

APPENDIX 3

Addendum to Technical Specialist Report – Acoustics / Reverse Sensitivity Matters – Section 42A Reporting

PLAN CHANGE 13 – TE RAPA RACECOURSE PRIVATE PLAN CHANGE

to

HAMILTON CITY DISTRICT PLAN

Hamilton City Council

1 Introduction

Purpose of Report

- 1.1 This addendum provides further assessment and comment on Plan Change 13 following review of the applicant and submitter evidence. It updates the Technical Specialist Report – Acoustics – Section 42A Reporting, prepared by Peter McGregor for Hamilton City Council (HCC).

This is a statement of evidence from Peter McGregor.

Information Considered

- 1.2 In preparing this addendum the following documents have been reviewed:

- Evidence of James Bell-Booth (Marshall Day Acoustics)
- Submitter Evidence from Alex Jacob (Earcon Acoustics Limited)
- Evidence of John Olliver
- Submitter evidence from Murray Vereker-Binden, a resident at the Forest Lake Gardens Retirement Village
- Submitter evidence from Suzanne O-Rourke representing Fonterra

Code of Conduct

- 1.3 While I understand that the present hearing is not a matter to which the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note (2023) applies, I confirm that I have approached the preparation of this evidence in the same manner as I would for Environment Court proceedings and have complied with the requirements of the Code. I confirm that the issues addressed in this evidence are within my area of expertise and the opinions I have expressed are my own except where I have stated that I have relied on the evidence of other people. I have not omitted material facts known to me that might alter or detract from my evidence.

2 Applicant Evidence

- 2.1 In his evidence in chief (starting at paragraph 30), Mr Bell-Booth describes further noise monitoring carried out of ambient noise within the Te Rapa Racecourse site during June 2023.
- 2.2 The additional measurements confirm that the current acoustic environment has not changed since the previous 2017 and 2018 measurements. The measurements serve to describe the current ambient acoustic environment to provide context and to confirm that noise emission from existing industrial activity would be able to comply with the proposed 65dB LAeq(15-mins) limit in rule 25.8.3.7(e) within the proposed residential precinct, noting that there is no existing limit on noise emission from the nearby industrial activities into the racecourse property being a major facilities zone, referred elsewhere as a “gap” in the ODP noise rules.

3 Submitter Evidence

Assessment methodology-

- 3.1 Mr Jacob states a concern in paragraph 52 of his evidence that the Marshall Day acoustic assessment (dated 19 July 2022) is based on the existing acoustic environment rather than what could potentially occur in terms of permitted levels, although acknowledging that the proposed changes to the noise rules are reasonable despite this (at least during the daytime hours).

- 3.2 As stated in paragraph 2.2 above, the assessment of the current ambient environment provides assurance that noise emission from the current level of industrial activity would be able to comply with the proposed 65dB LAeq(15-mins) limit.

LAeq(15-mins)-

- 3.3 Mr Jacob has pointed out in paragraph 21 of his evidence that the noise descriptor used in proposed rule 25.8.3.7(e) does not include the reference time interval of 15-mins that is used in most other noise related rules. This needs to be corrected, so the limit should read 65dB LAeq(15-mins) and to confirm, this applies at any point within the proposed residential precinct. This would be consistent with other provisions in the Hamilton District Plan (for example Rule 25.8.3.7(c)).

Rule 25.8.3.7(a)-

- 3.4 Mr Jacob has pointed out in paragraph 22 of his evidence that the proposed exception from rule 25.8.3.7(a) would also exempt the targeted industrial activity from complying with the default noise limits in relation to the Forest Lake Retirement Village.
- 3.5 I agree that this is an unintended outcome of the proposed rule and should be corrected.
- 3.6 Mr Olliver in his evidence has proposed a change to Rule 25.8.3.7(a) that would remove the proposed Te Rapa Racecourse Medium Density Residential Precinct from coverage of this rule. I agree that the proposed change would address the issue.

