

WHANGAREI PC85 REVIEW
Recommendations for Revision
Rp 001 2015614A

10 June 2016



Project: **WHANGAREI PC85 Rural Plan Change**

Prepared for: **Whangarei District Council
Private Bag 9023
Whangarei 0148
New Zealand**

Attention: **Melissa McGrath**

Report No.: **Rp 001 2015614A**

Disclaimer

Reports produced by Marshall Day Acoustics Limited are prepared based on the Client's objective and are based on a specific scope, conditions and limitations, as agreed between Marshall Day Acoustics and the Client. Information and/or report(s) prepared by Marshall Day Acoustics may not be suitable for uses other than the original intended objective. No parties other than the Client should use any information and/or report(s) without first conferring with Marshall Day Acoustics.

Copyright

The concepts and information contained in this document are the property of Marshall Day Acoustics Limited. Use or copying of this document in whole or in part without the written permission of Marshall Day Acoustics constitutes an infringement of copyright. Information shall not be assigned to a third party without prior consent.

Document control

Status:	Rev:	Comments	Date:	Author:	Reviewer:
Draft	0	-	9 Oct 2015	Peter Ibbotson	D Badham (client)
Issue	1	-	30 Oct 2015	Peter Ibbotson	M McGrath (client)
Issue	2	Operative Plan changes	10 June 2016	Peter Ibbotson	-

TABLE OF CONTENTS

1.0	INTRODUCTION	4
2.0	RELATIONSHIP TO PC110.....	4
3.0	PROPOSED PLAN CHANGE.....	5
3.1	Existing Environment	5
3.2	Proposed New Environments.....	6
4.0	EXISTING NOISE ENVIRONMENT	8
5.0	ACOUSTIC AND VIBRATION RULES AND GUIDELINES	9
5.1	Noise Rules – Operative Plan.....	9
5.2	Other Guidelines for Residential Amenity.....	13
5.2.1	NZS6802:2008.....	13
5.2.2	World Health Organisation.....	13
5.2.3	AS/NZ 2107:2000 “Acoustics - Recommended design sound levels and reverberation times for building interiors”	13
6.0	DISCUSSION OF EXISTING AND PROPOSED NOISE RULES.....	15
6.1	RURAL VILLAGE INDUSTRIAL	15
6.2	RURAL VILLAGE CENTRE	16
6.3	RURAL VILLAGE RESIDENTIAL	17
6.4	RURAL LIVING	17
6.5	RURAL (URBAN EXPANSION) ENVIRONMENT.....	18
6.6	RURAL PRODUCTION	18
6.7	STRATEGIC RURAL INDUSTRIES	19
7.0	VIBRATION	22
8.0	CONCLUSIONS	23

1.0 INTRODUCTION

Marshall Day Acoustics has been engaged by Whangarei District Council to provide recommendations on noise and vibration rules that should apply to the proposed Rural Plan Changes (PC85A-D and 86) in Whangarei. The brief for this project is to develop appropriate noise and vibration limits for the various Environments within the Rural Plan Changes.

This report provides a summary of noise rules that are recommended for the Rural Environment. The recommendations for revision are as contained in Appendix A; this appendix proposes rules appropriate for the Rural Environment within the framework of the Whangarei District Plan. The body of this report discusses each proposed section and provides supporting comment where necessary.

2.0 RELATIONSHIP TO PC110

Plan Change PC110 recommended the noise and vibration limits to be applied across all existing Environments within Whangarei District. Following hearings and Environment Court mediation the Plan Change was adopted by Council. The changes have been incorporated into the Operative Plan.

The assessment of the Rural Plan Changes has referred directly to analysis performed in the PC110 assessment and the subsequent noise rules approved within the Operative District Plan. Further information on this can be found in Marshall Day Acoustics reports prepared for PC110 (Refer: *Rp 001 2014326A PAI District Plan Review*).

It is understood that the Rural Plan Changes would introduce new Environments within the Plan.

3.0 PROPOSED PLAN CHANGE

3.1 Existing Environment

The proposed Plan Changes (PC85A-D and 86) and the new Environments proposed are intended to provide clear direction as to how the Rural Environments should operate. Some objectives and policies that are relevant to noise and vibration are as follows:

Objectives

- Protect the long-term viability of the productive functions of rural land in a manner that delivers economic benefit and sustains the environment.
- Avoid, remedy or mitigate reverse sensitivity impacts especially in relation to established and productive rural activities.
- Avoid cumulative impacts in the Rural Area resulting from un-consolidated residential, rural residential and rural living subdivision and development.
- Protect the range of amenity values and characteristics in the Rural Area.
- Consolidate rural living subdivision and development in areas where productive rural land uses have already been compromised, or on less productive land without significant adverse effects on the environment.
- Provide for areas of rural residential development on the fringe of Whangarei city while ensuring that these areas can accommodate future urban growth.
- Provide for a range of appropriate land uses in the Rural Area, including residential, rural residential, rural lifestyle, commercial, industrial and rural production in appropriate areas.
- Provide for managed growth of rural villages.

General Policies

Policies have been provided to achieve the above objectives. The policies provide specific direction on the establishment of various environments. Policies that are specific to noise and vibration effects include:

- Ensuring that the potential for reverse sensitivity effects in the Rural Area are not increase through the provision of Rural Living Environment land.
- Ensuring that Strategic Rural Industry Environments incorporate appropriate mitigation and management methods to ensure environmental effects are acceptable in the area in which the activities are proposed.
- Ensuring that the Rural Village Sub Environments do not compromise the long term development of the rural village.
- Ensuring that the Rural (Urban Expansion) Environment does not compromise future urban growth.
- Ensuring that the scale and nature of new rural land use is consistent with the existing level of amenity of the relevant environment.

- Managing the establishment and location of new rural activities to avoid conflicts between incompatible land uses.

