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Acoustics 

WHANGAREI DISTRICT COUNCIL  
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Project: **WHANGAREI DISTRICT COUNCIL**

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## 1.0 INTRODUCTION

This report summarises our response to the submissions received on Whangarei District Council Plan Change PC85.

Each detailed submission is addressed individually and in turn with the exception of the pro forma submissions that have been submitted by many landholders.

The following summarises our position on each. The first person singular has been used to represent the opinion of the Author (Peter Ibbotson) and to avoid confusion on advice that may have been given by Marshall Day Acoustics to other parties.

## 2.0 STATEMENT OF EXPERIENCE

My name is Peter Ibbotson. I am an acoustic consultant at Marshall Day Acoustics with responsibility for our Northland operations. I hold a Bachelor of Mechanical Engineering with Honours from the University of Auckland. I am a member of the Acoustical Society of New Zealand (MASNZ).

I have been engaged in the field of acoustics for over fourteen years. I have previously held positions as an acoustic engineer with Ron Rumble Pty Ltd (Australia) and Powell Fenwick Ltd (New Zealand). I have been employed with Marshall Day Acoustics for the past ten years. Marshall Day Acoustics is a well-respected international acoustical consultancy with offices in New Zealand, Australia, China, Hong Kong and France.

I have been involved with a broad range of environmental sound assessment projects in New Zealand, Australia and the South Pacific. I have presented expert evidence at many hearings, including resource consent hearings, Environment Court hearings and mediation, and in the Supreme Court of Samoa. I have been involved with many projects involving the emission of noise within rural zones and from mineral extraction activities. I authored the Whangarei District Plan noise and vibration rule (Plan Change 110 "PC110" – Noise and Vibration "NAV").

## 3.0 PRO FORMA SUMISSIONS

A proforma submission has been included by several landholders. These appear to be based around the Horticulture NZ submission points.

### 3.1 Rural Production vs. Rural Living Noise Limits

The proforma submission includes a request to amend the Noise and Vibration provisions of the District Plan to allow for the Rural Production noise rules to apply to the Rural Living Environment. The submission requests that the noise limits that are to be applied at the notional boundaries of the Rural Production Environment be applied at the notional boundary of Rural Living Environments.

The following summarises my current recommended noise limits for both Environments:

#### To Rural Living (Environments other than Business 2/4, Marsden Port Port, Rural Village Industrial and SRIE)

Daytime:	50 dB $L_{Aeq}$
Night-time:	40 dB $L_{Aeq}$ , 70 dB $L_{AFmax}$

#### To Rural Production (Environments other than Business 2/4, Marsden Port Port, Rural Village Industrial and SRIE)

Daytime:	55 dB $L_{Aeq}$
Night-time:	40 dB $L_{Aeq}$ , 70 dB $L_{AFmax}$

The following note also is included in NAV6.1

NAV. 6.1 shall not apply to mobile machinery used for a limited duration as part of agricultural or horticultural activities occurring in the Rural Production, Rural Living, Rural (Urban Expansion), ~~Countryside, Coastal Countryside~~ or Urban Transition Environments. Limited duration events are those activities normally associated with industry practice, of relatively short duration, and where no reasonable alternative is available. Any such activity shall be subject to Section 16 of the Resource Management Act.

“Limited duration activities” in this context include, but are not limited to:

- *Spraying and harvesting of crops and/or weeds for horticultural or agricultural purposes e.g. topdressing or aerial spraying*
- *Primary forestry activities (not including milling or processing)*

This exclusion does not apply to:

- *static irrigation pumps;*
- *motorbikes that are being used for recreational purposes;*

While the submission relates to the relevant noise rule, this is not an argument that specifically relates to noise but rather what the primary nature of the Rural Living Environment is intended to be.

The noise limits I recommended for the Rural Living Environment have been set on the basis that people living in the Rural Living Environment often demand similar levels of amenity to those in residential environments. This assumes that the Rural Living Environment is intended to primarily provide for a “rural lifestyle”, rather than as land intended for primary production.

It is noted in the RLE.1 document that it is intended that the Rural Living Environment provides a “...continuation of some rural land uses albeit at a smaller scale than activities such as dairy farming and forestry...” The RLE.1 document also states: “The range of rural lifestyle activities occurring in the District can be categorised as bush living (bush blocks), hobby farming, ‘going green’ (off the grid, organic production, no spray areas etc), working from home, and commuters (people who want a rural lifestyle but are closely aligned with the urban environment for work, education and services)”. My PC85 report stated “It is expected that these allotments would be operated generally as lifestyle blocks with a small-to-negligible amount of primary production occurring on them”. It can be seen that the RLE.1 document does not fully support my statement and primary production may in fact occur on Rural Living land.

