

Appendix D

Acoustic Report

13 July 2017

Beca
PO Box 448,
Waikato Mail Centre
Hamilton 3240

Attention: Richard Douch

Dear Richard

CONCEPT NECB AND ACOUSTIC PERFORMANCE STANDARDS

Tatua proposes to lodge a Plan Change with the Matamata-Piako District Council for the purpose of amalgamating a number of existing resource consents and their existing Development Control Plan (DCP) for the site. The proposed revision to the DCP would also give consideration to future growth and expansion.

This letter provides a discussion on appropriate acoustic performance standards for the revised DCP, and the potential environmental acoustic impact of the proposed revision. This letter is to inform a discussion between Tatua, its neighbours, Matamata-Piako District Council (MPDC) and Beca.

Current DCP Noise limits

The current DCP refers to Section 5.2.5 of the MPDC District Plan (reproduced below).

'5.2.5 Scheduled Sites (See Schedule 5)

- i. Unless otherwise specified for a scheduled site and shown on the Development Concept Plan, the noise levels and noise control periods relating to scheduled sites shall be as follows:*
 - a) The noise level (L10) as measured within the boundary of any land zoned residential, the notional boundary of the rural dwelling, where shown on the DCP, or the noise emission control boundary shall not exceed the following :*

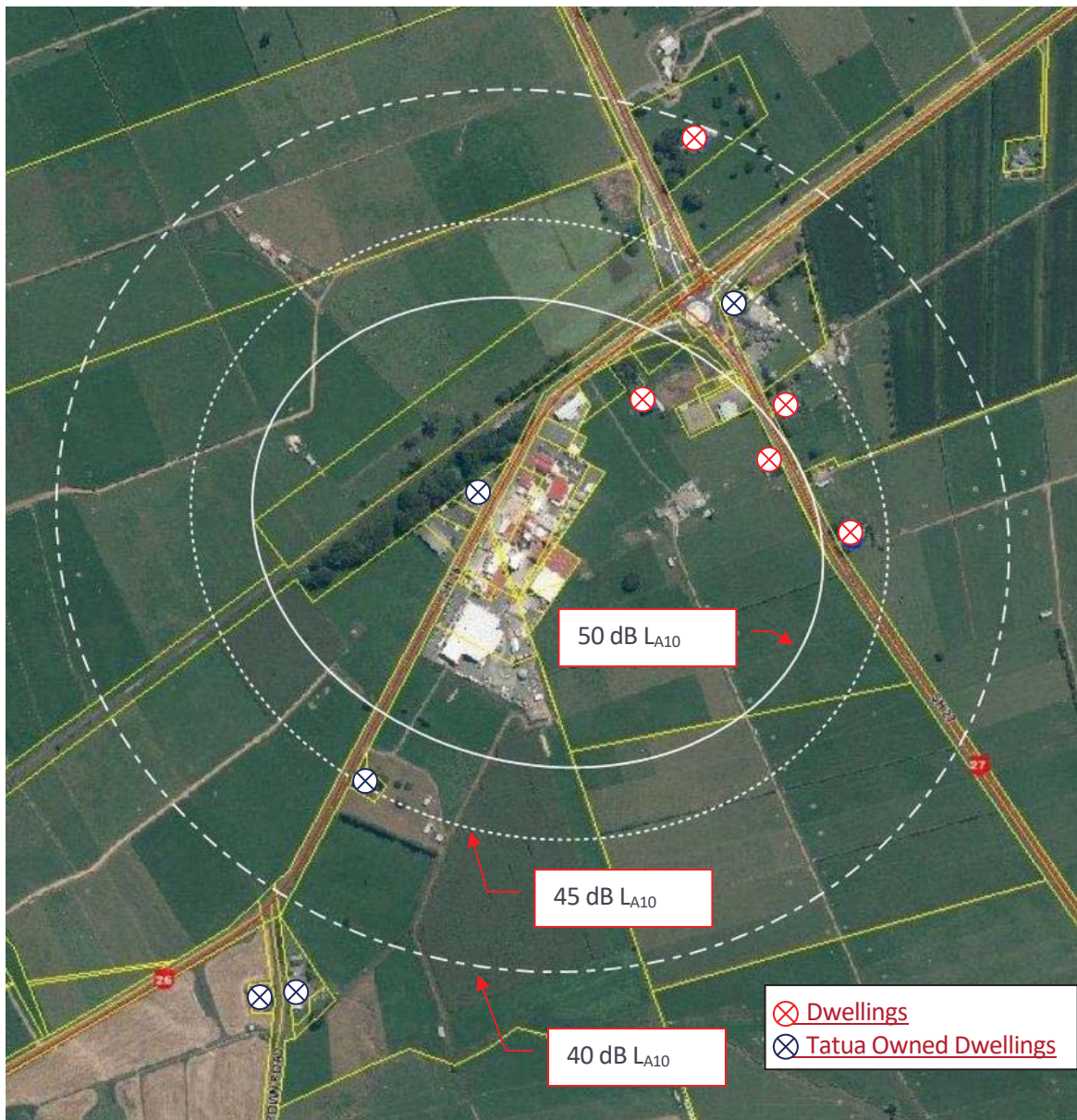
<i>Monday to Saturday</i>	<i>7.00am to 10.00pm</i>	<i>50dBA</i>
<i>At all other times including Sundays and Public Holidays</i>		<i>40dBA</i>
<i>10.00pm to 7.00am. The Lmax shall not exceed 65dBA</i>		
 - b) 10.00pm to 7.00am. The Lmax shall not exceed 65dBA.*
 - c) The noise level (L10) as measured within the boundary of any adjacent industrial zone shall not exceed 65dBA.'*

