

WHANGAREI DISTRICT PLAN REVIEW
Recommendations for Revision
Rp 001 2014326

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Project: **WHANGAREI DISTRICT PLAN REVIEW**

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1.0 INTRODUCTION

Marshall Day Acoustics has been engaged by Whangarei District Council to review the existing plan and to provide recommendations for revision. The brief for this project is to provide a single section or chapter containing all referenced noise and vibration rules. Council require that the noise and vibration rules be updated and located in a simplified single reference chapter.

This report provides a summary of recommendations for the District Plan review. The bulk of our recommendations are as contained in Appendix A; this appendix proposes new rules for the chapter. The body of this report discusses each proposed section and provides supporting comment where necessary.

2.0 PROPOSED CHANGES

This section provides supporting comments on the proposed District Plan noise rules in Appendix A.

2.1 General Changes

The previous Plan noise rules were written as “dBA L_{10} ” and “dBA L_{max} ”. In this nomenclature, “dBA” referred to an overall decibel level where an “A-weighting” had been applied. The “ L_{10} ” level referred to the level that was exceeded for 10% of the measurement period and the “ L_{max} ” level referred to the maximum noise level in any measurement period. This form of nomenclature is no longer used as New Zealand now follows international guidelines for describing noise. The following summarises the changes:

- “dBA L_{10} ” is now written “dB L_{A10} ”
- “dBA L_{max} ” is now written “dB L_{AFmax} ”
- “dBA L_{eq} ” is now written “dB L_{Aeq} ”

It is recommended that noise rules in this document be generally in accordance with New Zealand and international conventions for environmental noise. This means that noise rules are recommended in terms of the “ L_{Aeq} ” noise level (to provide amenity for outdoor activities during the day and for sleep during the night period) and in terms of the “ L_{AFmax} ” noise level (to provide a suitable level of amenity for sleep). It is recommended that the L_{A10} noise level no longer be used.

The previous rules in the Plan were written in terms of the L_{10} noise level (or “ L_{A10} ” in the new nomenclature). For most sources of noise, the change from L_{A10} to L_{Aeq} noise rules would not result in materially different outcomes. In most cases, a change from a noise rule of (say) 50 dB L_{A10} to 50 dB L_{Aeq} represents either no change to the overall level of noise permitted or (at worst), a just perceptible increase.

Throughout this document, noise limits have been expressed as “dB L_{Aeq} ” rather than “dB $L_{Aeq(15\text{ min})}$ ”. The lack of inclusion of the “15 min” time interval is intentional. It is our view that provision of a specific time interval is not required and may lead to ambiguity, confusion or disagreement. This is because a measurement time period of 15 minutes is not always appropriate for every sound source. Furthermore, the use of the prescriptive time interval may lead to disagreement over whether the “time averaging” provisions of

NZS6802:2008 should be applied. It is considered that the absence of a specific time interval strengthens the rule rather than weakens it and makes it more robust as a result of diminished ambiguity.

Regarding assessment locations, we consider that noise levels should be assessed “within the boundary” or “within the notional boundary”. This is preferable to “at or within the boundary” which indicates noise may be assessed at the boundary OR within the boundary, but perhaps not both. It is also in accordance with Section 8.4.3 of NZS6802:2008 which provides recommendations for assessment locations.

The following sections discuss our recommendations for each environment.

2.2 General Environment Noise Rules

2.2.1 Living Environments

The relevant **amenity value** for this area is “low levels of noise, visual pollution, odour and nuisances”. The relevant **objectives** require that the characteristic values of each environment are maintained, that amenity is not reduced to levels below that which is desirable for people’s health and safety and that activities that demand a high level of amenity do not unduly compromise other land uses. The **policies** seek to ensure that non-residential activities in Living environments do not have adverse effects that are significantly greater than those associated with Living environments.

The existing noise rules contained in the District Plan for Living 1, 2 and 3 environments are:

- 45 dB L_{A10} during the daytime¹
- 35 dB L_{A10} and 60 dB L_{AFmax} to be achieved during the night-time.

The noise limits were applied at the site boundary.

These are stringent limits. They are much more stringent than guidelines contained in New Zealand Standards (such as NZS6802:2008) or in international guidelines such as the World Health Organisation Guidelines for Community Noise. These are discussed below

NZS6802:2008

This standard provides the following *guidelines*. It is suggested that these be applied within the notional boundary of rural dwellings and within the site boundary of residential dwellings.

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

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

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

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

¹ Note that in this report “day-time” refers to 0700 to 2200 hours and “night-time” refers to 2200 to 0700 hours unless stated otherwise

World Health Organisation

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

In both cases the guidelines are significantly higher than in the existing Council noise rules.

