

MalcolmHuntAssociates

noise and environmental consultants

Date of Issue:	17 January 2020
Client:	Waikato District Council Private Bag 544 Ngaruawahia Attention: Ms Jane.Macartney Jane.Macartney@waidc.govt.nz
Project Reference:	Noise Matters - Advice on specific issues - Proposed Waikato District Plan
Name of File:	\\192.168.1.75\Working Documents\A to E\COUNCILS\Waikato District Council\MHA Advice On PWDP Noise Matters.docx
Document version:	Rev 2
Document Status	FINAL
Document Prepared By:	Malcolm Hunt

RE: Expert Advice – Industrial Zone Noise Matters Proposed Waikato District Plan

Dear Jane,

Thank you for your instructions to provide expert advice to Waikato District Council on certain environmental noise matters that have arisen in response to submissions received following notification of the Industrial Zone provisions of the Proposed Waikato District Plan.

I confirm I am appropriately qualified and experienced to provide you with this advice, having over 30 years' experience as an environmental noise expert with the qualifications summarised below under my signature. In responding to these noise matters I have been guided by the relevant RMA considerations, National Planning Standards, relevant NZ Standards, experience elsewhere and perceived 'best practice', also taking into account the overall thrust of the plan signalled within the noise provisions of the notified proposed version, with some cognisance of the operative plan noise provisions they will replace.

I have read and am familiar with the Code of Conduct for Expert Witnesses in the Environment Court Practice Note. I have complied with that Code in the preparation of this review. Other than where I state that I am relying on the advice of another person, this evidence is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

I comment on the requested noise matters as follows;

Genesis Energy (Huntly Power Station)

1. Several issues I have been asked to comment on are included within the evidence in chief and rebuttal evidence of Mr Ellerton (on behalf of Genesis Energy) and relate to noise associated with the operation of the Huntly Power Station.
2. The first matter relates to confirming the appropriate noise compliance location(s) for the station. Mr Ellerton sets out why he considers it necessary to retain the 'date stamp' for notional boundaries/dwellings that existed as at 25 September 2004. this being referred to within the Environment Court's consent order issued on 15 June 2011.^[2] I agree with this recommendation, especially around providing certainty to the noisemaker regarding where noise limits apply. Supporting this, I note that the provisions of Appendix I provide adequate indoor protection via acoustic insulation of any new dwellings in the residential zone that are established more within 350 metres of the power station boundary.
3. It is noted the rebuttal evidence of noise expert Mr Styles (on behalf of Havelock Village Limited) stated the date stamp approach may be reasonable for specific sites and situations where the fixed location is acceptable (e.g. for the Huntly Power Station) but he does not support the date stamp approach as a district-wide control. I agree with that position.
4. On balance, as the rule is specific to the Huntly Power Station site, I recommend Council accept Mr Ellerton's suggested amendments to P2 of Rule 21.2.3.2 *Noise – Huntly Power Station* that have the net effect of applying the compliance location to notional boundaries to dwellings that existed as at 25 September 2004.

Genesis Energy - Acoustic Insulation

5. The rebuttal evidence of Mr Ellerton makes reference to APPENDIX I of the notified PWDP sets out the relevant insulation standards to be achieved as a 'permitted activity' design standard for new habitable rooms within the circumstances set out within the bullet-pointed categories set out in the left-hand column of Table 14 of Appendix I. This table is reproduced below as follows;

6.1 Conditions for Permitted Activities

- (1) Compliance with the internal design sound levels shall be demonstrated through the production of a design certificate from an appropriately-qualified and experienced acoustic specialist certifying that the internal sound level will not exceed the levels listed in Table 14.

Table 14: Internal sound level

Area	Internal design sound level
<ul style="list-style-type: none"> • Within 350m of the Huntly Power Station • Dwellings in the Business Zone • Dwellings in the Business Town Centre Zone • Within 100m of the Tamahere Commercial Areas A, B and C • Multi-Unit Development • Comprehensive Development – Rangitahi Peninsula 	40dB L _{Aeq}

6. The 40dB L_{Aeq} level is assessed INDOORS. This rule means qualifying rooms need to be designed so that sounds from the Huntly Power Station do not exceed this level indoors, within sensitive spaces constructed within 350 metres of the station boundary. Mr Ellerton contends the **40dB** L_{Aeq} internal design sound level should be reduced to **35dB** L_{Aeq} as he considers this more appropriate for the protection of bedrooms. As below, he also

requests that this LAeq be determined as a ‘whole day’ average sound level measured indoors.