3.2 Proposed New Environments

It is proposed to create new Environments within Whangarei as part of the Rural plan changes. Some of these would replace the existing Environments. These are summarised in the table below:

Table 1: Plan Change 85 Rural Environment changes

Proposed Environment	Existing Environment Within the Operative Plan
Rural Production Environment	Countryside and Coastal Countryside Environments
Rural Living Environment	Existing areas of “lifestyle dwellings” within the Countryside Environment
Rural Village - Residential Sub Environment - Centre Sub Environment - Industry Sub Environment	Rural and Coastal villages within the Living and Business Environments
Strategic Rural Industries Environment	Existing industries located in the Business 4 Environments, some with scheduled Activity Overlays or operating within resource consent
Rural (Urban Expansion) Environment	Countryside Environment

The proposed new Environments are described as follows:

Rural Production Environment

The Rural Production Environment provides for the productive use and development of rural land and resources. In this environment, residential, commercial and industrial land use and development is expected to be secondary to productive uses. The Rural Production Environment sets out the restrictions on subdivision and land use activities using a standard set of rules that apply when no other important land resources are identified on a property.

As can be seen in the above description, the “Rural Production Environment” is intended to protect and provide rules appropriate for typical primary activities. Noise rules appropriate in this area would not restrict typical activities that might occur on this land while allowing for a reasonable level of amenity for people who live on the productive land.

Strategic Rural Industry Environment

The purpose of the Strategic Rural Industry Environments is:

To recognize and provide for the on-going operation of established large scale industrial activities located within rural areas. The Strategic Rural Industry Environment sets out the

restrictions on subdivision and land use activities using a standard set of rules that apply when no other important land resources are present on a property.

There are three SRIEs identified: Kauri Dairy Factory, Crofts Poles and Golden Bay Cement. Noise rules appropriate for these sites would recognise noise emissions from these activities are inevitable and, where reasonable, apply reverse sensitivity controls to residential activity occurring on adjacent land.

Rural Village Environment

The Rural Village Environment recognises the established rural and coastal villages in the Whangarei District. Three Sub Environments are proposed within the villages:

- **Rural Village Residential Sub Environment**

This Environment is intended to *“provide for the development of residential land use and general living activities within established rural villages”*

This Environment should include noise rules that allow for an appropriate standard of residential amenity, recognising the generally low background noise levels that typically occur in these Environments.

- **Rural Village Centre Sub Environment**

This Environment is intended *“to provide for, and protect the commercial centre of larger rural villages”*.

This Environment should have noise rules appropriate to an area of commerce, i.e. noise limits within the Environment should ensure that typical and reasonable business use is not restricted, while ensuring that incompatible commercial activities are not located adjacent to each other.

- **Rural Village Industrial Sub Environment**

This Environment is intended *“to recognize and provide for the on-going operation of established industrial developments and activities within established rural villages”*

This Environment should have noise rules that do not restrict typical industrial activities which may at times make significant noise.

Rural Living Environment

The proposed Rural Living Environment:

“... provides opportunities for the on-going development of land for rural living activities in locations that have an existing density compatible with lifestyle development...”

...Reverse sensitivity impacts can arise from the ad hoc location of rural living activities throughout the rural areas of the District. These impacts can affect the economic viability of rural production activities through increases in land values (and rates) and the differing expectations of residents in terms of noise, odour, dust etc.”

People living in rural living environments often demand similar levels of amenity to those in residential environments. This can lead to conflict with established primary production activities in the area. Noise rules appropriate to these Environments would aim to

provide a suitable level of amenity for activities occurring within the Environment, while recognising and allowing for primary production activities that may occur nearby.

Rural (Urban Expansion) Environment

The proposed Rural (Urban Expansion) Environments are five proposed clusters of land surrounding Whangarei City. These proposed Environments are intended to be “rural residential” in character. The Environments are intended to form a buffer between the Rural Production Environment and the urban areas within the city. The Environment is intended to allow for the future expansion of Whangarei City.

Although the proposed Environment differs from the Rural Living Environment, the acoustic amenity required in both Environments is likely to be similar. Therefore, the noise rules appropriate to this Environment would aim to provide a suitable level of amenity for rural-residential activities, while recognising and allowing for primary production activities that may occur nearby.

4.0 EXISTING NOISE ENVIRONMENT

Noise levels in the proposed Rural Production Environment have been measured by Marshall Day Acoustics in a range of locations in Whangarei District in the past 30 years. The following is noted:

- In the majority of the Rural Production Environment (i.e. those far from established areas of population, main roads or operating industry), background and ambient noise levels will be very low during settled weather conditions. It would be typical under settled conditions for background noise levels to be below 30 dB L_{A95} during the night-time in much of the Rural Production Environment.
- In areas near main roads such as State Highway 1, ambient noise levels will be elevated to around 50 to 60 dB L_{Aeq} within 50 metres of the road during the night time. However due to intermittent traffic on such roads, background noise levels would be significantly lower.
- In areas up to 4 kilometres of major industry, ambient and background noise levels may vary between 25 to 40 dB L_{Aeq} at night. A wide range is given depending on wind conditions and the type of activity on-site.
- In village areas, daytime noise levels are likely to be 50 to 55 dB L_{Aeq} and 40 to 45 dB L_{A95} in established areas of township. Noise levels at night are likely to be generally low; noise levels of between 25 to 35 dB L_{A95} would not be unusual.

The examples given above are indicative only; noise levels will vary significantly depending on proximity to noise sources, weather conditions, etc.

5.0 ACOUSTIC AND VIBRATION RULES AND GUIDELINES

The following sections summarise the existing operative rules for relevant existing Environments.

5.1 Noise Rules – Operative Plan

The Whangarei Operative District Plan noise rules are as follows (these apply at the site boundaries of any property within the Environment).

NAV 6.1

To the Business 2 Environment:

Daytime: 65 dB L_{Aeq}
Night-time: 60 dB L_{Aeq} , 80 dB L_{AFmax}

To the Business 1 Environment:

Daytime: 60 dB L_{Aeq}
Night-time: 55 dB L_{Aeq} , 80 dB L_{AFmax}

Marshall Day Acoustics' review suggested the above limits were appropriate within a business zone where residential housing could establish.

To the Open Space Environment (Business 2 only)

Daytime: 55 dB L_{Aeq}
Night-time: 45 dB L_{Aeq} , 75 dB L_{AFmax}

To the Open Space Environment (from all other Environments)

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

The above rules were considered appropriate within Open Space zones. A more permissive rule was applied to noise from the Business 3 Environment during the night.

