

**BEFORE THE INDEPENDENT HEARING PANEL ON PROPOSED PRIVATE  
PLAN CHANGE 13 TO THE OPERATIVE HAMILTON CITY DISTRICT PLAN**

**UNDER** the Resource Management Act 1991

**IN THE MATTER** of Proposed Private Plan Change 13 to the Hamilton City  
District Plan

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**Summary of Evidence of Alex Jacob**

**Acoustics**

**Dated 24 August 2023**

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## **INTRODUCTION**

1. My full name is Alex Eli Jacob. I am an Engineering Director at Earcon Acoustics Limited. My qualifications and experience are set out in my Evidence in Chief dated 9 August 2023.
2. I reconfirm that I have read the Code of Conduct for expert witnesses as contained in the Environment Court's Practice Note 2023. I have complied with the Code when preparing my Evidence in Chief and this Summary Statement and will do so when I give oral evidence before the Panel.

## **SUMMARY OF ACOUSTIC CONSIDERATIONS**

3. In paragraphs 14-17, I set out the summary of acoustic considerations and noted that the main areas of concern pertaining to acoustics are:
  - (a) Sensitivity and amenity of the residential properties, these being in proximity to an industrial zone with allowance for emission of high noise, day and night, as per Hamilton City District Plan ("HCDP") standards.
  - (b) Reverse sensitivity effects arising from new noise sensitive activities in proximity to lawfully established noise generating activities.
4. I explained that the main issue regarding PPC13 is industrial noise that can lawfully be generated at night. Night time noise requires special consideration for dwellings as it can cause sleep disturbance. The Acoustic Assessment and the evidence of Mr Bell-Booth did not consider the effect of night time noise or proposes controls specific to it. The resulting proposed Plan Change 13 ("PPC13") provisions in my opinion lack sufficient controls and mitigation measures to address night time noise.

## **ISSUES WITH PPC13**

5. I disagree with three aspects of PPC13 as it stands:
  - (a) it does not protect residents from low frequency noise;
  - (b) does not protect from impulsive noise; and
  - (c) obfuscates the potential issues by not including no-complaints covenants.
6. The proposal is to create a Residential Zone and facilitate the development of 200 residential dwellings adjacent to an Industrial Zone. Residential zones in the

HCDP include protection from night time noise, but in its current form PPC13 would establish a residential zone without night time noise mitigation or controls.

7. The current Assessment Criteria in 1.3.3.P.c does not include any consideration for low frequency noise or for impulsive noise, both critical to protection of dwellings from sleep disturbance. The assessment criteria would require only attenuation of noise in the order of 20-25dBA (noise level at the façade to internal noise levels), which as detailed in page 20 of the Acoustic Assessment (Appendix G) can be satisfied by simply closing windows and adding mechanical ventilation. The proposed assessment criteria would not require any further specialised acoustic treatments for the building envelopes. While this may be just adequate for daytime, it is inadequate for night time.
8. The proposal does not include provision of no-complaint covenants, which would contribute to avoiding sensitivity issues and mitigating reverse sensitivity issues.

#### **ABOUT NOISE**

9. I note a trend in the proposed changes where noise descriptors are incorrectly referenced, effectively changing their meaning. For example, the wording of the noise limit in rule 25.8.3.7.(e) of the HCDP should be updated to  $LA_{eq(15min)}$  65dB (instead of simply  $LA_{eq}$  65dB) and the noise limit in 1.3.3.P.c (Assessment Criteria) is referenced differently as  $LA_{eq(24\text{ hours})}$  65dB which gives it a different meaning.
10. To describe environmental noise, three elements must always be taken into account otherwise the levels would be misleading. Noise must include (1) frequency or weighting across frequencies, (2) location and (3) timeframe. These are the "what, where and when" that must be associated with noise, otherwise it becomes misleading. For example, it is a fact that a mosquito and a 20 tonne rock breaker can both generate  $LA_{eq(1s)}$  85dB. The omission in that statement is the "location" (20mm vs 20m respectively from the source).
11. The reason I note the above is that the Rebuttal Statement of Mr Bell-Booth, specifically for external low frequency noise levels, disregards "location", in a manner similar to the proposed noise limit at the boundary disregarding "time." As another example, the reference in 1.3.3.P.(c) is incorrect as instead of the "time" being 15 mins for  $LA_{eq}$  65dB, it is referenced as 24 hours, which gives it a different meaning (e.g. allows assessment without night time noise.)