The L_{AFmax} noise limit in NZS6802:2008 is significantly higher than that recommended by the World Health Organisation (WHO). The WHO guidelines are based on setting limits to achieve 45 dB L_{AFmax} inside bedrooms at night to provide a high level of protection for sleep disturbance. These guidelines are widely regarded as unreasonably stringent and not necessarily representative of noise that is likely to be typically received in residential environments.

Discussion

While a low level of noise in residential areas is desirable, it is our opinion that the limits contained in the existing plan are stricter than necessary. In the majority of the WDC Living 1 and 2 environment, the existing ambient noise (L_{Aeq}) will generally be above these levels. At locations near busy roads, it is likely that even the background level of noise (L_{A95}) would be above these levels.

In our experience, the provision of a very low noise limit in environments that already receive moderate levels of ambient noise does not necessarily ensure increased levels of amenity; rather it tends to increase consenting and compliance costs and uncertainty to activities seeking to establish within the area without necessarily resulting in significant improvements in residential amenity. In this regard, the provision of a low limit is not necessarily good management of resources and could be seen as contrary to the purposes of the Resource Management Act.

For the reasons given above, it is recommended that levels of 50 dB L_{Aeq} (daytime) and 40 dB L_{Aeq} (night-time) be adopted at the site boundary at Living environments. It is considered that these limits are 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. These limits are typical of many other District Plans. They would typically not allow for activities such as childcare centres to establish within Living areas as a permitted activity (unless on large sites); such activities should, in our view, be assessed as discretionary activities. A higher limit of 55 dB L_{Aeq} (daytime) and 40 dB L_{Aeq} (night-time) is recommended for open space environments to allow communities to interact with these spaces and reducing the requirement to erect noise barriers along the open space boundaries.

It is recommended that the noise limits continue to be applied within the site boundary at Living 1 and 2 environments. This is appropriate as these tend to be small allotments where the majority is used for “residential living”. On these sites, it is typical for residents to use their entire property for the purpose of relaxation (at times). For this reason, a site boundary noise rule is appropriate, as it provides the required level of protection to the entire property.

In Living 3 environments, the suitability of a site boundary noise rule is less clear. The Living 3 environment contains some areas where allotments are small, however there are also allotments which are relatively large and are used for “rural living” type activity. In these areas, it could also be reasonable to apply the noise rules within the notional boundary as the majority of the site is not generally used for rest and relaxation but is often used for grazing, horticulture or as a vegetated area.

While the assessment locations may not result in materially different levels of noise in most cases, in general the notional boundary approach would favour adjacent business, rural land uses and other Living 3 activity (as these could potentially make more noise at their boundary) while a site boundary approach favours the residential amenity of the subject site (as the entire site is protected and noise levels at the dwelling will generally be lower). After some consideration, it is recommended that a notional boundary approach be taken. This approach will not alter the assessment location for small allotments but will mean that the larger allotments will have a noise environment more in keeping with a “rural” environment. This approach will ensure that the productive use of adjacent rural land will be less compromised by encroaching urban development.

It is recommended that a noise limit of 70 dB L_{AFmax} be adopted in the Living 1, 2, 3 and Open Space environments during the night-period. This is a significantly higher level of transient noise than was previously allowed for but is considered to be appropriate for residential environments where typical residential activity may regularly exceed 60 dB L_{AFmax} . While 60 dB L_{AFmax} provides a higher level of protection for sleep disturbance, it is considered that the risk of sleep disturbance at 70 dB L_{AFmax} is acceptable and that this level of noise strikes a balance between the use of property during the evening/night and the need to ensure sleep is not unreasonably disturbed.

It is noted that the above rules would not generally allow for medium to large childcare centres to establish in Living environments as permitted activities; it is considered appropriate to assess these as discretionary activities under the above framework. It is noted that childcare centres may be acceptable where they exceed the above noise rules; however it is considered appropriate to assess this on a case-by-case basis.

2.2.2 Countryside, Coastal Countryside and Urban Transition

The relevant **amenity value** for the Countryside area is “low noise levels, particularly at night”. Noise is not mentioned in the amenity values of the Coastal Countryside or Open Space environments. The relevant **objectives** are as per the Living environments. The **policies** for the Countryside environment makes specific reference to reverse sensitivity effects and protecting the amenity values of the area.

Our measurements show that these environments can have low background noise levels in the Whangarei District. Night-time background noise levels of around 20 to 25 dB L_{A95}

are possible during still conditions. In areas that have very low background noise levels, even relatively low levels of noise can sound intrusive. A reasonably high level of protection is therefore required to ensure the amenity of the area is not compromised. However regardless of the low background noise levels, the provision of extremely stringent night-time noise rules (i.e below 40 dB L_{Aeq}) is not considered necessary.