Existing Sound Emission Envelope

Marshall Day Acoustics (MDA) has previously surveyed and established site sound emissions from the factory (refer to our report *Rp001 2014453H* dated 6 October 2014).

The following figure illustrates the typical night-time sound emissions from the facility based upon historical environmental sound surveys. It is noted that given the 24 hour nature of the facility, the daytime sound emissions are unlikely to vary significantly from night time emissions.

Figure 1: Sound Emission Envelopes



Note: The areas inside the envelopes represent the places at which the sound levels from the Tatua dairy factory are likely to be at or above the corresponding sound levels indicated in the figure. It is noted that the sound emission envelope described in the figure does not take into consideration terrain and its potential effect on sound levels. It should also be noted that the envelope does not define specific positions at which a certain sound level is predicted.

MDA has established that sound emissions exceeded the current DCP Limits at five dwellings (not owned by Tatua) during the night time period. Our report also noted that compliance with the current limit is likely to be practicably impossible.

Ambient noise levels

In the absence of sound emissions from the site, the ambient acoustic environment around the dwellings identified in Figure 1 is dominated by noise from traffic on the State Highways.

MDA have established that the traffic noise level is 6 to 14 decibels higher than the site sound emissions.

It is noted that the survey of ambient sound levels was conducted in the small hours of the morning, during a period when traffic flows are typically at their lowest, and hence the level of traffic noise is at its lowest.

Subjectively, the plant is only audible for short periods between regular bursts of traffic.

The level of the ambient environment, in the absence of noise from the Tatua site, calls the suitability of existing MPDC acoustic performance standard applicable to the Tatua site into question.

New Noise Limit

In the context of the ambient acoustic environment a 45 decibel noise limit may be considered appropriate. It is generally accepted that a noise limit of 45 decibels is the upper threshold of acceptability for night-time sound levels received at dwellings. The 45 dBA sound emission envelope illustrated in Figure 2 is considered representative of the existing sound emissions and could reasonably be adopted as the basis for a new 45 dBA night-time sound emission control boundary for the Tatua site.

Proposed NECB and Noise Limit

Figure 2 below outlines a proposal for a NECB for the revised DCP. At this stage the proposed NECB is to inform a discussion around the proposal.

Figure 2: Proposed NECB



The proposed NECB has been generated in part by:

- the existing site sound emissions at the north-eastern end of the site, and;
- a boundary allowing for expansion on the southern and south-western part of the site.

The proposed noise limit for Tatua site sound emissions at the proposed NECB in Figure 2 are:

- Monday to Sunday including Public Holidays, between 7 am and 10 pm, 50 dB L_{Aeq}
- All other times 45 dB L_{Aeq} and 75 dB L_{Amax}
- All noise levels shall be measured and assessed in accordance with the requirements of New Zealand Standard NZS 6801:2008 "Acoustics – Measurement of Environmental Sound" and New Zealand Standard NZS 6802:2008 "Acoustics - Environmental Noise".