**EXISTING NOISE VS ALLOWED NOISE**

12. I fundamentally disagree with any reliance or reference to historically measured noise levels. These measured noise levels are out of date and out of context when introducing a sensitive zone into a potentially noisy environment. Noise levels can (and likely will) increase in an industrial zone to the allowed limits. A simple scenario is any of the operations requiring an early start (e.g. 5:00am) due to increased demand.
13. I also note that the "locations" of monitoring are not fit for purpose. As per the figure on page 30 (Appendix A) of Mr Bell-Booth's Evidence in Chief, no measurements were taken in the eastern corner of the site where the main industrial activities currently occur. Measurement location LP1 is 100m away from the Ecostream building (423 Te Rapa Road). Measurement location LP2 is more than 80m from the Ecostream building, and hidden from the Panel Beaters (89 Garnett Ave) behind the mixed use building which is an effective acoustic shield.
14. Contrary to the assertion of Mr Bell-Booth in Paragraph 8 of the rebuttal, reverse sensitivity issues are occurring currently. I understand from discussion with the Panel Beaters located at 89 Garnett Ave, there have been multiple complaints from the adjacent mixed use development regarding a compressor in the back yard disrupting their sleep when it has to be started early in the morning. This is exactly the type of reverse sensitivity effect that can occur.

**LOW FREQUENCY NOISE**

15. I recommend inclusion of internal noise performance standards specific to low frequency noise, based on allowed noise levels at the boundary. All district plans, including the HCDP, include external low frequency noise limits at dwellings from industrial or commercial activities where warranted. For example, the HCDP in 25.8.3.7.d limits external low frequency noise from Te Awa Lakes Business 6 Zone in the accommodation area to  $LA_{eq(15min)}$  50dB at 63Hz and 55dB at 125Hz. Another example would be noise from the Te Rapa Racecourse which also has external limits on low frequency noise.
16. In the case of PPC13, it would be inappropriate to apply an external low frequency noise limit to established industries. As such, the other mechanism to protect the dwellings would be to account for the low frequency content that can reasonably occur externally, and reduce this through façade design to

appropriate internal noise levels. I note the internal noise levels quoted from the Auckland Unitary Plan apply in Auckland to any and all business zones and industrial zones (E25.6.9 and E25.6.10 respectively). I further note that these internal levels align with the external noise limits in the HCDP when calculated internally for a standard dwelling (i.e. reducing 10dB-15dB through the building envelope)

17. Regarding the external low frequency levels I recommend, I note these are at the boundary and based on commonly used equipment and mechanical plant, and collated with the  $LA_{eq(15min)}$  65dB limit at the boundary. The arguments made in the rebuttal statement of Mr Bell-Booth that these levels are too high are incorrect because the rebuttal statements disregard the “location” of the proposed external low frequency levels is at the boundary closer to mechanical plant, not at the dwellings at least 30m from the boundary (e.g. 75dB at 10m = 63dB at 40m). All the arguments in the rebuttal statements compare scenarios where the external levels are at dwellings (or at a boundary where dwellings are allowed.) I make it clear in my evidence that assessment (i.e. noise reduction over distance and shielding) should be made similar to the noise limit at the boundary.
18. The proposed low frequency levels set out in my evidence are realistic and consistent with published data in the BS5228-1 standard (as referenced in NZS6803) which includes examples of equipment relevant to the adjacent industrial facilities. Tables C2, C3, C5 of BS5228-1 demonstrate that a hand held gas cutter for steel, or a generator for welding or a water pump, located at 10m from the boundary would have noise levels similar to those identified. I do not believe the use of these machines represents fanciful scenarios.

#### **IMPULSIVE NOISE**

19. Impulsive noise at night from industrial activities also warrants special consideration for protection of sleep. I propose mitigation for this is provided in the form of either an increased offset from the boundary or a meaningful acoustic fence. In my evidence I noted a simple example of a pneumatic wrench to demonstrate the issue. This is one of the most commonly used tools in garages, tyre shops, mechanics, and panel beaters. Other examples include: loading/unloading of containers, use of compressed air, use of an angle grinder, even opening of a steel roller door. The most pertinent scenario may be in context of a panel beater “beating” panels.

20. I note here the very poignant paragraph 27.(b) of Mr Bell-Booth's rebuttal. This paragraph states that using a pneumatic wrench (e.g. securing a wheel to a car) at night is unlikely to happen and if it does, it would not satisfy s16 and s17 of the RMA. This demonstrates how reverse sensitivity effects will arise from establishing conflicting noise environments without proper mitigation. In my opinion PPC13 as it stands will constrain and potentially preclude many meaningful, lawful, even some basic industrial activities from occurring at night.

#### **NO-COMPLAINTS COVENANTS**

21. I also propose that no-complaints covenants are required to be registered against the titles in the PPC13 Residential zone to formally establish expectations pertaining to noise. A Residential zone carries with it an expectation by a layperson that the zone has a certain character including soundscape. A covenant would first reduce sensitivity issues by giving potential occupants the opportunity to avoid this environment if it does not suit them. If they do accept it, the covenant provides the industrial neighbours with some mitigation from reverse sensitivity complaints. Not registering covenants would obfuscate the non-standard soundscape of this new zone, and discard a BPO that "avoids" and "mitigates" sensitivity and reverse sensitivity issues.

#### **SUMMARY**

22. As my Evidence in Chief sets out, I do not believe PPC13 as it stands provides sufficient protection from night time noise sensitivity or from the resulting reverse sensitivity issues.

*A Jacob*

**Alex Jacob**

Dated this 24<sup>th</sup> day of August 2023