To the Business 3 Environment

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

Marshall Day Acoustics review considered that the above rules would allow for an increased level of business activity during the daytime with a higher degree of protection to residential activity during the night. A sound insulation requirement was recommended for residential activity in this area.

To Living, UTE, Countryside and Coastal Countryside Environments (from Business 2/4)

Daytime: 55 dB L_{Aeq}
Night-time: 45 dB L_{Aeq} , 75 dB L_{AFmax}

To Living, UTE and Coastal Countryside Environments (other Environments)

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

Marshall Day Acoustics' review suggested the above limits were appropriate at the site boundary at Living 1 and 2 Environments, with higher noise limits for noise from Business 2/4 Environments. The same noise limits are proposed within Living 3 and Urban Transition Environments; however the limits are applied at the notional boundary of dwellings.

It was considered that these limits were more in line with what is a reasonable level of noise in residential areas and strike a more appropriate balance between the needs of land users and sensitive receivers while still providing for the relatively high level of amenity required by the Plan policies.

To Countryside Environments (Environments other than Business 2/4)

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

Marshall Day Acoustics' review suggested the above limits were appropriate on the basis that rural environments should primarily be considered "industrial areas" and that noise rules well above the background were appropriate. A daytime noise rule of 50 dB L_{Aeq} was recommended for the Coastal Countryside. It was recommended that limited duration agricultural and horticultural activities be excluded from assessment against the rules.

NAV6.1.1

Normal residential activity occurring in Living environments such as children's play, spontaneous social activities, lawnmowing and home maintenance work undertaken by the occupier is excluded from compliance with the noise rules during the daytime provided such activity is reasonable in terms of duration and noise level and in the case of home maintenance does not exceed the rules for construction noise. These provisions do not apply to non-residential land use within the Living environment such as childcare centres.

NAV 6.1.2

NAV. 6.1 shall not apply to mobile machinery used for a limited duration as part of agricultural or horticultural activities occurring in the 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;

NAV6.1.4

Noise generated by temporary activities in the Town Basin Environment may exceed the noise rules in any Environment for 12 days every calendar year provided that noise does not exceed a level of 65 dB L_{Aeq} between 0900 and 2300 hours at the boundary of any Living Environment.

NAV6.1.5

Except that in the Business 1 environment the “daytime” noise standard shall apply between 0700 and 0000 hours (midnight) on Friday and Saturday evenings. The “night-time” noise standard shall apply between 0000 and 0700 hours on Saturday and Sunday mornings.

NAV6.1.9

The noise rules shall not apply to the following activities:

- Level crossing warning devices.
- The operation of emergency service vehicles or emergency callout sirens.
- Noise from aircraft and helicopters when in flight.
- Unamplified noise from sporting events in Open Space Environment where these occur for up to 20 hours per week between 0700 and 2100 hours.
- Unamplified noise from standard school outdoor activities where this occurs between 0700 and 1800 hours Monday to Sunday.
- Rail movements within Fonterra’s Kauri Milk Processing site (the area encompassed within Scheduled Activity 15); excluding the loading and unloading of goods from trains within the site.
- Emergency generators used to ensure the continued operation of network utilities. This exemption shall not include emergency generator testing which are required to comply with NAV.6.14.

NAV6.5

1. Any noise sensitive activity established within a Business 1, 2, 3, Town Basin, Port Nikau Noise Zone 1 or 2, or Marsden Primary Centre Noise Zone 1 or 2 Environments shall be designed and constructed to ensure the following internal design noise levels:

Environment	Bedrooms and sleeping areas within dwellings or units	Other habitable spaces within dwellings or units	Teaching spaces, places of religious assembly, health and veterinary service buildings
	2200 – 0700 hours	0700 - 2200 hours	0700 – 2200 hours
Business 1 Business 2 Business 3 Town Basin Mixed Use	30 dB L _{Aeq}	40 dB L _{Aeq}	35 dB L _{Aeq}

2. For design purposes, the following external L_{eq} noise levels shall be used. These noise levels shall be assumed to be incident on the façade.

Environment	Design noise level (dB L _{eq}) - incident							
	63	125	250	500	1k	2k	4k	dBA
	Hz	Hz	Hz	Hz	Hz	Hz	Hz	
Bedrooms and Sleeping Areas								
Business 1, Town Basin	66	65	55	54	49	42	38	55
Business 2	67	64	61	58	55	52	49	60
Business 3. Mixed Use	57	54	51	48	45	42	39	50
Other Habitable Rooms								
Business 1 , Town Basin, Business 3, Mixed Use	71	70	60	59	54	47	43	60
Business 2	72	69	66	63	60	57	54	65

Note: Where windows are required to be closed to achieve these sound levels the ventilation requirements of Clause G4 of the New Zealand Building Code shall be achieved.

Note: A certificate from a Recognised Acoustician, confirming that the building accommodating the noise sensitive activity will achieve the minimum sound insulation requirements, is required to confirm compliance with NAV.6.5

5.2 Other Guidelines for Residential Amenity

5.2.1 NZS6802:2008

This standard provides the following *guideline* within the site boundary of residential dwellings.

Daytime: 55 dB $L_{Aeq(15\text{ min})}$

Evening: 50 dB $L_{Aeq(15\text{ min})}$

Night: 45 dB $L_{Aeq(15\text{ min})}$, 75 dB L_{AFmax}

The standard is clear that these are provided only as guidelines and that District Councils should set their own limits.

5.2.2 World Health Organisation

The World Health Organisation Guidelines on Community Noise states that during the daytime, few people are seriously annoyed by external noise levels of less than **55 dB $L_{Aeq(16\text{ hour})}$** with few people moderately annoyed by noise levels of less than **50 dB $L_{Aeq(16\text{ hour})}$** . These guidelines suggest that to ensure sleep disturbance does not arise, noise levels should be no greater than **45 dB $L_{Aeq(8\text{ hour})}$** and **60 dB L_{AFmax}** *outside dwellings*; this equates to an indoor noise level of **30 dB L_{Aeq}**

5.2.3 AS/NZ 2107:2000 "Acoustics - Recommended design sound levels and reverberation times for building interiors"

This standard provides recommended internal noise levels for a variety of building types. The relevant recommendations are as follows:

Type of occupancy / activity	Recommended Design Sound Levels dB L_{Aeq}	
	Satisfactory	Maximum
EDUCATIONAL BUILDINGS		
Teaching spaces	35	45
Lecture theatres (unamplified)	30	35
HEALTH BUILDINGS		
Dental suites	40	45
Consulting rooms	40	45
Laboratories	45	50
Office areas	40	45

Type of occupancy / activity	Recommended Design Sound Levels dB L _{Aeq}	
	Satisfactory	Maximum
OFFICE BUILDINGS		
General office areas	40	45
Private offices	35	40
RESIDENTIAL BUILDINGS		
Houses and apartments		
- near minor roads		
Living areas	30	40
Sleeping Areas	30	35
Work Areas	35	40
Houses and apartments		
- near major roads		
Living areas	35	45
Sleeping Areas	30	40
Work Areas	35	45

6.0 DISCUSSION OF EXISTING AND PROPOSED NOISE RULES

The following provides a discussion of noise rules appropriate to the Environments proposed.