7. Conceptually the approach of Table 14 is considered adequate as it is consistent with insulation standards implemented in some other district plans and consent orders based around designing buildings so that the level of outdoor noise (of the type concerned) is reduced by building methods and materials so that the stated indoor limit is not exceeded, when measured indoors.
8. I have long held reservations regarding the efficacy of indoor noise level rules based LAeq received indoors, specifically the ability for Council’s to lawfully enforce insulation standards where indoor sound level limits are used in district plans in an attempt to protect sensitive indoor spaces against elevated levels of outdoor sound .
9. The amendments I recommend below continues the current approach, however by including additional measures to address low frequency sound and by referring to an appropriate NZ Standard, many of the pitfalls usually associated with rules based on a simple indoor LAeq noise limit are avoided.
10. I agree minimum acoustic standards of some sort are necessary in new dwellings and sensitive buildings to implement Proposed Plan Policy 4.7.11. This is so that subdivision, building and development can be designed to minimise reverse sensitivity effects on adjacent sensitive sites and activities.
11. To address this concern I recommend enhancing and augmenting the insulation requirements by retaining the notified indoor LAeq 40 dB requirement and adding two low frequency band additional design requirements . The recommended wording change is set out as follows (proposed indoor acoustic standards are shown underlined);

Table 14: Internal sound level

Area	Internal design sound level
<ul style="list-style-type: none"> • Within 350m of the Huntly Power Station • Dwellings in the Business Zone • Dwellings in the Business Town Centre Zone • Within 100m of the Tamahere Commercial Areas A, B and C • Multi-Unit Development • Comprehensive Development – Rangitahi Peninsula 	<p style="text-align: center;"> <u>40 dB L_{Aeq(1h)}</u> <u>50 dB L_{Zeq} at 63 Hz</u> <u>45 dB L_{Zeq} at 125 Hz</u> </p>

All measurements shall be undertaken in accordance with AS/NZS2107:2016 Acoustics – Recommended design sound levels and reverberation times for building interiors.

12. These recommended wording changes retain the basic approach of the existing rule but strengthen it by reducing uncertainty around how the problems of indoor low frequency sound can be avoided and a more successful outcome achieved. By reference to an appropriate NZ Standard, the implementation of this rule will be enhanced in a technical sense.
13. The minor technical improvements I recommend give reasonable effect to Mr Ellerton’s request to improve the standard of acoustic insulation required by Table 14. This is achieved by making the rule more effective in protecting sensitive indoor spaces such as bedrooms. The recommended 63 Hz and 125 Hz limits are not unusually restrictive, rather they are aimed at ensuring low frequency sound is adequately taken into account when designing the room. Issues around indoor noise annoyance to outdoor sound largely revolve around the amount of low frequency sound received indoors. The changes outlined above will address this and also enhance Council’s ability to check the appropriate standard is achieved in practice (if required).

14. AS mentioned above, Mr Ellerton is also concerned the indoor LAeq should be determined over a 24 hour period. I do not agree LAeq levels averaged over 24 hours will achieve the policies of the PWDP and recommend the use of a 60 minute (1 hour) indoor LAeq limit. This will allow application of the rule for the 'worst hour' rather than designing against a 24 hour average sound level.
15. I would appreciate (if the opportunity arose) to discuss these recommendations with Mr Ellerton prior to the hearing should the Council consider this worthwhile.

Ports of Auckland/Northgate

16. POAL have submitted on noise limits for activities within the Horotiu Industrial Park and have requested wording of a noise emission limit as follows:
 - (a) 75 dBA (LAeq) within any other industrially-zoned site in the Industrial Park; and
 - (b) 55 dBA (LAeq) (7am to 10pm) and 45 dBA (LAeq) (10pm to 7am the following day) measured within the notional boundary of any site zoned Residential or Rural
17. The concern raised by the submitter is that the night time noise emission limit is 5 dB too low for activities taking place within the Horotiu Industrial Park¹, Mr Chris Day engaged by POAL provides reasonably compelling acoustic evidence to support changing the LAeq 40 dB night time of the industrial park owing to the presence of significant night time noise (mainly from rail and highway sources). Mr Day contents it would be overly onerous to comply with a 40 dB limit when the ambient sound levels are mostly found to be in the region of 41 to 47 dB at night time.
18. Have reviewed the summary information on measurements of ambient night time sound levels provided collected at two representative receiver sites in the area. I agree the ambient night time sound levels are such that a 40 dB night time district plan noise limit may not be warranted, and may not be able to be measured at receiver sites due to the presence of elevated ambient sound in the environment (should compliance testing be required).
19. Although some submissions received by Council on the Industrial Zone provisions are concerned not to allow noise limits in industrial zones in the district be increased, in this case I consider there are practical issues with enforcing a 40 dB noise limit at night time in areas where this sound level is already exceeded by ambient sound sources.
20. Regarding the request to amend where noise is assessed, I agree with Mr Day's contention that the imposition of a site boundary noise limit is unnecessarily restrictive for the industrial users and is contrary to the widely accepted 'notional boundary' concept referred to within NZS6802:2008.
21. In recommending this approach I do not recommend including a 'date stamp' for this rule. I recommend Rule 20.6.3.I should be worded as follows (amended wording is underlined);