Low frequency and impulsive noise-

- 3.7 Mr Jacob in his evidence has raised two issues in relation to potential night-time adverse noise effects (sleep disturbance) from industrial activity –impulsive noise and low frequency noise (represented by the 63Hz and 125Hz octave band widths).
- 3.8 Examples of activities that give rise to impulsive noise are detailed in paragraphs 30(a) and 33 of Mr Jacob's evidence. Paragraph 33 describes impulsive noise. Examples of activities that give rise to low-frequency noise are detailed in paragraph 40 of Mr Jacob's evidence.
- 3.9 I agree that these types of noise have the potential to cause sleep disruption during night-time.
- 3.10 It is submitted by Mr Jacob that the best practicable option to mitigate effects from these types of noise is to increase the building setback to 60m or to construct an acoustic barrier at the industrial zone boundary (of greater dimensions than the currently proposed 1.8m acoustic fence) and also, with reference to low frequency noise, to impose internal noise performance standards for the proposed Te Rapa Racecourse Medium Density Residential Precinct in relation to the 63Hz and 125Hz octave band widths.
- 3.11 I discuss each of these in the following paragraphs.

Low frequency and impulsive noise-

- 3.12 Rule 25.8.3.10 requires any noise-sensitive activity (which includes residential activity) located within an industrial zone (among other zones and certain transport corridors) to comply with the internal noise

design criteria in rule 25.8.3.10(e). The criteria do not include anything in relation to low frequency noise or impulsive noise.

- 3.13 Conversely, the Hamilton District Plan has low frequency noise limits that apply to and within the Te Awa Lakes Business 6 Zone (rule 25.8.3.7(d)), and to event type noise at certain venues (rule 25.8.3.9(c)) that must be met within residential zones. There are also low frequency noise limits in chapter 25.3 – Temporary Activities that apply to activities within certain zones / spaces that must be met within residential zones.
- 3.14 The LAeq limits apply only during night-time and are 70dB at 63Hz and 65dB at 125Hz except for the Te Awa area where they are 10dB lower. These are all external noise limits imposed on the noise producing activities and are intended to control bass beat noise from concert type events. The accompanying LAeq(15-mins) levels are 75dB for event type noise and 55dB in the Te Awa area.
- 3.15 Notwithstanding that rule 25.8.3.10 is silent on low frequency and impulsive noise received in habitable spaces, I consider that it would be necessary to include consideration of protection from night-time low frequency and impulsive noise, particularly when considering the proposed limit of 65dB LAeq(15-mins), which is between the LAeq levels of 55dB and 75dB quoted in the previous paragraph. This would mitigate reverse sensitivity effects raised by submitters in the event industrial activity increased to a greater level during night-time.

Increased offset or higher acoustic fencing-

- 3.16 It is submitted that the potential adverse effects on residential amenity and reverse sensitivity of impulsive noise and of low-frequency noise can be mitigated by either increasing the building setback from 30m to 60m, or by installing a 4m high acoustic fence along the industrial boundary.
- 3.17 The suggestion to erect a 4m high acoustic fence on the industrial boundary is the preferred option (to the 60m setback) and deserves consideration in my opinion. It represents the preferred method of disrupting the propagation of noise, which is to mitigate at or close to the source of the noise, which in this case is the boundary with the industrial zone. An alternative option to a fence on the boundary is to construct an earth bund in the open space area.
- 3.18 Such a fence or bund would reduce the line of sight from industrial based noise sources to the nearest residential buildings, particularly in relation to habitable rooms in lower floor levels of the residential buildings. It could be constructed with sufficient mass to mitigate (although not necessarily avoid) effects from impulsive noise and low-frequency noise. The resulting noise level on the residential side of the fence/bund would depend on the level and type of noise emitted by industrial activity. Having a fence / bund would mean less restraint imposed on industrial activity (thus mitigating reverse sensitivity).
- 3.19 While a fence or bund would have significant benefits in my view, there would likely be residual noise to manage and there would be locations along the boundary where the fence / bund may be less effective, for example in relation to upper levels of residential buildings and/or elevated industrial sites/activities.
- 3.20 For this reason, low frequency and impulsive noise insulation should also be provided at the building façade. Amendments to the assessment criteria are suggested to specifically refer to low frequency and impulsive noise as part of the acoustic design of the building. The following assessment criteria amendments are suggested:

