



## **1. INTRODUCTION**

- 1.1 This evidence briefly repeats in summary form the evidence I lodged in support of Kāinga Ora's position in Hearing Stream 5. That evidence relates to ventilation requirements as expressed in NOISE R-14, and NOISE-RXX (Ventilation) and applies equally to Hearing Stream 10a as to Hearing Stream 5. The Panel is asked to consider that evidence in full as applying to the Airport-related provisions.

## **2. PRELIMINARY POINTS**

- 2.1 My full name is Lance Michael Jimmieson. I am a specialist Building Services Engineer and Managing Director of Jacksons Engineering Advisers Limited, having been an owner and Managing Director for the past 23 years. I lead a team of 26 Building Services consulting engineers in the design, construction, and assessment of building services, working across New Zealand and internationally.
- 2.2 My Hearing Stream 5 evidence describes my qualifications and expertise. I have reminded myself of 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.
- 2.3 The recommended amendments to the provisions under consideration in Hearing Stream 10a that are included in Attachment B to Mr Lindenberg's statement of evidence include my input and recommendations.

## **3. KEY POINTS**

- 3.1. As I explained in my Hearing Stream 5 evidence, if windows must be closed to achieve the design noise levels, are non-compliant (windows less than 5% of floor area) or are fixed pane, the building is to be designed, constructed and maintained with mechanical heating, cooling and ventilation systems as set in clause 3.3 below.
- 3.2 Due to the requirement to simultaneously achieve acceptable levels of indoor air quality (to ensure the creation of lifelong healthy homes),

ensure minimum levels of comfort (Internal temperatures of 18 – 25°C) and acceptable internal noise levels, minimum requirements for dwellings' fitted with openable windows should be based on clause 3.3 below.

3.3. Minimum heating, cooling and ventilation requirements

- a) Mechanical ventilation compliant with section 1.5, Mechanical Ventilation of NZBC G4/AS1 is to be provided for all habitable rooms.
- b) Ventilation, heating and cooling, is to be provided for each separate habitable space, including each bedroom, assuming bedroom doors will be closed.
- c) Ventilation system(s) are to be adjustable by the occupants only where non-compliant or fixed windows are installed. Otherwise minimum ventilation rates are to fixed airflow.
- d) All controls and ancillary items to effect the correct operation of the above systems is to be provided.
- e) A suitable heating system(s) that is controllable by the occupant and capable of maintaining a minimum internal design temperature of 18oC, while operating within the specified noise criteria of 35 dB LAeq(30s) when measured 1 metre away from any outlet/inlet is to be provided. Equipment breakout noise must also fit within this criteria.
- f) A suitable cooling system that is controllable by the occupant and capable of maintaining a maximum internal design temperature of 25oC, while operating within the specified noise criteria of 35 dB LAeq(30s) when measured 1 metre away from any outlet/inlet is to be provided. Equipment breakout noise must also fit within this criteria.
- g) The design is to be based on the NIWA 2.5% design weather dataset (i.e. 24 hour data as published by NIWA) for ensuring heating and cooling solutions work appropriately 24/7 for the geographic location in which the dwelling is located.

3.4 Where buildings are fitted with non-compliant or fixed windows, the minimum ventilation requirement should be increased to 1 air change per hour and a flushing function capable of up to 2 air changes per hour may also be provided.

- 3.5 Alternatively, a specific engineered system can be proposed by a suitably qualified and experienced HVAC expert, provided the above outcomes can be met or exceeded.

A handwritten signature in black ink, appearing to read 'Lance Michael Jimmieson', with a large, stylized loop at the end.

Lance Michael Jimmieson

**02 February 2024**