Pre 2008 versions of NZS6802 provided guidance in setting limits that related to the background noise level. These standards suggested that the noise limit should not exceed the background noise level by 10 decibels or more, but that this approach was not appropriate when background sound levels were “very low”, i.e lower than 30 decibels. The standards stated that *“at these times other sounds which might exceed the background level, e.g. by 10 dB or more, may still be acceptable to the community”*.

Regardless of the existing background noise level, it is considered that rural environments should be considered primarily as “industrial areas” where the primary focus of the land use is for the production of goods. While people do live in the Countryside environment and require a certain level of amenity, the use of the land for production must be preserved. Rural areas may at times have very low background noise levels however activities occurring on rural land can be noisy during day and night. In order to provide for the efficient use of the land a noise rule that is well above the background noise level is generally considered appropriate.

The existing rules do not apply to limited duration agricultural, horticultural and forestry activities provided that they comply with the provisions of Section 16 of the RMA. The exclusion of these activities allows a more stringent limit to be applied to other “non-rural” and permanent activities. It is noted that in some other Districts only mobile or portable equipment is exempted from the noise rules. Noise from animals is often exempted in rural areas also.

Our company has noted an increasing number of issues surrounding noise from fixed plant such as generators and irrigation pumps. Noise from such static sources is much more readily controlled and can such plant generally be sited to achieve the relevant District Plan noise limits. This is not generally the case for mobile plant. For this reason, it is generally recommended that mobile plant be exempted from the noise rules, but not static plant.

An alternative approach to the above would be to allow for liberal noise limits during the daytime that would apply to “farming and forestry” activities. Either approach has merits; however in this case it is considered that maintaining a more stringent approach non-rural and permanent rural activities during the night-time is appropriate in the environment and is consistent with the Plan policies.

It is recommended that during the daytime a noise rule of 55 dB L_{Aeq} be adopted within the Countryside environment. This is greater than the existing noise rule and allows for permanent rural activities to operate with relatively few restrictions. In the Coastal Countryside environment and Urban Transition environments, it is considered that a noise rule of 50 dB L_{Aeq} be adopted.

During the night period, it is recommended that the existing night-time noise rule be increased at the Countryside, Coastal Countryside and Urban Transition environments.

The existing noise rule of 35 dB L_{A10} is very stringent and allows for little permanent or non-rural activity in the area. The provision of a 40 dB L_{Aeq} noise rule would still provide for a reasonable level of amenity in the area but would allow for greater flexibility in the establishment of permanent and non-rural activities. The rule is considered to be in accordance with the amenity values of the environment.

As with the Living environments, it is recommended that a night-time L_{AFmax} noise limit of 70 dB L_{AFmax} be adopted. This will ensure there is only a low level of risk of sleep disturbance in relatively quiet residential environments.

The use of frost fans within rural environments is a special case. A specific rule has been provided for frost fans as this plant is a special case that must operate during the night period.

2.2.3 Business Environments

The Business environment **amenity values** recognise that “business” environments require some level of amenity as these environments are where “many people spend a significant proportion of their day”. The plan goes on to state that “levels of amenity within the Business vary”. The relevant **objective** for these environments is “adverse effects on amenity values do not result in a reduction of amenity values below that which is desirable for people’s health and safety”. There are no **policies** that specifically relate to Business environments.

Business environments are less sensitive to noise than rural and residential areas. For some Business such as those containing heavy industry, little control between the environments is required provided noise does not result in damage to hearing. For other environments, such as those containing cafes and shops, noise levels from adjacent properties must be such that conversation can be carried out.

We make the following comments on each environment:

Business 1: This environment relates to the CBD area. The CBD is intended to operate as a quasi mixed-use area, albeit it is understood that few people currently live within it. The CBD is intended to favour nightlife, cafes and restaurant as well as retail, notwithstanding that provisions for residential occupants must be provided.

The previous noise rule of 60 dB L_{A10} allows for moderate business activity during the daytime while ensuring that noise levels remain generally at or near the existing level of ambient noise from traffic in the CBD area. A level of 60 dB L_{A10} will ensure that speech intelligibility outside or inside shops is adequate and ensures that alfresco dining is not significantly impacted upon from adjacent premises. The majority landuse within the CBD consists of offices and retail and these will operate well below this limit at all times.

During the night period, a limit of 60 dB L_{A10} is permissive given that there are no rules prohibiting residential development within the CBD. While there are currently few existing dwellings or apartments in the CBD, future development is possible and is not prohibited by the plan. Whether or not this is desirable is a planning matter; however it is understood for the purposes of this report that residential dwellings will continue to be permitted in business areas. If the plan is changed to exclude these areas in the future, our recommendations of appropriate noise levels would also change.

Where bars and residential dwellings are adjacent, conflict often arises. In areas with high densities of bars and residential areas (e.g. Queenstown) noise complaints are endemic. However even relatively low density mixed-use areas suffer from this type of conflict. Inappropriately managed mixed-use areas are undesirable as they lead to community dissatisfaction, health effects and economic uncertainty for business owners.