The recommended rules are intended to allow for primary production activities that may occur nearby on Rural Production land. Nonetheless, the rules I proposed for Rural Living Environments are somewhat more stringent than the limits that would apply in the Rural Production environment and do have the potential to constrain a small number of rural activities in both zones. However, as the exemption for mobile machinery would apply in **both** the Rural Living and Rural Production zone, any constraints are only likely to apply to static plant (e.g. pumps, cowsheds, irrigation, etc.) that operate during the daytime only<sup>1</sup>. This is unlikely to result in significant reverse sensitivity effects in general.

Whether the relief sought should be granted would depend on whether it is appropriate for the Rural Living environment to be truly subservient to Rural Production or whether it is appropriate to provide the higher level of amenity that many “rural living” residents may expect.

My report makes it clear that either option is available. If the Environment is to be subservient and be similar in nature to the Rural Production Environment (but on a smaller scale), then the rural production rules can be applied. These rules would provide for a generally acceptable standard of

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<sup>1</sup> Night-time operation would be subject to a lower noise limit.

amenity, albeit a potentially lower one than may be expected by some occupants of rural living zones.

In my view the decision should rest upon an evaluation of the objectives and policies for each Environment, the expected level of amenity required in the Rural Living Environment, and the risk of economic effects as a result of operational constraints within the Rural Production Environments adjacent to Rural Living Environments. However, either set of rules is expected to work acceptably within the Rural Living Environment given that there are clear provisions for mobile plant within the NAV noise rules. I do not consider this is an area of significant risk for the District.

### 3.2 Bird Scaring Devices and Frost Fans

The submissions seek the permitted standards for bird scaring devices and frost fans in the Rural Production Environment to be included in the Rural Living Environment.

I have recommended the following rules:

#### NAV.6.11 Bird Scaring Devices

*The use of bird scaring devices is a permitted activity in the ~~Countryside or Coastal Countryside~~ Rural Production Environments if:*

- a. *Bird scaring devices do not operate between half an hour after sunset and half an hour before sunrise.*
- b. *Each device operates at not more than 6 “events” per hour where an “event” includes clusters of up to three shots from gas operated devices or three individual shots from a firearm in quick succession. (This rule does not apply to bird scaring devices that generate a noise level of less than 55 dB LAE within the notional boundary of any noise sensitive activity not owned by the operator of the device).*
- c. *The sound level from any event does not exceed 65 dB LAE within the notional boundary of any noise sensitive activity not owned by the operator of the device.*

#### NAV.6.13 Frost Fans

*The use of frost fans is a permitted activity in the ~~Countryside or Coastal Countryside~~ Rural Production Environments if:*

- a. *Noise generated by single or multiple frost fans on a site does not exceed 55 dB LAeq (10 minute) at any time when assessed at the notional boundary of any noise sensitive activity on a separate site under different ownership. Note: The noise rule includes a correction for the special audible characteristics of frost control fans and no further penalty shall be applied to measured noise levels.*
- b. *Operation of frost fans during the night period shall be for protection of crops from frost only. Any other operation, such as for the purposes of maintenance, shall be undertaken during the day period.*
- c. *A legible notice shall be fixed to the road frontage of the property on which the frost fan is being used giving the name, address and telephone number of the person responsible for its operation. The use of frost fans in any other Environment is a discretionary activity. Advice Note: Existing use rights may apply where a frost fan has been lawfully established prior to the operative date 24 May 2016 of the NAV chapter.*

The application of these noise rules to the Rural Living Environment is perhaps best determined by considering the intended character of the Rural Living Environment. If this Environment is intended to primarily be an environment which is somewhat more “residential” in nature, then the provision of these rules may not be appropriate. However if the Environment is intended to allow a mix of productive land and residential activity then the rules could be applied to the environments without

significant concern. In this regard, the decision is a planning matter related to the character of the Environment (refer s 2.1 above).

I note that this issue was considered as part of Plan Change 110. The NAV rules that emerged from the hearing process did not apply the bird scaring device of frost fan noise rules to the UTE or Living 3 Environments.

Finally, it should be noted that the noise rules may be difficult to comply with on small allotments. The application of these permitted standards to small allotments may therefore be somewhat academic as they may be difficult or impossible to comply with on small sites.

#### 4.0 SUBMISSIONS

The following are my responses to individual submissions.

##### 4.1 0221 BADRAN

The submission seeks to have the zoning of land at 1391 Whangarei Heads Road be included as Rural Village Residential rather than Rural Village Centre (RVCE) or the noise rules altered to protect the amenity of residential properties.

The RVCE limits do not provide a high degree of amenity for residential, but instead make provision for mixed use in this zone though sound insulation of new dwellings that could be located in this zone. The RVCE noise rules are:

##### To RVCE from all environments other than SRIE

Daytime:	60 dB $L_{Aeq}$
Night-time:	50 dB $L_{Aeq}$ , 75 dB $L_{AFmax}$

These noise “limits” are relatively high; I have recommended them to ensure that business activity does not experience significant restrictions. Future dwellings constructed within this environment have a sound insulation requirement imposed upon them to mitigate against reverse sensitivity effects.