It is noted that the proposed performance standard uses the most recent New Zealand Standards; New Zealand Standard NZS 6801:2008 "Acoustics – Measurement of environmental sound" and New Zealand Standard NZS 6802:2008 "Acoustics - Environmental Noise" be adopted for this project.

The current (2008) version of the standard now recognise that the A-weighted equivalent continuous sound level (L_{Aeq}) as the acoustic index that best represents the community response to noise as opposed to the L_{A10} acoustic index used in previous standards. The L_{Aeq} acoustic index is adopted in most International Standards.

It is considered that Councils throughout New Zealand are likely to adopt the L_{Aeq} acoustic index and the new Standards for setting of acoustic performance standards during the next review of their District Plans.

Comparison of L_{A10} and L_{Aeq}

An L_{A10} level is a level which is exceeded for 10% of the specified period and is commonly described as the 'average maximum level'. L_{Aeq} is the energy average of noise during a specified period and is commonly known as the average noise level.

The relationship between the L_{A10} index and the L_{Aeq} index is dependent upon the nature sound source under consideration. Typically for constant sound sources the difference between L_{Aeq} and L_{A10} is 2 to 3 decibels or less; as is the case for sound emissions from the Tatua site. The following table provides a typical indication of subjective response relative to change in noise level.

Table 1: Change in noise level

Change in Sound Level (dBA)	Subjective Reaction
1 - 2	Imperceptible change
3 - 4	Just perceptible change
5 - 7	Appreciable change
9 - 11	Doubling (or halving) of loudness
> 12	More than a doubling (or halving) of loudness

Subjectively, the change in sound level of 2 decibels is generally considered to be imperceptible. On this basis the effect of altering the index of a specified noise limit from L_{A10} to L_{Aeq} insignificant.

Since the publication of the standard MDA have been involved in numerous projects in which the L_{Aeq} index is applied to existing numerical limit indexed as L_{A10} without consequential effects.

Furthermore, international research has shown that the L_{eq} descriptor has a greater degree of correlation to noise annoyance than L_{10} , and is widely accepted as being the preferred noise descriptor for use in environmental noise standards and limits.

The L_{Aeq} descriptor is now progressively replacing L_{A10} for the assessment and measurement of environmental noise levels, and for the specification of noise limits in District Plans. It is considered that those Councils throughout New Zealand which have not already adopted L_{Aeq} are likely to adopt the L_{Aeq} acoustic index and

the new Standards for setting of acoustic performance standards during the next review of their District Plans.

A noise limit of 50 dBA L_{eq} (day) / 45 dBA L_{eq} (night) at the NECB, is in keeping with guidance contained in New Zealand Standards such as NZS6802:1991 (and the more recent NZS6802:2008) as well as international guidelines such as the World Health Guidelines for Community Noise.

Impact of proposed NECB and noise limit

To the north east of the site, where the proposed NECB is generated by the existing site emission, the impact of the proposed NECB is considered to be negligible. The dwellings which currently neighbour the site would not be subjected to any more noise from the site than present. Site sound emissions are typically only audible between bursts of traffic.

It is noted that four dwellings identified by red dots in Figure 2 fall inside the proposed NECB and would experience sound levels higher than the upper threshold of acceptability (45 decibels) for night-time sound levels received at dwellings.

One dwelling to the north, Lot 1 DPS 7021 (4479 SH27), will experience sound levels of 42 decibels. This level is higher than the District Plan limit, (40 decibels) but less than the upper threshold of acceptability (45 decibels).

Tatua may wish to consult with these neighbours and consider undertaking a memorandum of understanding (MoU).

Toward the south and south-west the NECB has been drawn in an effort to balance the need for site expansion whilst providing acoustic amenity. The closest dwellings to this section of the NECB are over 700m from the NECB. Activities which complied with the proposed noise limits at the NECB would generate levels lower than the MPDC District Plan noise limits, which are measured at the notional boundaries of a dwelling. The reason for having a NECB in this area, as opposed to applying the District Plan noise limits, is that it reduces Tatua's exposure to reverse sensitivity issue of new dwellings encroaching on the site. It is noted that the proposed NECB crosses numerous lots not owned by Tatua. In order to ameliorate the issue of dwellings encroaching/entering the NECB, MDA recommend that a MoU or DCP condition is formulated to restrict new dwellings near/ within the NECB.