- c. The extent to which noise sensitive activities within the Noise Sensitive Area shown on the Te Rapa Racecourse Medium Density Residential Precinct Plan (Figure 4.5-1) are protected from noise arising from outside the building by ensuring that;
- i. the building is designed and constructed to meet an indoor design sound level of 35dB LAeq (24hr) in bedrooms and 40 dB LAeq (24hr) in all other habitable rooms; and
 - ii. the building is designed and constructed to mitigate the impact of impulsive noise, and to mitigate low frequency noise at 63 Hz and 125Hz to a reasonable level; and
 - iii. when calculating the indoor sound level for i above the outdoor noise level incidental on the noise sensitive activity is calculated using the rule 25.8.3.7 e noise limit of 65dB LAeq (24hr 15min) at the nearest Industrial zone boundary, including any relevant noise level reduction from distance, screening and/or orientation in relation to that Industrial zone boundary; and
 - iv. an acoustic design certificate is provided that describes the proposed design of the building to achieve the internal noise design levels in i above; and
 - v. where the internal design levels in i above can only be achieved in a habitable room with windows and doors closed, an alternative ventilation system is installed that complies with the requirements of Section G4 – Ventilation of the New Zealand Building Code 2011.

3.21 A 4m high (or other sufficient height) substantially constructed fence or bund would also serve to provide a better outdoor amenity not only within the proposed residential precinct, but also in the greater area including the open space (which would not be screened by buildings).

3.22 It has been suggested that such a fence be erected where there are (presumably) existing noisy industrial operations. In my view this is a piecemeal approach and is a less efficient way of managing noise when considering the potential for an increase in the level of industrial activity at any one site. There is the issue of who would pay for the construction of new fences in the future when an industrial site becomes 'noisy'.

3.23 My view is that such a fence or bund should be required by a rule in the ODP to be erected along the whole of the industrial site boundary as part of the plan change. Such a rule already exists in relation to the Ruakura Logistics and Ruakura Industrial Park zones (Rule 25.8.3.13(d)).

3.24 In summary, a sufficiently high acoustic fence or bund of sufficient mass would be the preferred option to a 60m setback and provide relief in relation to the following-

- (a) Reduced adverse effects of low-frequency and impulsive noise from industrial activity on residential activity (although protection from night-time low frequency and impulsive noise should still be considered)
- (b) Reduced line of sight to habitable rooms in lower floor levels resulting in reduced acoustic related design and construction of the residential buildings to comply with any internal noise design criteria that may still be required
- (c) Reduced constraints on building design and construction including the placement of habitable rooms within buildings and building orientation
- (d) Increased outdoor amenity within the residential precinct and in the intervening open spaces

No-complaints covenant-

3.25 It is submitted that a no complaints covenant would be appropriate to mitigate reverse sensitivity. In my view, a no complaints covenant would have no value from a regulatory point of view.

3.26 Such a covenant would not necessarily prevent complaints to Council. Any complaint would initiate an investigation to determine compliance with the 65dB LAeq(15-mins) limit (if accepted). Remedial action by an industrial activity would be required only where there is non-compliance with this proposed limit.