I note that mixed use zones inevitably require compromise on both residential and commercial land uses. It is not possible to provide a high level of residential amenity while allowing for unrestricted business activity to occur.

With the proposed noise rules, there is potential for reverse sensitivity in this Environment where dwellings already exist, especially if a low degree of sound insulation has been included in the dwelling design. I consider that the rezoned land should be appropriate for this Environment. The Rural Village Residential sub environment makes provision for noise rules that are entirely appropriate for residential land use. It should be recognised that the application of the Rural Village Residential rules adjacent to the RVCE will restrict activity that can occur on the adjacent RVCE land. It is normally (but not always) possible for a shopping centre to comply with residential rules of 50 dB  $L_{Aeq}$  daytime, 40 dB  $L_{Aeq}$  night-time.

Whether the relief is granted is likely to require consideration of a range of matters. In terms of noise, the amenity of existing dwellings will potentially be better in the Rural Village Residential Environment than in the RVCE.

##### 4.2 0250 GBC WINSTONES

This submission raises many points. The majority are related to policy matters rather than specific noise issues.

The major submission point that appears to have attracted most submissions is the proposal to introduce the mineral extraction area (overburden) to the Peagram block. I understand from my review of the submission that the following is proposed:

1. A new planning provision is proposed as an “MEA (Overburden Area)”
2. The Peagram Block is proposed to be zoned “MEA3 (Overburden Area)”
3. No specific noise rule is to be included for the MEA (Overburden Area) as no change to MEA Appendix 1 is proposed by GBC Winstones<sup>2</sup>. The noise rules for MEA3 are proposed to remain at 55 dB L<sub>Aeq</sub> (daytime) and 45 dB L<sub>Aeq</sub> (night-time).

**Note 1:** It is not explicitly clear whether no rule is proposed, or whether the rules applying to MEA3 are intended to also apply to MEA3 (Overburden Area) also. However it is my view that if no specific rule is proposed for MEA3 (Overburden Area) then the MEA3 rules would be interpreted as applying to activity in the MEA3 (Overburden Area) also. This would result in a 55 dB L<sub>Aeq</sub> (daytime) noise rule becoming the de facto noise rule in MEA3 (Overburden Area)

It is my view that if a separate overburden area subzone is to be included in addition to MEA3, then the noise rule applying to that subzone should be explicitly stated under a separate line item for MEA3 (Overburden Area)<sup>3</sup>. However the appropriate noise rule would need to be carefully considered. It is my view that insufficient supporting information has been provided to support the provision of a 55 dB L<sub>Aeq</sub> MEA3 (Overburden Area) noise rule at this time.

4. It is proposed that the placement of greater than 5000m<sup>3</sup> of overburden in any 12 month period within the Overburden Area of a Mineral Extraction Area would be a restricted discretionary activity.

**Note 1:** The matters over which discretion is restricted does not specifically include noise (although it could be considered an “off-site” effect which would include noise).

**Note 2:** It is my reading of the proposed rules that the placement of less than 5000m<sup>3</sup> of overburden could be considered a permitted activity (as it does not appear to be a controlled, restricted discretionary or discretionary activity)

5. It is proposed that the disturbance or removal of more than 5000m<sup>3</sup> of material in the Buffer Area of a Mineral Extraction Area in any 12 month period would be a discretionary activity.

The submission refers to, but does not include, two documents prepared and submitted to Whangarei District Council in 2016. These are:

1. The Boffa Miskell Landscape and visual analysis (4 March 2016)
2. The Marshall Day Acoustics report (4<sup>th</sup> March 2016)

I provided an analysis of the proposed activity to Whangarei District Council in my Otaika Quarry Report (1 April 2016). The report sets out how conflicts of interest were managed. My report made the following conclusions:

- Overburden placement for up to 6 months of the year every 3 to 4 years (with no activity at other times) generating 55 dB L<sub>Aeq</sub> during the daytime would broadly result in similar noise

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<sup>2</sup> I have not considered whether the noise rules in Appendix 1 are appropriate for the quarries in MEA1 to MEA9. These noise rules have presumably been applied via some historical planning process (such as a land use consent) and it is not within the scope of my assessment to recommend change to these limits. The analysis required to determine if any change to the limits is appropriate would be very detailed and would not normally be carried out without a clear cause. I note that, in general, the noise limits are consistent with typical guidelines for community noise and also with other quarry consents that I have been involved in. Notwithstanding this, I consider that the appropriate noise limit applying to new quarry areas should be considered on a case-by case basis.