¹ The author is familiar with the issue of night time noise in the area having recently completed an investigation and prepared expert advice to Hamilton City Council on the re-zoning of the adjacent Te Awa Lakes zone in the Hamilton district.

Rule 20.6.3.1 P2

- (a) Noise from an activity in the Horotiu Industrial Park must not exceed:
 - (i) 75dBA (LAeq) at any time measured within any other site at any time

- (b) Noise from an activity in the Horotiu Industrial Park must not exceed the following limits when measured within a Residential Zone:
 - (i) 55dBA (LAeq) 7am to 10pm
 - (ii) ~~40~~ 45 dBA (LAeq) and 70dBA (LAmax)10pm to 7am the following day

- (c) Noise from an activity in the Horotiu Industrial Park must not exceed the following limits when measured with the notional boundary of any building containing a noise sensitive activity within any zone outside of the Horotiu Industrial Park and Heavy Industrial Zone (except the Residential Zone):
 - (i) 55dBA (LAeq) 7am to 10pm
 - (ii) 45dBA (LAeq) and 70dBA (LAmax)10pm to 7am the following day

- (d) Noise levels must be measured in accordance with the requirements of New Zealand Standard NZS 6801:2008 “Acoustics - Measurement of Environmental Sound”

- (e) Noise levels must be assessed in accordance with the requirements of New Zealand Standard NZS 6802:2008 “Acoustics- Environmental noise”.

Havelock Village Ltd

22. Mr Jon Styles (Styles Group Acoustics and Vibration Consultants) on behalf of Havelock Village Limited raises a number of noise concerns which are commented on page 48 of the s.42A planners report. Issues raised regarding Rule 21.2.3.1 and other matters are summarised (together with our considered comments) in the following table;

Issue – as identified on page 47 of the s.42A report	Comment
a) The PWDP sets noise limits for the Heavy Industrial Zone that are 5 dB higher than the operative Industrial 2 Zone	
b) The PWDP daytime noise limits for the Industrial Zone are 10 dB higher than the operative Light Industrial Zone	
c) There are inherent difficulties in prescribing a high enabling noise limit of 75 db LAeq (at all times) where the noise-generating potential of industrial activities is constrained by the noise limits applying at other proximate and more sensitive zones	The now-recommended wording of Rule 21.2.3.1 allows elevated noise (at any time) but only so long as the accompanying P2(b) rule is also complied with which restricts noise received within residentially zoned sites, and within the notional boundary to rural dwellings. On this basis, I consider noise within adjacent zones to be adequately controlled and managed.
d) The operative provisions prescribe a noise limit of 70 dB LAeq (at all times) for noise generated and received at sites in the Industrial 2 Zone, and a noise limit of 65 dB LAeq (at all times) for noise generated and received in the Light Industrial Zone. The operative provisions also include noise limits to control industrial noise received in zones containing noise-sensitive activities	The proposed industrial noise limits are not unreasonable and take a more integrated approach. They are considered to adequately control noise effects both within the zone and within adjacent zones.
e) The PWDP's lower night-time noise controls for the Industrial Zone should be removed. These are redundant, because this zone does not anticipate or provide for noise-sensitive activities that require night-time protection from sleep disturbance. Instead, the day-time noise limit should apply at all times.	I do not agree that the night time limit should be removed. This is a practical means of reducing low-level 'amenity' noise at distant sensitive receiver sites in other zones. The zones are not considered to be of sufficient land area to enable LAeq 70 dB at night without creating low-level ambient night time noise effects within adjacent zones so the Plan is correctly applying a 55 dB night time limit (which provides for within-zone noise conditions that are not suitable for uses within the zone in itself that are sensitive to night time noise)
f) To maintain the amenity and viability of noise-sensitive zones adjacent to industrial zones, it is essential that the PWDP maintains the interface noise limits an amended was recommended, it being suggested this approach was easier to apply and understand	I do not share the concerns raised as the now-recommended amended wording for P2 adequately specifies <u>where</u> noise limits are to be achieved.