Proposed wording of DCP noise performance criteria

To ensure that the intent of the above is captured within the proposed DCP we recommend that the Acoustic Performance Standards Section of the DCP text reads:

- (i) *That the corrected noise level measured at the Noise Emission Control Boundary shall not exceed:*
 - *Monday to Sunday including Public Holidays (7 am to 10 pm) 50 dB LAeq,*
 - *All other times 45 dB LAeq and 75 dB LMax.*

- (ii) *The performance standard in (i) does not apply within the notional boundary of any rural dwellings within the following Lots*
 - *Section 15 SO 468539 (3458 SH26 and 4528 SH27)*
 - *Section 18 SO 468539 (4521 SH27)*
 - *Lot 2 DP 25518 (4543 SH27)*
 - *Lot 1 DPS 7021 (4479 SH27)*
 - *Lot 1 DPS 19332 (16 Brown Road)*
 - *Lot 2 DPS 57607(11 Brown Road)*
 - *Lot 1 DPS 35994 (3386 SH26)*
 - *Part Lot 3 DP 12471 (34335 SH26)*
 - *Lot 1 DPS 38971 (4507 SH27)*
 - *Or within the notional boundary of any rural dwelling established post 1 December 2017 within the Noise Emission Control Boundary*

- (iii) *That, all noise levels shall be measured and assessed in accordance with the requirements of New Zealand Standard NZS 6801:2008 "Acoustics – Measurement of Environmental Sound" and New Zealand Standard NZS 6802:2008 "Acoustics - Environmental Noise".*

- (iv) *All construction noise shall comply with the relevant noise levels stated in NZS 6803: 1999, section 7.2 'Recommended numerical Limits for construction noise' and shall be measured and assessed in accordance with NZS 6803: 1999 'Acoustics – Construction Noise'.*

We trust this information is satisfactory. If you have any further questions please do not hesitate to contact us.

Yours faithfully

MARSHALL DAY ACOUSTICS LTD



James Bell-Booth

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15 January 2018

Marius Rademeyer
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Dear Marius

TATUA DEVELOPMENT CONTROL PLAN

As requested I have reviewed the proposal by the Tatua Co-operative Dairy Company Ltd at 3434 SH26 Tatuanui, Morrinsville (as shown in Figure 1) to rationalize the different existing resource consent conditions with a new Development Control Plan (DCP), which will also provide for future growth of the existing activity. The information assessed includes a letter prepared by Marshall Day Acoustics (MDA) entitled Concept NECB and Acoustic Performance Standards dated 13 July 2017 and the proposed Performance Standards prepared by Beca dated August 2017.



Figure 1. Location of the Site

Existing Noise Controls

Rule 5.2.5 Scheduled Sites, of the Matamata Piako District Plan sets the current noise requirements for the Tatua Milk Processing Factory located on SH 26 at Tatuanui at:

- (i) *Unless otherwise specified for a scheduled site and shown on the Development Concept Plan, the noise levels and noise control periods relating to scheduled sites shall be as follows:*

- (a) *The noise level (L_{10}) as measured within the boundary of any land zoned residential, the notional boundary of the rural dwelling, where shown on the DCP, or the noise emission control boundary shall not exceed the following:*

<i>Monday to Saturday</i>	<i>7.00am to 10.00pm</i>	<i>50dBA</i>
<i>At all other times including Sundays and Public Holidays</i>		<i>40dBA</i>
<i>10.00pm to 7.00am. The L_{max} shall not exceed 65dBA.</i>		

- (b) *The noise level (L_{10}) as measured within the boundary of any adjacent Industrial zone shall not exceed 65dBA.*

The Proposal

As set out in the MDA report the existing noise environment is exceeding the current District Plan requirements by approximately 15dBA L_{10} at the most exposed dwelling. This does not include dwellings owned by the company or any future dwellings that may be developed in the area. MDA have stated that with the current District Plan requirement it is practically impossible to reduce the noise to satisfy the District Plan limits.