6.1 RURAL VILLAGE INDUSTRIAL

The proposed Rural Village Industrial Environment falls across land currently zoned as follows:

- Within Waipu, the existing Business 4 Environment will be rezoned to Rural Village Industrial. The existing land currently contains secondary industries located adjacent to Living areas.
- Within Hikurangi it is proposed to rezone existing Business 2 land to Rural Village Industrial. The existing land currently contains light industrial manufacturing adjacent to Living and Countryside Environments

Because the proposed Rural Village Industrial Environments are located in relatively small “village” areas, it is inevitable that the proposed or future industrial areas will be in reasonably close proximity to dwellings within nearby “Residential” or “Living” Environments. For this reason it is important that the Rural Village Industrial Environment does not generate unreasonable levels at the site boundary of adjacent dwellings. Noise limits at the boundary should be set at a level that does not significantly affect speech intelligibility in outdoor recreation areas or inside dwellings during the daytime, and does not result in sleep disturbance in the majority of the population during the night period.

Notwithstanding the above, the Rural Village Industrial Environments will inevitably generate noise. Residents living adjacent to these areas should expect to have an overall standard of acoustic amenity which, while reasonable, may not be as high as true suburban areas.

With the above in mind, noise rules of 55 dB L_{Aeq} (daytime) and 45 dB L_{Aeq} , 75 dB L_{AFmax} are considered appropriate for noise from the Rural Village Industrial Environment when received in residential areas. These noise rules are consistent with national and international guidelines for residential amenity. The rules are as liberal as appropriate to allow for the expected level of noise emission from industrial activities within the Environment and to ensure that such activities are not restricted more than is necessary to ensure an acceptable residential environment nearby

Within the Industrial Environment (i.e. between adjacent industrial activities), a much higher level of noise is appropriate. It is typical for noise limits of around 75 dB L_{Aeq} to apply between adjacent heavy industrial activities, while lower noise levels of between 60 to 65 dB L_{Aeq} are often applied where industrial and commercial / retail activities may occur adjacent to each other, or where office activities within industrial sites are likely. Where dwellings can potentially be located within these areas, a lower noise limit is appropriate. It is understood that dwellings within the Rural Village Industrial Environment are prohibited.

Based on the existing character of the area, it is considered that the existing industrial activities are unlikely to be sensitive to noise from similar activities nearby. As a

commercial environment is proposed in most villages (Rural Village Centre Environment) it is considered that the Industrial Environment should not need to cater for retail or other similar commercial activities. With this in mind it is recommended that the noise standards between sites in the Rural Village Industrial Environments are 75 dB L_{Aeq} at all times. No L_{AFmax} noise rule is recommended.

Note that in most village areas it is likely that the noise rule applied at the adjacent residential boundary will limit activity in the industrial area, rather than the rule applying between the Industrial sites.

The District Plan Business 4 Environment noise rule is considered to be the most appropriate noise rules for this Rural Village Industrial Environment.

6.2 RURAL VILLAGE CENTRE

The “Rural Village Centre” is proposed to fall across existing Business 2 and 3 Environments within the existing villages. In some villages (such as Maungatapere), existing Business 4 land is to be rezoned as Rural Village Centre. In some villages (such as Tutukaka), small areas of Living 1 and 3 Environment land will be rezoned to Rural Village Centre. Land uses in these areas include: existing commercial activity, retail, service activities, churches and existing industrial activity.

The Rural Village Centre Environment primarily provides for commercial shopping areas adjacent to areas of residential dwellings. It is understood that heavy industry will be a prohibited activity in this Environment while construction of a residential unit would be a permitted activity.

Noise rules appropriate for this Environment would not unreasonably restrict typical commercial activity while ensuring that adjacent commercial activities can co-exist. As the Environment could include residential dwellings, external noise levels must not be unacceptable for that purpose. As dwellings may be located adjacent to noise producing activity, a sound insulation rule which provides for an appropriate internal noise level within dwellings would be required.

Noise from commercial activity in the Village Centre Environment received in adjacent residential environments should not result in significant effects on residential amenity. Because a sound insulation rule in residential areas is not practical, noise levels received from nearby commercial activity should result in relatively high levels of acoustic amenity within standard dwelling constructions.

It is considered that an appropriate noise rule applying within the Rural Village Centre Environment is 60 dB L_{Aeq} during the daytime and 50 dB L_{Aeq} , 75 dB L_{AFmax} night-time. This provides for a relatively liberal level of control during the day-time period and will allow business and commercial activities to have few constraints on operation. During the night-time, the noise limit is more restrictive providing a greater level of amenity to any residential dwellings that might be located within the Environment.

It is considered that an appropriate noise rule at any nearby Residential / Living Environment is 50 dB L_{Aeq} (daytime), 40 dB L_{Aeq} , 70 dB L_{AFmax} night-time. This will provide for a high standard of residential amenity in the Village Area. This provides for a higher level of amenity than dwellings located near the Town Centre Industrial Environment.

It is considered that the District Plan Business 3 Environment noise rules are appropriate for the proposed Rural Village Centre Environment. These rules will provide for commercial activity within the village while maintaining a high standard of amenity for residents.

6.3 RURAL VILLAGE RESIDENTIAL

The “Rural Village Residential Environment” would appear to allow for predominantly residential activity; commercial and industrial activities would be non-complying and prohibited activities within this zone.