In residential or short stay accommodation near bars, it is our view that an internal noise level of below 30 dB $L_{Aeq(15\text{ min})}$ is necessary to provide a suitable environment for sleep. Levels of 35 dB $L_{Aeq(15\text{ min})}$ or more are intrusive and lead to complaints. In order for residential dwellings to coexist with bars in the Business 1 environment, the noise limit must be appropriate and suitable sound insulation requirements must be included in the plan.

In order to allow for the future mixed-use development of the CBD, the following is recommended:

- Reduce the night-time noise limit to 55 dB L_{Aeq} . No control of low frequency noise has been suggested (other districts such as South Waikato and Auckland (PAUP) control low frequency noise in business areas). Low frequency controls may be useful in established bar areas where high levels of bass noise are likely to occur, however the control over low frequency would provide further complication of assessment and for that reason has not been recommended.
- Provide an extension of the daytime period until 12pm in the environment on Friday and Saturday nights.
- Provide a sound insulation requirement/internal noise limit that all new residential dwelling bedrooms must achieve. It is expected that this will require new apartments in the city to be constructed of masonry, have heavier than standard ceilings and thick laminated glazing. Mechanical ventilation will also be required.

If the Business 1 noise rule were to remain at 60 dBA during the night-time, it would require apartments to be constructed using more expensive noise control measures, or alternatively, potentially receive higher-than-acceptable internal noise levels. A noise rule of 60 dBA would allow for bars with moderate sized outdoor areas to establish within around 30 metres from dwellings however, a 55 dBA noise rule would require setbacks of around 60 metres. Where outdoor areas do not form part of the operation, the noise limits can be achieved through the provision of suitable façade sound insulation, sound locks etc.

The above approach is considered to be an acceptable compromise where residential and bars must coexist, however it is inevitable that such controls will affect bar operation to a degree. The establishment of an “entertainment precinct” (as discussed below) may be a more suitable approach to avoiding inevitable mixed-use conflicts. It is recommended that this approach be considered by Council.

Business 2: This environment is understood to cater for “light industry”. It is understood that residential activity can currently establish in these environments, however WDC consider that this environment is generally “less appropriate” for residential living.

The current noise rule of 65 dB L_{A10} at all times allows for a high level of activity. For the majority of retail activity in these areas, noise emissions would be well below this limit at all times. It is likely that even manufacturing, fabrication or panel beating operations would typically comply with this limit.

The noise rule allows noisier activities to establish in the area and recognises that the adjacent activities are not intended to be noise sensitive. The environment allows for joinery operations, panel beaters and other noise generating businesses. Such activities may not be appropriate in other Business environments (such as Business 3) that are near to Living areas. Such activities generally operate during the day.

Business 2 areas can receive high levels of street traffic noise and ambient noise levels of 60 to 70 dB L_{Aeq} would be typical on relatively busy streets during daytime. Traffic in these areas is likely to be intermittent and background levels would typically be around 50 dB L_{A90} . Traffic and ambient noise levels would reduce significantly during the night period in these areas.

In general, Business 2 environments can support high daytime noise rules given their typical land use and moderate to high levels of existing ambient noise.

It is understood that residential development is permitted in the Business 2 environment subject to the provision of suitably sized balconies or outdoor living areas. It is understood that few residential dwellings exist within this environment currently; however, future development could occur. The viability of the Business 2 environment for business should be protected.

Based on the above, it is recommended that the noise rule within the Business 2 environment be 65 dB L_{Aeq} during the day and 60 dB L_{Aeq} during the night. In this environment, it would be reasonable to prohibit residential development as any residential dwelling could be subject to high noise levels². Prohibiting dwellings from establishing in this area is considered the preferred approach (note that if this was the case a higher night-time limit could be supported). An alternative, but also appropriate, approach would be to make all dwellings in this environment fully discretionary.

If no prohibition is considered appropriate by Council, it is recommended that any dwellings are required to achieve the same internal noise level as Business 1 environments on the basis that internal noise levels will be higher than ideal at times. It is considered that this reduced level of amenity is appropriate given the generally industrial and business nature of the environment. It is considered that this approach strikes a balance between the needs of business operators in the environment and the amenity required of people who may choose to live in this potentially noisy area. However it is noted that this approach does not ensure that reverse sensitivity effects would never arise.

Business 3: The Business 3 environment is intended to be a business / mixed use environment favouring daytime commercial operations (offices, food outlets, etc) with

² Note that if residential dwellings were prohibited from this area, night-time noise levels of 65 dB L_{Aeq} would be acceptable within the environment.

some potential for residential development. The environment is not generally intended to allow for late night entertainment.

