 3 minutes in 2050 compared to an aircraft movement every ~5 minutes in 2022.

1.29 Finally there will be more aircraft operating in the evening hours prior to the curfew commencing and in the early morning after the curfew period ends.

D Humpheson

7 August 2023