MDA have stated in their report that they “have established that the traffic noise level is 6 to 14 decibels higher than the site sound emissions” and “subjectively, the plant is only audible for short periods between regular bursts of traffic”. The traffic flow on SH27 to the south of the roundabout and to the east of the site is 5,900vpd with 18% heavy commercial vehicles with a grade 5 chip seal. On SH26 past the site the road surface is a Grade 2/4 chip seal with 6,010vpd and 9% heavy commercial vehicles. The report does not give the location of the noise assessment points or what level was recorded. However, with the existing traffic conditions it appears the level being referred to is the $L_{Aeq(24hr)}$ level, as that is the assessment normally adopted for traffic noise. It is also assumed the level given is for the closer dwellings to the road. Regardless, to assess the effects of the plant the noise should be compared with the existing background level (L_{A90}) and it is predicted the L_{A90} would be below 27dB during the night time period.

Based on their assessment of the existing noise environment MDA have recommended a control for the site of 50dB L_{Aeq} during the daytime and 45dB L_{Aeq} at night time at a noise control boundary. As set out above, the daytime District Plan limit is 50dBA L_{10} and the night time limit is 40dBA L_{10} . The change from L_{10} to L_{Aeq} is based on updating the assessment from the current District Plan requirement of NZS6802:1991 - *Assessment of Environmental Sound* to the more recent Standard of NZS6802:2008 *Acoustics – Environmental Noise*. This change is agreed with. A level of 40dBA L_{Aeq} equates to a level of approximately L_{10} 43dB. It is generally acknowledged that this change is acceptable but to recommend a level that is 5dB above this is an effective 8dB increase to the level anticipated in the District Plan.

The proposal by MDA is to set a Noise Effects Control Boundary (NECB) that the plant operates to rather than the notional boundary of the dwellings as required in the Operative District Plan. As set out in the MDA report there are a number of dwellings within the proposed NECB and the approach to overcome this problem has been to recommend “Tatua may wish to consult with these neighbours and consider undertaking a memorandum of understanding (MoU)” and “In order to ameliorate the issue of dwellings encroaching/entering the NECB, MDA recommend that a MoU or DCP condition be formulated to restrict new dwellings near/ within the NECB”.

Recommendations

There is no design criterion for the five existing dwellings within the 40dBA L_{10} noise contour in the recommended conditions. It is considered important that the expectations of these residents, as set in the District Plan, are acknowledged and addressed. This leaves two options: either the factory complies with the Operative District Plan requirements, which according to the MDA report is impractical, or the residents who are being asked to experience noise levels of up to 18dB¹ L_{Aeq} above the level set out in the District Plan are given the option to have their dwellings treated to control the noise to within their expectations.

It is recommended that in the event the development of the DCP is adopted a condition should be included that enables the residents to have their dwellings upgraded to ensure the internal environment is within a reasonable level. The WHO guidelines² recommend that for a good night's sleep, sound levels should not exceed 30dB L_{Aeq} for continuous background noise. In addition, it is generally accepted there will be a 15dB reduction through a dwelling façade with windows open for ventilation so a level of 40dBA outside at night time (the level permitted in terms of the District Plan) equates to a level of 25dB inside. In this case it is considered to be reasonable to adopt an internal design level of 30dB L_{Aeq} for any bedroom. For all other habitable rooms (including the school) the indoor design level should be set 10dB higher at 40dB L_{Aeq} . For the highest noise exposure at the existing dwellings this would only require a façade reduction of 28dB, which is practical to achieve with the minimum façade treatment.

With the introduction of the proposed NECB there are a number of properties that will be affected in the event a new dwelling is located on their property. The MDA report recommends these properties should be excluded from any noise protection. This does not appear to be a reasonable approach and does not satisfy the requirements of the Resource Management Act which states that the best practicable option must be adopted to ensure that the emission of noise does not exceed a reasonable level. It is therefore recommended that if the proposed NECB approach should be adopted then the noise maker should be liable for providing any acoustic treatment to a new dwelling in order to achieve an indoor level of 30dB L_{Aeq} in bedrooms and 40dB L_{Aeq} in all other habitable rooms. This requirement should only apply to properties where there is no reasonable building site that is outside of the NECB. Figure 2 shows the location of the predicted existing noise levels as set out in the MDA report.