The existing Business 3 environment noise rule is 55 dB L_{A10} at any other site in the environment at any time. This noise limit is relatively stringent during the daytime and is similar to what would be suitable at a residential area. It is expected that the provision of a 60 dB L_{Aeq} limit during the daytime would be reasonable and would allow for increased levels of activity within this environment. This is appropriate where “vibrancy” during the daytime is to be encouraged.

The 55 dB L_{A10} limit also applies at night which is appropriate where sleep disturbance is not generally an issue. In general, most business activities that exist in this area would generate much lower levels of noise than those allowable under the plan. However it is noted that nightclubs or bars do have the potential generate noise levels that could approach or exceed these limits, depending on their operation. Residential activities can establish inside these areas and thus a suitable level of protection for this land use is required.

It is considered appropriate to apply a noise rule of 50 dB L_{Aeq} in this environment at night. This provides a higher level of protection to residential development and will preclude some noisier night-time businesses from operating. As with the other Business, a sound insulation requirement is recommended for any residential activity establishing within the environment. As there is a reduced night-time noise limit, this sound insulation measure would only require a modest level of attenuation and mechanical ventilation.

This approach may preclude community taverns from establishing in these areas where they have outdoor drinking and dining areas operating after 10pm. Such activities would need to be assessed as discretionary activities under the suggested framework.

Town Basin: The Town Basin contains several sub-environments. The **policies** for the environment states “To carefully manage and mitigate effects of mixed use development in the Town Basin Environment, including, but not limited to, traffic generation, bulk and location of buildings, and cross boundary conflicts (e. g. glare and noise)”. The policies also state that the special amenity values of the Town Basin are to be protected and enhanced.

The Town Basin environment noise rule is similar to the Business 3 environment noise rule (55 dB L_{A10} at all times). This rule is relatively stringent during the daytime and would likely provide some restriction over the use of outdoor areas for hospitality operations. The noise rule is likely to be readily complied with by all retail activities.

The noise rule allows for a modest level of activity during night-time. It is understood that the Town Basin is intended to be a mixed-use environment and the dwellings or apartments could be constructed within the environment in the future. The existing rule provides a relatively balanced approach to residential and hospitality activity within the environment during the night-time without favouring one in particular. This is suitable for a mixed-use environment, but would not be suitable for an entertainment precinct.

We recommend that noise rules as applied to the Business 1 environment be also applied in the Town Basin environment. This allows for a relatively high level of daytime noise,

but provides controls over the level and nature of entertainment noise during the night period.

Noise to other environments: The District Plan has historically applied less stringent noise rules between Business environments and Living environments than it has between adjacent properties within the Living environments. For example, the existing noise rules for Business-to-Living/Rural environments are:

Business 1: 50 dB L_{A10} (daytime) and 40 dB L_{A10} / 65 dB L_{AFmax} (night-time)

Business 2: 50 dB L_{A10} (daytime) and 45 dB L_{A10} / 70 dB L_{AFmax} (night-time)

Business 3 / Town Basin: 50 dB L_{A10} (daytime) and 40 dB L_{A10} / 65 dB L_{AFmax} (night-time)

Business 4: 55 dB L_{A10} (daytime) and 45 dB L_{A10} / 75 dB L_{AFmax} (night-time)

Marsden Point Port: 55 dB L_{A10} (daytime) and 45 dB L_{A10} / 65 dB L_{AFmax} (night-time)

Whereas the limits between Living environments are 45 dB L_{A10} (daytime) and 35 dB L_{A10} (night-time).

It is common in District Plans throughout New Zealand for less stringent noise rules to apply at a business-residential zone interface than apply within the residential area. This recognises that there is likely to be a reduced (but still reasonable) level of amenity for residents who live adjacent to business environments. Businesses operating at the periphery of the business environment are required to comply with a limit that is more stringent than to other business sites, but more liberal than would apply within the Living environment.

In Whangarei, this balanced approach can still ensure that noise levels are reasonable at Living environments through the provision of appropriate noise rules. It is considered that the following should apply:

Business 2, 4 and Marsden Point Port should be subject to daytime noise rules of 55 dB L_{Aeq} . During the night-time, a noise limit of 45 dB L_{Aeq} and 75 dB L_{AFmax} should apply. In general this represents only a minor change to what is currently permitted in the Plan; it is noted however that the changes to the noise limits applying to the Business 2 environments are more significant. Nonetheless, it is considered that background noise levels during the daytime near these environments would be such that a daytime noise level of 55 dB L_{Aeq} and a night-time limit of 75 dB L_{AFmax} would not be unreasonable. This level of noise is consistent with national and international guidelines (refer to Living environment Section 2.2.1 above)

In all other Business, activities would need to meet the proposed Living environment noise rules. These rules are marginally more liberal than the existing noise rules given the change from L_{A10} to L_{Aeq} proposed.