The District Plan Living 1, 2, 3 and Kamo Low/Medium Density Living Environments noise rules are 50 dB L_{Aeq} (daytime) and 40 dB L_{Aeq} / 70 dB L_{AFmax} (night-time). **Such noise rules are considered appropriate within the Rural Village Residential Environment, notwithstanding that the Environment may receive higher levels of noise from the Rural Village Industrial Environment. The noise rules allow for a reasonably high level of amenity. The rules are consistent with an environment where commercial activity is discouraged.**

6.4 RURAL LIVING

The “Rural Living Environment” is intended to provide for a “rural lifestyle”, i.e. relatively small allotments of land in environments with a predominantly “rural character”. 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. The Rural Living Environments are to be established in 14 locations throughout the Whangarei District and each will be surrounded by areas of Rural Production land.

The Rural Living Environment represents a risk of reverse sensitivity to the Rural Production Environment. This is because residents in lifestyle block areas often have expectations of high standards of acoustic amenity given the generally low levels of background noise. The proposed objectives of the Rural Area state: ...[5] *Reverse sensitivity effects on surrounding rural production, rural industries or key infrastructure are avoided remedied or mitigated...* Policies for the area state: *“To preserve rural character and amenity whilst enabling lifestyle developments in the RLE and maintaining factors that contribute to rural character including: Low levels of noise, particularly at night.”*. These policies and objectives are somewhat conflicted; it is difficult to avoid reverse sensitivity effects while setting a low noise limit in a rural production area.

In the Urban Transition and Coastal Countryside Environments, noise rules of 50 dB L_{Aeq} (daytime) and 40 dB L_{Aeq} , 70 dB L_{AFmax} (night-time) were recommended. These rules applied to noise from any other Environment when received within the UTE / Coastal Countryside, including noise from the Countryside Environment. These noise rules provide for a relatively high standard of residential amenity overall.

These more stringent noise rules were considered appropriate, primarily because NAV.6.1.2 excludes noise from mobile machinery used as part of agricultural or horticultural activities. The proposed NAV chapter also provides specific noise rules for frost fans and bird scaring devices elsewhere. Static noise sources within the Countryside Environment (such as pumps, cowsheds, generators, etc) are therefore likely

to be the only noise sources that would be assessed in accordance with the Environment noise limits. Static noise sources can be more easily controlled or located to meet noise limits and the risk of reverse sensitivity due to a lower noise limit within these Environments is therefore reduced. Notwithstanding the above, the noise limit would be lower than applied within the Countryside Environment and would therefore place slightly more restrictions on activity within the Countryside Environment than if the Rural Living Environment was not proposed.

On the basis of the above, it is recommended that the Urban Transition Environment, Coastal Countryside Environment and Living 3 Environment District Plan noise rules be applied within the Rural Living Environment. These rules provide for a good standard of residential amenity and do not represent a significant risk of reverse sensitivity.

It is noted that if the Rural Living Environment was intended to be truly subservient to the Rural Production Environment, the Countryside noise rules could be applied. This would result in little reverse sensitivity risk to the Countryside Environment. Daytime noise rules would still provide for a generally acceptable standard of residential amenity, albeit it is possible that noise levels may be greater than anticipated by occupants of the Rural Living Environment at times.

6.5 RURAL (URBAN EXPANSION) ENVIRONMENT

The Rural (Urban Expansion) Environment is intended to provide for a “rural-residential” environment. It is understood that the density of development may be greater than the proposed Rural Living Environment, however the density will not be as significant as that which generally occurs across the Living Environments.

As per the Rural Living Environment, the Rural (Urban Expansion) Environment represents a risk of reverse sensitivity to the Rural Production Environment. As with the Rural Living Environment, the proposed policies and objectives for the Rural (Urban Expansion) recognise this: it is intended that the Environment does not compromise the future urban development or rural land use nearby.

It is recommended that the Rural Living Environment noise rules (i.e. those applied to the Living and UTE Environments in the District Plan) also be applied to the Rural (Urban Expansion) Environment. These rules provide for a good standard of residential amenity and do not represent a significant risk of reverse sensitivity. The notional boundary approach recognises and provides for a range of land sizes within the Environment.

6.6 RURAL PRODUCTION

The “Rural Production Environment” replaces much of the existing Countryside and Coastal Countryside Environments. The “Rural Production Environment” is intended to provide for predominantly primary production activities such as farming and forestry.

The Countryside and Coastal Countryside Environments noise rules in the District Plan were set to be appropriate for an environment that was primarily focussed on rural production. These noise rules are as follows:

- Countryside: 55 dB L_{Aeq} (daytime), 40 dB L_{Aeq} , 70 dB L_{AFmax} (night-time)

- Coastal Countryside: 50 dB L_{Aeq} (daytime), 40 dB L_{Aeq} , 70 dB L_{AFmax} (night-time)

NAV6.1.2 provided for mobile machinery used for a limited duration as part of agricultural or horticultural activities occurring in the Countryside, Coastal Countryside or Urban Transition Environments. This rules excluded such activities from compliance with the noise rules within any other Environment.

Because the Rural Production Environment is proposed to be an Environment primarily focussed on rural production activities, it is recommended that the District Plan noise rules for the Countryside Environment are applied to the Rural Production Environment. This will result in an appreciably higher level of noise being permitted in the “Coastal Countryside Environment” than was previously allowed for, however permitted noise standards are still appropriate for an environment where people may live, and are in keeping with national and international standards for residential amenity.

6.7 STRATEGIC RURAL INDUSTRIES

Three Strategic Rural Industry Environments are proposed. These include:

- The Kauri Dairy Factory (SH1, Kauri)
- The Croft Timber Company (SH1, Kauri)
- The Golden Bay Cement Works (Portland)

Strategic Rural Industries are important to the economic prosperity of the region. The Strategic Rural Industry Environment is intended to recognise this through objectives such as:

3. *Promote the adoption of more flexible and targeted management framework for existing and/or strategic Rural Industries.*
4. *Maintain rural amenity and avoid reverse sensitivity effects associated with Strategic Rural Industries.*

The draft policies for the Strategic Rural Industries suggests that rural amenity and containment of reverse sensitivity effects would be maintained through the *provision and management of buffer areas, setbacks and other appropriate mitigation measures*. The draft requisite policies would establish a minimum boundary setbacks of 20 metres between Living and Open Space areas and limit residential units within the Environment to those used for security purposes. The draft policies for the Rural Production, Rural Living and Rural (Urban Expansion) Environments would make the establishment of a residential unit within 500 metres of a Strategic Rural Industry a discretionary activity.