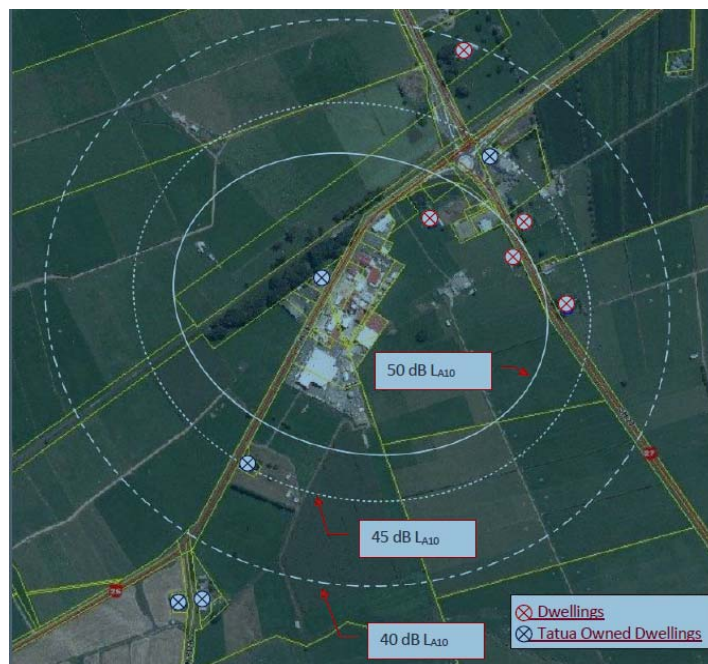


Figure 2.MDA Predicted Existing Noise Level

¹ 15dB from the L_{10} predictions plus 3dB for the conversion from L_{10} to L_{Aeq}

² World Health Organization Guidelines for Community Noise, edited by Birgitta Berglund, Thomas Lindvall and Dietrich H Schwela

It appears that based on Figure 2 MDA have developed Figure 3, which shows their predicted future NECB. The report does not say, but it is assumed that this figure is based on the 45dB L_{Aeq} noise level, not the L_{10} level.

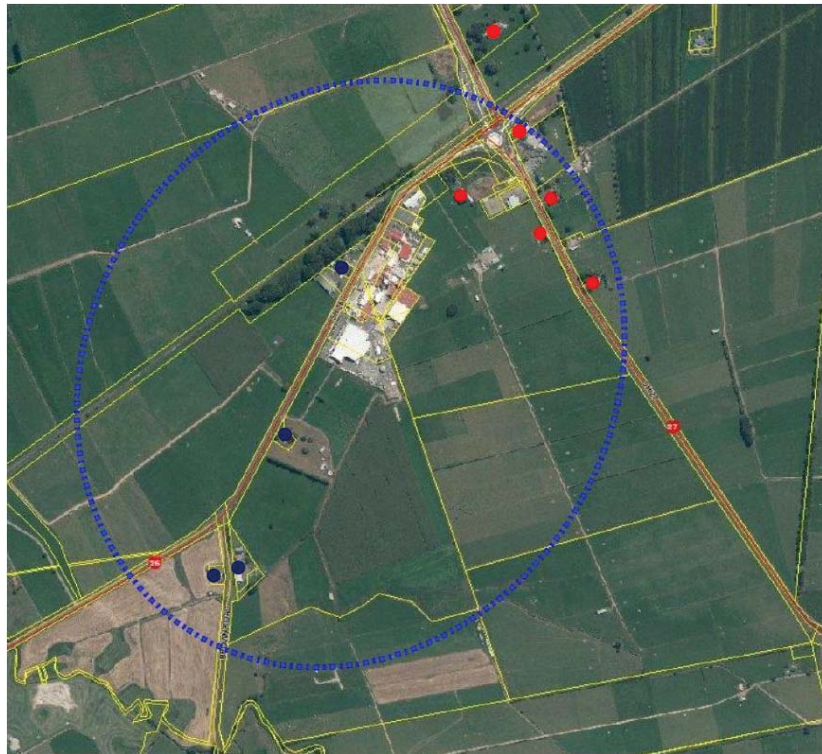


Figure 3. MDA proposed NECB

As Figure 3 is understood to represent the future 45dB L_{Aeq} noise contour it will be necessary to have this figure updated to reflect the 40dB L_{Aeq} noise contour to take into account the above recommendations. In addition, the properties currently without a dwelling and not having a reasonable building site outside of the NECB should be identified and included in the recommended noise controls.