Fonterra submission-

- 3.27 Fonterra raised concerns about reverse sensitivity issues in relation to noise emission from their operations impacting on their operations at their Crawford Rd site.
- 3.28 The nearest distance from the western boundary of the proposed residential precinct to the Crawford site is approx. 450m. There is also a large building on their site located between the racecourse boundary at this point and their outdoor yard area, which would act as an effective noise barrier.
- 3.29 There is an open line of sight to an outdoor operations area to the south of the building approx. 600m from the residential precinct boundary. The intervening ground cover over the racecourse area is predominantly soft, which would provide additional attenuation of noise over and above distance attenuation.
- 3.30 The distances are similar to the existing Forest Lake Gardens Retirement Village adjacent to the racecourse.
- 3.31 To date, there have been no complaints received by Council from residents in the Forest Lake Village or the new Bupa Foxbridge Retirement Village in Minogue Drive indicating the Fonterra site does not currently emit a level of noise that creates adverse effects at these locations.
- 3.32 The existing LAeq(15-mins) limits that apply to industrial activity (including the Crawford St site) in relation to the retirement village are 50dB during the daytime and 40dB during the night-time with two short shoulder periods at 45dB. These same limits would apply in relation to the residential precinct (other than the industrial sites adjacent to the residential precinct).
- 3.33 It is also noted there are other residential sites closer to the Crawford St site (albeit to the west of the site) where compliance with the above noise standards would have to be met.
- 3.34 Therefore, Plan Change 13 would not introduce any additional burden of compliance on Fonterra in relation to noise that does not already exist.

Murray Vereker-Binden-

- 3.35 Mr Vereker-Binden raised a concern about entertainment areas within buildings in the residential precinct being used for noisy resident's gatherings, impacting residents in the Forest Lake Gardens Retirement Village.
- 3.36 Noise from short-term noisy gatherings, particularly where amplified music is involved, would be subject to noise control as in any other area within the city. Any continuing issues would be dealt with according to well established procedures, which would include the involvement of any body corporate or other property management agency.

Conclusion-

- 4.1 The additional measurements carried out by Marshall Day Acoustics confirm the current acoustic environment has not changed since the previous 2017 and 2018 measurements. The measurements serve to describe the current ambient acoustic environment to provide context. They confirm that noise from existing industrial activity would comply with the proposed 65dB LAeq(15-min) limit, noting that there is no existing limit on noise emission from the nearby industrial activities into the racecourse property being a major facilities zone.

- 4.2 However, there is the potential for impulsive noise and low frequency noise to cause sleep disruption within the proposed residential precinct at night-time at a higher level of industrial activity than is currently observed.
- 4.3 The LAeq noise descriptor used in the proposed rule 25.8.3.7(c) should include the 15-min reference time interval.
- 4.4 The wording of the proposed rule 25.8.3.7(a) should be amended to confirm that the industrial sites with a common boundary with the racecourse are subject to the current time-dependant noise levels in relation to all residential zones other than the proposed Te Rapa Racecourse Medium-Density Residential Precinct. I agree with the changes proposed by Mr Olliver in this respect.
- 4.5 The installation of a 4m high fence or bund on the industrial boundaries is the preferred option to a 60m setback and would be beneficial in relation to internal noise in habitable rooms in lower levels and would also serve to reduce the effects of impulsive noise and low-frequency noise on the residential buildings. It would also increase outdoor amenity within the residential precinct and the open spaces.
- 4.6 A no complaints covenant would have no value from an acoustics point of view. All industrial activities / sites would have to comply with the applicable noise limits, whether or not a covenant is in place.

4 Recommendations

- 5.1 Update the noise descriptor in the proposed rule 25.8.3.7(e) to read 'LAeq(15-mins)'.
- 5.2 Amend the proposed change to rule 25.8.3.7(a) to confirm that the industrial sites with a common boundary with the racecourse are subject to the current time-dependant noise levels in relation to all other residential zones other than the proposed Te Rapa Racecourse Medium-Density Residential Precinct.
- 5.3 Consider including protection from night-time low frequency and impulsive noise into the assessment criteria.
- 5.4 Introduce a rule that would require a 4m high acoustic fence along the industrial zone boundary or alternatively construct a bund in the open space and in either case to require its design and construction to be sufficient to reduce low-frequency noise from the industrial zone.



Peter McGregor
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25 August 2023