Lack of entertainment precinct: It is noted that in all the main downtown area that residential dwellings are permitted in all environments and that there is no “entertainment precinct” where dwellings are excluded. It is recommended that WDC give consideration to providing such a precinct in the Plan if a desirable area for bar and nightclubs can be identified. The precinct would need to include the following planning measures:

1. Dwellings, short stay accommodation and other activities where sleep disturbance is possible would be prohibited from this area;

2. Elevated night-time noise limits would apply
3. A non-residential buffer between this area and any adjacent mixed-use area should be provided.

The provisions recommended in the CBD are currently a compromise between providing an acceptable level of amenity for residential users and the needs of bar owners to allow for outdoor activity after 10pm. This is not ideal; the entertainment precinct approach would be an appropriate solution to this.

2.2.4 Airport Environment

The existing airport environment noise rules are appropriate for the adjacent Living environment. The noise rules suggested in this report for Living environments are similar to those that are currently applied to the airport environment. It is recommended that the airport environment rules be consistent with the Living environment noise limits, namely 50 dB L_{Aeq} (daytime) and 40 dB L_{Aeq} and 70 dB L_{AFmax} (night-time).

It is recommended that the existing exclusions for aircraft testing be retained notwithstanding that the limits be changed from L_{A10} to L_{Aeq} .

2.2.5 Port Nikau and Marsden Primary Centre Environments

The noise rules for these environments are similar. We understand that these noise rules have been brought into the District Plan through Plan changes. Both environments are intended to be developed as mixed-use areas and it is understood that the intention is for residential living to co-exist with industrial and commercial areas in these areas to some extent.

We make the following comments on the noise rules in each environment:

Port Nikau

The Port Nikau environment rules split the environment into noise “zones”. Zone 1 has noise rules that apply to activities within the zone, outside the zone in Noise Zone 2, and outside the zone in Living and Countryside Environments. In Zone 2, no rules apply to the Zone 1 boundary. The noise rules apply within Noise Zone 2 and to any Living and Countryside environment.

It is understood that noise sensitive activities such as residential dwellings, accommodation, health care and some dining areas are prohibited from some (but not all) of Noise Zone 1.

A sound insulation rule is included in the environment which requires the noise level in bedrooms to be no more than 35 dB $L_{Aeq(60\ min)}$ and no more than 45 dB $L_{Aeq(60\ min)}$ in other habitable areas. The internal noise limits are likely to be achievable in Noise Zone 1 with masonry constructions, and heavier-than-standard glass and ceilings.

The existing noise rules would be generally appropriate where commercial and industrial activities occur in Noise Zone 1 and other more “noise sensitive” activities occur in Noise Zone 2. The noise rules provide a relatively low level of amenity for residential dwellings establishing in Noise Zone 1 as the internal noise level is relatively high.

The absence of a noise rule between Noise Zone 2 and Noise Zone 1 does not provide protection to noise sensitive activities establishing in Noise Zone 1 from any activity occurring in Noise Zone 2

Overall it is considered that the noise rules in this zone can be simplified through:

- Requiring any activity in any environment to achieve a 65 dB L_{Aeq} (all times) and 70 dB L_{AFmax} (night) limit within Noise Zone 1
- Requiring any activity in any environment to achieve a 65 dB L_{Aeq} (day) and 55 dB L_{Aeq} / 70 dB L_{AFmax} (night) limit within Noise Zone 2.
- Requiring all activities to achieve the relevant Living or Countryside noise limits
- Providing the sound insulation requirement already anticipated in the environment.

Marsden Primary Centre

The Marsden Primary Centre noise rules are similar to those in the Port Nikau environment in that the noise rules are split into zones. However the rules as drafted in *Part D – Environment Rules - Marsden Primary Centre* are somewhat more confusing and difficult to interpret. It is understood that Noise Zone 1 generally applies to the heavy industrial land to the east, Noise Zone 2 generally applies to the light industrial land in the middle of the site. It is understood that the “Town Centre Environment” in Precinct 1 does not fall within a “noise zone” but rather has noise rules that are supposed to apply to this area separately. This information could be easily clarified with a map showing the noise zones.