Recommendations

The MDA report says the impact of the proposed NECB is considered to be negligible and this is understood to be based on the existing noise levels. The levels are well above the set noise limits for the site and not considered to be within a reasonable limit for any residential activity. Thus, while the increase in level may be negligible the effects of the noise compared to what the factory is permitted in terms of the District Plan and generally accepted in terms of the requirements of NZS6802 (any version) are significant.

When considering the above the recommended noise control for the proposed Development Control Plan should be:

- i) *The noise level measured at the Noise Emission Control Noise Boundary as shown on Figure xx shall not exceed:*

Monday to Saturday	7.00am to 10.00pm	50dB L_{Aeq}
At all other times including Sundays and Public Holidays		40dB L_{Aeq}
10.00pm to 7.00am.		65dB L_{Amax}

- ii) *For any existing dwelling³ that is within the NECB, as identified in Figure xx,⁴ the Tatua Co-operative Dairy Company Ltd shall, where necessary, offer the owner to upgrade their dwelling to achieve a level of 30dB L_{Aeq} in any bedroom and 40dB L_{Aeq} in any other habitable room. Where ventilating windows and/or doors need to be closed to achieve the internal noise level, air conditioning shall be provided to satisfy the minimum requirements of Section G4 of the Building Code.*
- iii) *If there is any new dwelling constructed on any of the Lots shown in Figure yy⁵ then the cost of upgrading the design to achieve a level of 30dB L_{Aeq} in any bedroom and 40dB L_{Aeq} in any other habitable room plus the cost to provide air conditioning as set out in (ii) above shall be reimbursed to the dwelling owner by the Tatua Co-operative Dairy Company Ltd.*
- iv) *The noise level of any air conditioning units installed to satisfy condition (ii) and (iii) above shall not exceed 30dB L_{Aeq} when operating at the design speed as measured within 2m of the unit.*
- v) *The noise shall be measured in accordance with the requirements of NZS6801:2008 Acoustics - Measurement of Environmental Sound and assessed in accordance with the requirements of NZS6802:2008 Acoustics – Environmental Noise.*
- vi) *Construction noise shall comply with the requirements of NZS 6803:1999 Acoustics – Construction Noise*

With the above controls in place the Tatua Co-operative Dairy Company Ltd will not be required to implement any excessive noise control treatment to the plant and the residential neighbours (existing and future) will be provided with a reasonable internal noise environment. Some neighbours will experience noise that is above the level considered to be reasonable by the District Plan.

Should you have any questions regarding the above please do not hesitate to contact me.

Yours faithfully
Hegley Acoustic Consultants



Nevil Hegley

³ It is noted that as the school, which is only in use during the daytime, will experience an external level of approximately 45dB L_{Aeq} there will not be any specific noise control treatment necessary to achieve a reasonable level within the classrooms.

⁴ This figure needs to be prepared by MDA and based on the 40dB L_{Aeq} NECB

⁵ To be developed once the 40dB L_{Aeq} NECB is provided

30 January 2018

Beca
PO Box 448,
Waikato Mail Centre
Hamilton 3240

Attention: Corinne Frischknett

Dear Corinne

TATUA DAIRY – PROPOSED CONDITION AMENDMENTS

Introduction

Tatua Dairy has lodged a Plan Change with the Matamata-Piako District Council for the purpose of amalgamating a number of existing resource consents and their existing Development Control Plan (DCP) for the site. Since the submission, further noise conditions have considered to control the internal acoustic amenity of existing dwellings located within the proposed Noise Emission Control Boundary (NECB). These amendments are considered in the sections below.