23. There are no recommendations for noise rule changes as a result of the above matters raised by Mr Styles.

Tuakau Proteins Limited

24. This submitter is concerned should noise effects generated by activities on industrially zoned sites not be wholly contained within the industrial site. Nicola Williams (Planning expert) discusses noise interface rules in her evidence, but does not offer any suggested amendments that would, in our opinion, improve the relevant noise controls where noise from the industrial zone affects sensitive sites in the rural zone.
25. TPL's evidence recommends the industrial zone noise rules include an *Interface noise standard* which would provide a relaxation of 5dB for noise received at sensitive sites in the Rural Zone during the night time period (10pm to 7am). TPL considers this consistent with the approach taken in the Invercargill District Plan and Hastings District Plan however potential adverse effects are not discussed.
26. Further information from a noise expert referred to is, I understand, not available. I remain concerned that the interface approach advocated would result in an unnecessary increase in night time noise from activities on industrial sites and received within rural areas. Appropriate guidance for setting district plan noise rules is found within the following extract from NZS6802:2008 which states;

8.1.2 *Limits are normally set on the basis of compatibility with human activities and land use and the protection of community health and/or amenity. Noise limits may depend on many factors such as the time of day, the activities to be protected, the type of noise source, and other factors. The results of sound level surveys, planning expectations, or the need for protection of a particular type of amenity, can guide the setting of noise limits.*

[underlining added]

Commentary in this section of the Standard at C8.6.3 also provides guidance where it states:

The setting of noise performance standards should involve all stakeholders and provide sufficient information to explain the acoustical implications and consequences of the proposed performance standards. Transparency in utilising noise guidelines and local noise data to develop noise performance standards helps to increase public acceptance of measures that may be necessary for sustainable development reasons.

27. Thus, information is required (the least of which would be results from an up to date survey of ambient sound levels within the area) before I could support the case for increasing the night noise limit by a 5 dB. Ideally the information should indicate in map form the location of sensitive receivers who may experience the effects of the increase sought, and any consultation undertaken with these parties. To be of use to Council as a whole the information should quantify the nature and scale of actual and potential effects on the people and communities of any expected increase in allowable night time and daytime noise.

Construction Noise

28. The s.42A report refers to the use of NZ Standard NZS6803:1999 *Acoustics – Construction Noise* within Rule 21.2.3.1 to address the effects of this type of noise.

29. I confirm this is the relevant standard to apply, as confirmed by the National Planning Standard. I recommend a flexible approach which means the Standard is applied to manage and assess noise from construction activities affecting noise sensitive sites, rather than be applied as a limit that cannot be exceeded.

30. I recommend this Standard be applied using the following wording;

Noise from any construction, maintenance, or demolition activity must be measured, assessed, managed, and controlled in accordance with the requirements of NZS 6803:1999 Acoustics - Construction Noise.

31. The focus should be on managing noise emissions from construction activities, in accordance with the Best Practicable Option (RMA s.16) which can include elevated noise for some time periods as long as these temporary periods are no longer than necessary. Regular or frequent breaches of the recommended construction noise limits would not result in an acceptable level of noise effects for sensitive receiver sites. It is noted clause 7.4 NZS6803:1999 states;

Where the best practicable options for noise avoidance or mitigation have been applied to construction activities and the activity does not comply with the relevant noise limits, the contractor may need to apply to the local authority for a resource consent, or variation of resource consent. Resource consent may also be required if it is predicted that noise from a proposed construction activity will not comply with the relevant noise limits.

[underlining added]

32. Thus, the recommended rule wording does not imply 'no limits' apply as a resource consent is considered necessary where construction activities regularly exceed the recommended standards.

Yours sincerely,



Malcolm Hunt MASNZ. MNZEIH
Acoustic Consultant.

Bachelor of Science [B.Sc.]
Master of Engineering[mech]
Diploma in Public Health
RSH Diploma Noise Control Engineering.

[1] Paragraph 213 s42A report for Hearing 3 (Strategic Objectives)

[2] Environment Court consent order 15 June 2011 – Appendix A to Mr Ellerton's evidence

[\[3\]](#) S42A report – Part C Heavy Industrial Zone, paragraph 769

[\[4\]](#) Paragraph 8.1 Evidence of Nicola Williams on behalf of TPL