<sup>3</sup> I do not consider that the MEA3 noise rules should apply to the MEA3 (overburden area) proposed. I am simply stating my view on how the noise limit should be shown in the event that the relief proposed by GBC Winstones is granted.

effects as the permitted *Countryside or Living 3* noise standards of 50 dB  $L_{Aeq}$ . During the six months of activity, overburden placement would have a greater effect than could occur as of right, nonetheless noise effects would be within the range considered reasonable. I considered that the overall assessment of any noise effects must consider the level of noise generated together with any limitations on the duration of activity.

- Construction of bunds and depositing of overburden are likely to involve the same processes (dump trucks, excavators, bulldozers). Noise limits applied to construction activities are much higher than applied to operational activities. The duration of what is considered “construction” and what is considered “operation” is a key factor in whether noise from the activity is reasonable. I considered that provided any bunds can be established quickly and that the exceedance of the operational noise would only occur for the closest extent of the works then this would be reasonable. However I noted that it would likely be *unreasonable* for the entire extent of the landform to be subject to the NZS6803:1999 construction noise rules<sup>4</sup>.
- Overall I considered that noise can be “reasonable” provided that clear conditions are put in place and complied with.

I have considered the GBC submission and their proposed changes to the District Plan. It appears to me that it would be possible to place 5000m<sup>3</sup> of overburden per annum in the Peagram Block as a permitted activity. It is not explicitly clear whether an application to place greater than 5000m<sup>3</sup> of overburden in the Peagram Block as a restricted discretionary activity would require the submission of an acoustic assessment to accompany the application. This is because noise is not a matter explicitly referenced in the matters over which discretion is restricted (Refer MEA 2.X)<sup>5</sup>.

It is my reading of the submission that the noise standard that would apply to the ME3 (Overburden Area) would be 55 dB  $L_{Aeq}$  between 0630 and 2130 hours and 45 dB  $L_{Aeq}$  / 70 dB  $L_{AFmax}$  between 2130 and 0630 hours. Any acoustic assessment submitted as part of the land use consent for a restricted discretionary activity would likely reference this limit and use it as a basis for whether the activity is acceptable. This could be problematic given that no acoustic assessment has been provided as part of the submission that supports the de facto MEA3 (Overburden Area) noise limits.

I consider that overburden placement on the proposed MEA3 (Overburden Area) should be subject to an acoustic assessment so that the effects can be evaluated. I do not consider that the changes to the Plan rules proposed as part of the GBC Winstones submission will allow for that to occur with certainty or with sufficient scope to prescribe an appropriate limit to any consent.

It is my opinion that there should be provisions in any consent to allow conditions to be placed on the operation. Such conditions may include the following:

- An appropriate noise limit (this would likely be 50 to 55 dB  $L_{Aeq}$  (daytime), the exact limit would depend on several factors)
- An appropriate duration of the overburden placement activity
- A condition that clearly defines what is “construction” and what is “operation”.

Because the above will not result from the rules proposed by GBC Winstones, I would not recommend granting this relief as it may result in overburden placement occurring on all days of the year in the Peagram Block at a noise level of up to 55 dB  $L_{Aeq}$  (daytime) without a robust assessment

<sup>4</sup> This is a hypothetical statement, the report on behalf of GBC Winstones did not propose this to be the case.

<sup>5</sup> In the event that the relief sought is granted, I would recommend that noise is explicitly referenced as a matter for discretion.

of the effects. While I am not necessarily opposed to that scale of activity, there has not been sufficient information provided to me to support or oppose it at this time.

#### **4.3 0407 DOBSON**

This seeks sensible provisions for areas where boats and outdoor motors occur. The cleaning of outboard engines is provided for by Note 1 of NAV6.1 (i.e. it is excluded from compliance with the rules, notwithstanding that S. 16 of the RMA still applies).

Boating in the coastal marine area is understood to fall outside the scope of this Plan Change.

#### **4.4 0423 HORTICULTURE NZ**

The Horticulture NZ submission seeks the same amendments as requested in the proforma submissions (refer Section 2.0 above). The submission seeks a range of changes to policies and objectives that are not noise specific.

#### **4.5 0194 SALMON**

This submission supports stronger controls on land use in Rural Production Environments to encourage quiet farming methods to avoid impacts on wildlife and eco-tourism. The submission does not suggest what limits would be appropriate.

I consider that the Rural Production Environment noise rules are appropriate to allow for the range of activities that can occur on Rural sites without permitting unreasonable noise to occur. The effects of noise on wildlife is a difficult topic as noise effects are highly species specific. It is beyond the scope of this assessment to consider this effect; however it is noted that night-time noise limits are relatively low which will provide protection for birds active during the night.

The submission points could be seen as support the proposed Rural Living Noise rules (50 dB  $L_{Aeq}$  daytime) rather than for the 55 dB  $L_{Aeq}$  daytime noise rules sought by Horticulture NZ.