Marshall Day Acoustics’ recommendation is that the proposed and future Strategic Rural Industries be protected from reverse sensitivity effects through the preparation of a Noise Control Boundary (NCB) around the Strategic Rural Industry sites as required. This Noise Control Boundary may fall across land that is not owned by the Strategic Rural Industry. If a site generates high levels of noise, an inner and outer noise control boundary may be required. However for sites that do not generate high levels of noise, only one (outer) noise control boundary may be required.

- **Outer Noise Control Boundary:** a line within which noise levels are expected to be above 55 dB L_{Aeq} (daytime) and 45 dB L_{Aeq} (night-time)¹ even with all practicable noise control measures applied. This Noise Control Boundary may include an allowance for future expansion of the site.
- **Inner Noise Control Boundary:** a line where noise levels are expected to be such that residential activity inside the line is inappropriate based on external noise levels. This would typically be a level of 65 dB L_{dn} , i.e. a constant noise level of around 59 dB $L_{Aeq(1hr)}$, or a daytime noise level of 65 dB L_{Aeq} and a night-time noise level of 55 dB L_{Aeq} . An Inner Control Boundary may not be appropriate from industry with relatively low levels of noise emission.

The above noise control boundaries would need to be established with co-operation with the Strategic Rural Industries. Establishing these boundaries is likely to require detailed measurement of existing noise emissions as well as sound modelling by an acoustician.

Future dwellings proposed within the Outer Noise Control Boundary (but outside the Inner Control Boundary) would be permitted subject to the proposed building design submitted for building consent incorporating sound insulation measures to achieve appropriate internal noise levels. Dwellings within the Inner Control Boundary would ideally be a prohibited activity.

In other areas where this approach has been used successfully, existing dwellings that fall between the contours are retrofitted with sound insulation to ensure noise levels within the dwellings are appropriate. This treatment is often paid for (either partly or fully depending on location) by the industry generating the noise. Dwellings within the Inner Control Boundary are either purchased by the industry or treated to the best practicable level of sound insulation. These situations are given as examples only: approaches vary from industrial site to industrial site throughout New Zealand.

It is expected that the proposed 500 metre setback in the “Rural Environments” would generally be sufficient to ensure that dwellings are located in appropriate areas (i.e. outside the Outer Noise Control Boundary). However this setback would not necessarily provide criteria appropriate to determine whether dwellings can be established within this buffer while ensuring noise levels are reasonable. It is considered that the Inner and Outer Noise Control Boundaries represent a more precise way of ensuring that noise levels inside dwellings are reasonable while providing for the needs of Strategic Rural Industries.

Notwithstanding the above, it is understood that each proposed Strategic Rural Industry may have differing requirements with regard to reverse sensitivity. For instance we note that the Inner Noise Boundary may not be necessary to define for some (or all) of the Strategic Rural Industry Environments as the sites may not generate high enough levels of noise to warrant such an approach (or such levels may only occur across land owned by the industry). Each specific SRIE is discussed as follows:

¹ Note that this level would be the equivalent of 55 dB L_{dn} . If the level of noise emission is relatively constant, a noise level of 55 dB L_{dn} would represent an hourly level of 49 dB L_{Aeq}

Golden Bay Cement Factory: This site is located on land currently zoned Business 4. The Business 4 Environment extends at least 500 metres from the central factory plant. As dwellings are understood to be non-complying activities within the Business 4 Environment, the large Business 4 Environment serves to provide a quasi “Noise Control Boundary” around the site. However the extent of the Business 4 Environment may not necessarily be sufficient to ensure that any dwellings established on the periphery of the Business 4 Environment are exposed to noise levels that do not represent a risk of reverse sensitivity.

It is noted that the proposed Plan Change would make the construction of dwellings within 500 metres of the SRIE in a Rural Production Environment a discretionary activity. This provides additional security, but does not necessarily ensure that the conditions of any resource consent will be appropriate.

With this in mind, it is recommended that the site give consideration to the establishment of noise control boundaries as these would provide more certainty over any future development around the site. Further work would be required to establish the noise control boundary extents.

Crofts Timber: This is a large site on State Highway 1, near the Kauri Dairy Factory (also a proposed SRIE). The site is located near to dwellings which are distributed around the periphery of the factory. These are located on land that will be rezoned to Rural Production. The establishment of a new dwelling within the Rural Production Environment is proposed to be discretionary within 500 metres of the SRIE.

No noise emission data is available for this site, and it is possible that the level of night-time noise emission is not significant. During the daytime, noise from the State Highway will be high. With this in mind, the outer noise control boundary required may not be large. Notwithstanding this, the establishment of a noise control boundary around the site is considered to be a preferable way of controlling reverse sensitivity effects and is expected to be a more efficient method than requiring a 500 metre setback from the site. Further work would be required to establish the noise control boundary extents.

Kauri Milk Factory: This is a large site on State Highway 1, north of the Crofts Poles site (also a proposed SRIE). Dwellings are located to the north, west and south of the site; these are located on land that will be rezoned to Rural Production. The establishment of a new dwelling within the Rural Production Environment is proposed to be discretionary within 500 metres of the SRIE.

Fonterra have developed an outer noise control boundary for this site. The “Outer” Noise Control Boundary falls across some adjacent land. Some existing dwellings fall inside this contour, however on the whole there are few dwellings within the NCB. This is largely due to the Fonterra farm to the east of the factory being largely uninhabited. No “inner boundary” is provided as this would fall only inside the Fonterra site.

It is recommended that the proposed Noise Control Boundary be adopted and utilised. This approach is considered to be the most efficient method of reducing reverse sensitivity risk to the site.

Within the NCB, it is recommended that dwellings be designed to achieve a good level of amenity based on an external noise level of 50 dB L_{Aeq} (night-time) and 60 dB L_{Aeq} (daytime). This approach is relatively conservative but is not expected to result in onerous building design restrictions within the NCB. It is expected that any buildings constructed within the NCB will require mechanical ventilation, and may require a higher standard of glazing than would normally be considered as standard.