Control of Internal Acoustic Amenity for Dwellings within the NECB

Proposed Condition

l ii For any existing dwelling not currently owned by Tatua, that is within the NECB, as identified in Figure xx,4, where requested by the dwelling owner, the Tatua Co-operative Dairy Company Ltd ("Tatua") shall, undertake an assessment of whether noise generated by Tatua would result in levels exceeding 30dB LAeq within any bedroom or 40dB LAeq within any other habitable room. In the event that this assessment indicates that these noise levels are exceeded as a result of noise generated by Tatua then Tatua shall, within 12 months of the date of approval of the DCP, offer the owner to upgrade their dwelling to achieve a level of 30dB LAeq in any bedroom and 40dB LAeq in any other habitable room. Where ventilating windows and/or doors need to be closed to achieve the internal noise level, ventilation shall be provided to satisfy the minimum requirements of Section G4 of the Building Code.

Comment

The Australian, New Zealand Standard AS/NZS2107:2000 *Acoustics – Recommended design sound levels and reverberation times for building interiors* recommends design noise targets for bedrooms ranging from 25 to 40 dB LAeq and for living areas 30 to 45 dB LAeq depending on the existing ambient noise sources. For the dwellings near Tatua Dairy factory which are bounded by both State Highway 26 and 27, the recommended design targets are (for houses near major roads):

- Sleeping areas 30 to 40 dB LAeq
- Living areas 35 to 45 dB LAeq

Setting a noise target of 30 decibels in bedrooms and 40 decibels in living areas would provide a good acoustic amenity for the occupants.

It is generally agreed that a typical NZ dwelling provides an approximate 15 decibel reduction across the façade of the dwelling whilst still providing adequate natural ventilation within the rooms to satisfy Clause G4 of the Building Code.

Furthermore, if windows and doors are closed, the noise reduction can improve by a further 5 to 10 decibels. An alternative ventilation supply would be necessary, however, in this instance to meet the Clause G4 requirements.

It is noted, however, that Tatua can only be responsible for noise generated by the dairy factory and that any assessment would not consider the contribution from other noise sources such as the state highways. As part of an assessment, an acoustic consultant would consider the sound generated by the dairy factory at the façade of a dwelling within the NECB and make recommendations based on that sound level alone. It is possible, therefore, that the noise level inside the dwellings would still exceed the internal noise criteria.

Proposed Condition

iv) Any new dwelling or extension to any bedroom or other habitable room in an existing dwelling constructed within the NECB shall be designed to achieve a level of 30dB L_{Aeq} in any bedroom and 40dB L_{Aeq} in any other habitable room.

Comment

It is considered that Tatua can only be responsible for habitable spaces within dwellings currently constructed. Any further dwellings considered within the NECB or extensions to existing dwellings should be designed with the existing ambient acoustic environment in mind. As stated above, the two State Highways provide a more significant contribution to the environmental noise for the majority of land within the NECB and Tatua cannot be responsible for the construction of new habitable spaces within the contour.

Proposed Condition

v) The noise level of any ventilation system installed to provide for a residential dwelling shall not exceed 30dB L_{Aeq} when operating at the design speed as measured within 2m of the unit.

Comment

A mechanical ventilation system is likely to be required where windows shall be closed in order to meet the Clause G4 requirements of the Building Code. In this instance the mechanical ventilation system will become a noise source as well. The combined noise level from the ventilation system and external noise break-in shall be designed to comply with 30 decibels within bedrooms and 40 decibels with living areas.

Proposed Condition

(i) That the corrected noise level measured at the Noise Emission Control Boundary shall not exceed:

- Monday to Sunday including Public Holidays (7 am to 10 pm) 50 dB L_{Aeq} .*
- All other times 45 dB L_{Aeq} and 75 dB L_{Amax} .*

Comment

I note that there is a recommendation to extend the BECB out to 40 dB L_{Aeq} , however, I do not consider this to be appropriate for the following reasons:

- The principal noise source for areas at distance from the dairy factory are the two State Highways. It would be difficult to measure the 40 decibel contribution from the site from other ambient noise sources.
- As discussed above, no sound insulation measures would be likely for dwellings within the 40 to 45 decibel noise contour, so there would be no benefit for dwellings identified outside the 45 dBA contour. In addition, those properties would be designated as "Noise Sensitive" in the District Plan which is likely to have an adverse impact to the property with no benefit to the owner.

I, therefore, recommend that the NECB define the 45 dB L_{Aeq} noise contour from Tatua Dairy Factory.

We trust this information is satisfactory. If you have any further questions please do not hesitate to contact us.

Yours faithfully

MARSHALL DAY ACOUSTICS LTD

Curt Robinson

Consultant