We note the following:

- In Noise Zone 1 (this is understood to include the General Industrial area and the Neighbourhood Centre Commercial Policy areas) the noise rules are relatively liberal during the daytime and night-time. The rules are considered appropriate for industrial activities. A more stringent limit is applied for Noise Zone 1 activity received in Noise Zone 2; these rules are appropriate for mixed use areas and would be appropriate where some dwellings are located in Noise Zone 2.
- Activity in Noise Zone 1 is required to comply with residential type noise rules when “*Measured at the boundary of the nearest site in the Town Centre Environment or at the Notional Boundary of any residential unit in the Environment*”. It is unclear why this is worded in this way rather than simply requiring the limit to be met at any point within the Town Centre Environment as it applies to the Marsden Primary Centre.
- The only controls for activity within Noise Zone 2 appear to apply within Noise Zone 2. There do not appear to be controls to Noise Zone 1 or to the Town Centre Environment.
- The noise rules reference NZS6801:2008 and 6802:2008 for noise levels assessed within the Marsden Town Centre Environment. The rules reference the 1991 versions of the standards for activity measured outside the environment. It is

recommended that the 2008 versions be used in accordance with the recommendations made in this report.

As with the Port Nikau zone, it is recommended the noise rules be simplified as follows:

- Requiring any activity in any environment to achieve a 65 dB L_{Aeq} (any time) and 70 dB L_{AFmax} (night) limit within Noise Zone 1 as it applies to the Marsden Primary Centre.
- Requiring any activity in any environment to achieve a 65 dB L_{Aeq} (day) and 55 dB L_{Aeq} / 70 dB L_{AFmax} (night) limit within Noise Zone 2 as it applies to the Marsden Primary Centre.
- Requiring any activity in any environment to achieve a noise limit of 55 dB L_{Aeq} (day) and 45 dB L_{Aeq} / 70 dB L_{AFmax} within the Town Centre Environment as it applies to the Marsden Primary Centre.
- Requiring all activities to achieve the relevant Living or Countryside noise rules
- Requiring that any dwelling established in Noise Zones 1 or 2 be subject to a sound insulation requirement.

The requirement of any activity to achieve the recommended Living or Countryside noise rules represents a marginally (generally 2 to 3 dB) more stringent approach than exists currently. This does not represent a significant change and is consistent with amenity values throughout the rest of the District. It is likely that the noise rule within the Town Centre Environment would control the operation in any event.

2.2.6 Other Environments

It is understood that additional environments are proposed within the Plan (or are intended to be incorporated within the plan in the future). These environments are summarised as follows together with a discussion of appropriate noise limits:

Ruakaka Race Course: It is understood that this environment consists of an existing racetrack that will be rezoned subject to appeals. The environment is proposed to consist of four sub-environments, those being *western, southern, eastern and infield and racetrack*.

Western: It is understood this sub-environment is intended to be primarily residential on small allotments with some stabling. As such, it is expected that the noise rules proposed for the Living 1 and 2 environments would be most appropriate

Southern: It is understood this sub-environment is intended to be primarily residential on small allotments with some scope for training and riding of horses. As such, it is expected that the noise rules proposed for the Living 1 and 2 environments would be most appropriate.

Eastern: It is understood this sub-environment may operate as a mixed-use environment which may include a range of activities. The environment may include event spaces, restaurants, conference facilities as well as residential. Based on the suburban nature of the area surrounding it is considered appropriate to apply the Business 3 noise rules in this environment together with a suitable level of sound insulation to dwellings.

Infield and Racing Track: It is understood that this sub-environment will serve as an equine racing track. This environment does not require a high level of protection; the Business 3 noise rules are likely to be appropriate at the site boundary.

It is noted that racing tracks often have public address or amplified speech systems for the announcement of each race. Such systems may not comply with the abovementioned noise limits at locations near to the boundary. It is possible that noise from this activity should be exempt from compliance with the District Plan noise standards within the broader environment. This has not been included in the proposed rules as there is insufficient information available to determine if this is required.

Kamo Low and Medium Density Living: These areas are to be established around the Kamo Activity Precinct. In the low density environment it is proposed to establish residential living at a slightly greater density than in other environments. In the medium density area it is proposed to establish residential living at a higher density than elsewhere – it is expected that this will comprise of smaller detached houses, townhouses, apartments, etc.

Regardless of the density of living, it is considered that the proposed rules of 50 dB L_{Aeq} (daytime) and 40 dB L_{Aeq} , 70 dB L_{AFmax} (night-time) provides a good level of amenity for these areas. It is recommended that this forms the noise rule for these environments.

Kamo Activity Precinct: This environment is intended to be a mixed-use environment providing a mix of commercial and residential activities. The land is subject to traffic on Kamo Road and will generally receive moderate to high levels of noise during the daytime. It is considered that the proposed Business 3 noise limits are generally appropriate for this area and will provide a reasonable level of residential amenity during the daytime and night-time. A sound insulation rule to bedrooms of residential activities establishing in this area is appropriate.

Bulk Format Retail: This environment zoning is to be applied to land north of Okara Park/Toll Stadium. The land is currently zoned Open Space, Business 3 and Business 4. The land is already developed primarily as large format shops, however other land uses include marine and automotive services, car yards, laboratories as well as the existing stadium.