In summary, it is recommended that a Noise Control Boundary approach be generally implemented to the SRIE as follows:

- **Creating maps within the District Plan that show the Noise Control Boundaries (inner and outer as appropriate). Note that in some/all cases only an outer control boundary will be required**
- **Applying the internal noise criteria in NAV6.5 to noise sensitive activities established inside the Outer Noise Control Boundary but outside the Inner Noise Control Boundary.**
- **Prohibiting dwellings from being established within any Inner Noise Control Boundaries**
- **Agreeing with the existing industries the responsibility for noise control measures applied to existing dwellings within these boundaries.**

7.0 VIBRATION

No change to the vibration rules are proposed. The vibration rules are applicable to all new Environments proposed as part of PC85.

8.0 CONCLUSIONS

Marshall Day Acoustics has performed an analysis of noise and vibration rules that should apply to the proposed Rural Environments.

An analysis of the proposed environment has resulted in the following recommendations:

1. The Business 4 Environment noise rules should be applied to the Rural Village Industrial Environment.
2. The Business 3 Environment noise rules should be applied to the Rural Village Centre Environment.
3. The Living 1 /2 Environment noise rules are appropriate to the Rural Village Residential Environment.
4. The Urban Transition, Coastal Countryside and Living 3 Environment Noise rules are appropriate to the Rural Living and Rural Urban Transition Environments. However WDC could also consider applying the Countryside Environment rules to the Rural Living Environment if this Environment was to be truly subservient to the Rural Production Environment.
5. The Countryside Environment noise rules are appropriate to the Rural Production Environment.
6. A Noise Control Boundary approach is recommended for the Strategic Rural Industry Environments.
7. No change to the vibration rules within the District Plan are required.

Subject to the adoption of the recommended noise rules, the Rural Environment will cater for the broad mix of activities that occur within it, without significant restrictions on industrial activity or reductions in residential amenity.

APPENDIX A RECOMMENDED CHANGES TONOISE RULES

Note: in the following document, the changes decision changes are given in **red** and the recommended PC85 changes in **dark green (emboldened)**.

NAV.6.1 Noise Arising from Activities within Environments

The following noise limits shall apply within and between Environments:

Noise emitted from any site in the following Environment	Noise measured within the applicable boundary of any of the following Environments (refer to following table for applicable assessment location)	Daytime 0700 to 2200 hours	Night-time 2200 to 0700 hours		Notes 8,9
		dB L _{Aeq}	dB L _{Aeq}	dB L _{AFmax}	
Business 2 Business 4 Marsden Point Port	Living 1, 2, 3 Open Space Coastal Countryside Urban Transition Countryside Kamo Low/Medium Density Living Rural Village Residential Rural Living Rural Production Rural (Urban Expansion)	55	45	75	
Business 4 Marsden Point Port Rural Village Industrial	Living 1, 2, 3 Urban Transition Countryside Rural Village Residential Rural Living Rural Production Rural (Urban Expansion)	55	45	75	
All Environments other than: -Business 2 -Business 4 -Marsden Point Port - Rural Village Industrial - Strategic Rural Industry [ALL SRIE]	Living 1, 2, 3 Coastal Countryside Urban Transition Kamo Low/Medium Density Living Rural Village Residential Rural Living Rural (Urban Expansion)	50	40	70	1, 2, 3
	Countryside Open Space Rural Production	55	40	70	1, 2, 3

Noise emitted from any site in the following Environment	Noise measured within the applicable boundary of any of the following Environments (refer to following table for applicable assessment location)		Daytime 0700 to 2200 hours	Night-time 2200 to 0700 hours		Notes 8,9
			dB L _{Aeq}	dB L _{Aeq}	dB L _{AFmax}	
All Environments other than: -Strategic Rural Industry [All SRIE]	Business 1 Town Basin		60	55	80	4,5
	Business 2 Airport Bulk Format Retail		65	60	80	
	Business 3 Kamo Activity Precinct Rural Village Centre		60	50	75	
	Business 4 Marsden Point Port Rural Village Industrial Strategic Rural Industry [all SRIE]		75	75	-	
	Port Nikau and Marsden Primary Centre - Noise Zone 1		65	65	70	3
	Port Nikau and Marsden Primary Centre - Noise Zone 2		60	55	70	3
	Marsden Primary Centre - Town Centre		55	45	70	3
	Kauri Strategic Rural Industry	At the Kauri Milk Processing Site – Noise Control Boundary	Outer	55	45	75
Crofts Timber Strategic Rural Industry	At the Crofts Timber – Noise Control Boundary	Inner *(if required)				9
		Outer	TBC	TBC	TBC	
GBC Strategic Rural Industry	At the GBC – Noise Control Boundary	Inner *(If Required)				9
		Outer	TBC	TBC	TBC	
Mineral Extraction Areas	Any noise sensitive activity not owned or controlled by the quarry owner or operator	Low noise Environment			6,7	
			50	40	70	
		High noise Environment				
			55	45	75	

The above noise rules shall apply within the relevant boundary assessment location as set out below:

Site boundary	Notional Boundary
<ul style="list-style-type: none"> • Living 1, 2 • Kamo Low / Medium Density Living • Bulk Format Retail • Kamo Activity Precinct • Open Space • Business 1, 2, 3, 4 • Town Basin • Airport • Marsden Point Port • Port Nikau - Noise Zone 1 and 2 • Marsden Primary Centre - Noise Zone 1 and 2 • Marsden Primary Centre - Town Centre • Rural Village Industrial • Rural Village Centre • Rural Village Residential 	<ul style="list-style-type: none"> • Living 3 • Coastal Countryside • Urban Transition • Countryside • Rural Living • Rural Production • Rural (Urban Expansion) • Any noise sensitive activity not owned or controlled by the quarry owner or operator in a mineral extraction area
<p>Note: Except that where noise is generated from the Kauri Milk Processing Site, the noise rules shall apply at the Kauri Milk Processing Site – Noise Control Boundary as shown on Planning Map [xxx] [INCLUDE OTHER SRIES ALSO]</p>	

Notes:

- 1 Normal residential activity occurring in ~~Living~~ **any** Environments such as children’s play, spontaneous social activities, lawnmowing and home maintenance work undertaken by/for the occupier is excluded from compliance with the noise rules during the daytime provided such activity is reasonable in terms of duration and noise level and in the case of home maintenance does not exceed the rules for construction noise. This exclusion does not apply to non-residential land use within ~~the Living~~ Environments (such as childcare centres).
- 2 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;
 - ~~noise which originates from animals that are under the control of humans (e.g. milking cows)~~

- 3 NAV.6.1 shall not apply if the activity under consideration is a mineral extraction activity included in the Appendix 14 Schedule of Existing Mineral Extraction Areas and is located within a Mineral Extraction Area. Where this occurs the limits and stated timeframes in ~~Mineral Extraction Rules in Chapter 64 and a~~ Appendix 14 shall apply.
- 4 Noise generated by temporary activities in the Town Basin Environment may exceed the noise rules in any Environment for 12 days every calendar year provided that noise does not exceed a level of 65 dB L_{Aeq} between 0900 and 2300 hours at the boundary of any Living Environment.
- 5 In the Business 1 Environment the “daytime” noise standard shall apply between 0700 and 0000 hours (midnight) on Fridays and Saturdays. The “night-time” noise standard shall apply between 0000 and 0700 hours on Saturday and Sunday mornings.
- 6 In Mineral Extraction Areas the “daytime” noise standard shall apply between 0630 and 2130 hours. The “night-time” noise standard shall apply between 2130 and 0630 hours.
- 7 Except where an alternative noise limit is provided for the activity within the District Plan [See Appendix 14 – Schedule of Existing Mineral Extraction Areas] then the activity shall comply with the noise limit stated within the notional boundary of a noise sensitive activity not owned or controlled by the quarry owner or operator.
- 8 NAV.6.1 shall not apply to the following specific activities which are provided for elsewhere:
- Construction activities. Refer to Section [NAV.6.2] for specific rule.
 - Wind turbines and wind farms. Refer to Section [NAV.6.3] for specific rule.
 - Shooting ranges. Refer to Section [NAV.6.4] for specific rule
 - Helicopter and aircraft landing areas. Refer to Section [NAV.6.7] for specific rule.
 - Engine testing at the airport. Refer to Section [NAV.6.8] for specific rule.
 - Noise from explosives. Refer to Section [NAV.6.9] for specific rule.
 - Temporary military training activities. Refer to Section [NAV.6.10] for specific rule.
 - Bird Scaring devices. Refer to Section [NAV.6.11] for specific rule.
 - Road traffic noise. Refer to Section [NAV.6.12] for specific rule
 - Frost fans. Refer to Section [NAV.6.13] for specific rule
 - Emergency Generator Testing. Refer to Section [NAV.6.14] for specific rule
- 9 The noise rules shall not apply to the following activities:
- Level crossing warning devices
 - The operation of emergency service vehicles or emergency callout sirens.
 - Noise from ~~Aircraft movements and helicopters when in flight~~
 - Unamplified noise from standard school outdoor activities where this occurs between 0700 and 1800 hours Monday to Sunday.
 - Rail movements within Fonterra’s Kauri Milk Processing site (the area encompassed within Scheduled Activity 15); excluding the loading and unloading of goods from trains within the site.
 - Emergency generators used to ensure the continued operation of network utilities. This exemption shall not include emergency generator testing which are required to comply with NAV.6.14.

NAV.6.5 Sound Insulation Requirements

1. Any noise sensitive activity established within a Business 1, 2, 3, Town Basin, **Rural Village Centre**, Port Nikau Noise Zone 1 or 2, Marsden Primary Centre Noise Zone 1 or 2 Environments or within the **[Kauri Milk Processing Site, Crofts Timber, GBC] – Noise Control Boundary** shall be designed and constructed to ensure the following internal design noise levels are achieved.

	2200 – 0700 hours	0700 - 2200 hours	0700 – 2200 hours
Business 1 Business 2 Business 3 Kamo Activity Precinct Town Basin Rural Village Centre [Kauri Milk Processing Site, Crofts Timber, GBC] -Noise Control Boundary	30 dB L _{Aeq}	40 dB L _{Aeq}	35 dB L _{Aeq}
Port Nikau and Marsden Primary Centre Noise Zone 1 and 2	35 dB L _{Aeq}	45 dB L _{Aeq}	35 dB L _{Aeq}

2. For design purposes, the following external L_{eq} noise levels shall be used. These noise levels shall be assumed to be incident on the façade.

Environment	Design noise level (dB L _{eq}) - incident							
	63	125	250	500	1k	2k	4k	dBA
Bedrooms and Sleeping Areas	Hz	Hz	Hz	Hz	Hz	Hz	Hz	
Business 1 Town Basin	66	65	55	54	49	42	38	55
Business 2 Port Nikau and Marsden Primary Centre Noise Zone 2	67	64	61	58	55	52	49	60
Business 3 Rural Village Centre	57	54	51	48	45	42	39	50
Port Nikau and Marsden Primary Centre Noise Zone 1	72	69	66	63	60	57	54	65
Kauri Milk Processing Site – Noise Control Boundary	65	60	53	45	40	38	35	50
[Crofts Timber, GBC] – Noise Control Boundary	TBC							
Other Habitable Rooms								
Business 1 Town Basin Business 3 Rural Village Centre	71	70	60	59	54	47	43	60
Business 2 Port Nikau and Marsden Primary Centre Noise Zones 1 and 2	72	69	66	63	60	57	54	65
Kauri Milk Processing Site – Noise Control Boundary	75	70	63	55	50	48	45	60

[Crofts Timber, GBC] – Noise Control Boundary	
--	--

TBC

Note: Where windows are required to be closed to achieve these sound levels the ventilation requirements of the New Zealand Building Code shall be achieved.

Note: A certificate from a Recognised Acoustician, confirming that the building accommodating the noise sensitive activity will achieve the minimum sound insulation requirements, is required to confirm compliance with NAV.6.5

FURTHER CHANGES:

NAV6.11 Alter “Countryside” and “Coastal Countryside” to “Rural Production”

NAV 6.13 Alter “Countryside” and “Coastal Countryside” to “Rural Production”