Land use will generally not generate significant noise and is relatively insensitive to noise. The proposed Business 2 noise limits are generally appropriate and will provide an appropriate level of sound insulation.

It is noted that stadia often require exemptions to the existing noise standard for concerts held on the grounds, as these concerts generally cannot meet commercial or residential noise limits at nearby properties. Provided the number of concerts held per annum is reasonable and the concerts cease at a reasonable hour, high noise limits can be supported.

Rural Living: It is understood that this environment will apply to historically created smaller lots in the “rural” area. The limits proposed for the Living 3 and Urban Transition environment are appropriate in this area, with the noise rule assessed at the notional boundary.

Mixed Use: Mixed-use environments outside of the CBD area should generally have the same noise limits as proposed for the Business 3 environment. The provision of a sound insulation rule is also considered appropriate. The noise rules applied to the Business 3 environment strike a reasonable balance between the needs of business to operate during the daytime and the needs of residential receivers to sleep during the night period.

Rural village: The rural village environment can be made up of three different sub-environments: Rural Village Residential, Rural Village Centre and Rural Village Industry.

Rural Village Centre: This provides for mixed use commercial shopping centres. It is appropriate to apply the Business 3 environment rules to this environment, together with the residential facade sound insulation requirements.

Rural Village Residential Environment: This provides for the residential areas adjacent to the abovementioned village centre. The Living 1 and 2 noise rules are appropriate as sites are expected to generally be less than 4000m².

Rural Village Industry: These are existing industrial areas within larger rural villages. They are understood to often be in proximity to the rural village residential environment. It is understood that the environment will be applied only to existing land uses and will not be provided to new land. It is likely that existing use rights may apply to some activities. It may be appropriate to apply the Business 2 noise limits to this environment as these provide a more liberal noise limit at the residential interface whilst still providing for an acceptable level of amenity.

2.3 Construction Noise

It is recommended that the District Plan simply reference New Zealand Standard NZS 6803: 1999 “Acoustics - Construction Noise”. This standard provides guideline values for construction noise. The construction standard provides guidelines on how and where construction noise should be measured, corrections for façade reflections, corrections for background noise, etc.

An alternative methodology is to state the NZS6803:1999 guideline values within the District Plan text, as is often done in other jurisdictions. However this is not recommended as the supporting text within the standard is important also; stating only the tabulated guideline values ignores the supporting information.

It is noted that often construction and demolition processes require equipment / processes that can generate noise levels above the construction noise standard guidelines. Typical examples include piling and rock breaking, however even activities such as earthmoving and demolition can breach the standard where large equipment such as hydraulic excavators and bulldozers are used. Such processes can be essential to completing construction projects and may have no practicable alternative and thus it is generally necessary to allow them with certain restrictions. It is typical for such activities to be granted consent subject to the provision of a suitable noise management plan that sets out communication, monitoring, noise mitigation measures, etc.

It is understood that WDC wish to establish a framework whereby activities generally fall into two categories with regard to noise: permitted and discretionary. For most construction projects near dwellings, activities such as piling, rock breaking and the use of

heavy machinery would exceed the construction noise limits from time-to-time. While every such activity could be assessed as a discretionary activity, it may be preferable to make such activities restricted discretionary (or controlled) with discretion restricted to whether construction is limited to appropriate times, no other practicable alternatives are available, an appropriate noise management plan has been provided, etc. This approach has not been included within the proposed rules and can be discussed if required.

For essential work within road carriageways, it is recommended that activities be excluded from compliance with the construction noise rules provided a suitable construction noise and vibration plan is provided. This will obviate the need for any assessment to occur which is considered to be an efficient way of proceeding given that road maintenance activities will generally not comply with the NZS6803:1999 noise guidelines in any event. This approach is also included in the Proposed Auckland Unitary Plan (PAUP) and is considered an efficient means of allowing road construction in the district.

2.4 Sound Insulation

It is considered that any residential dwelling established within a business or other mixed-use environment should be designed to achieve an internal sound level that is suitable for residential amenity.

It is common for conflict to arise in mixed-use environments when dwellings are located adjacent to bars and nightclubs. While sound insulation of dwellings can reduce the number and severity of complaints, it is ideal for true entertainment precincts to be free from residential development. Marshall Day Acoustics has advised other districts in the development of entertainment areas and recommends the following:

1. Dwellings are excluded from establishing as-of-right in any “precincts” of the city that are currently (or likely to be developed as) late night entertainment and clubbing areas; i.e. areas that are densely developed with bars and predominantly generate noisy music and people noise late at night. Residential accommodation in these areas can only be developed with bespoke sound insulation solutions and through the application for resource consent.

Note: In Whangarei city, bars and night-clubs are not located in one homogenous area but rather are located throughout the city. There is some accumulation of bars around the Cameron/Vine/Bank street areas, however these are generally interspersed and separated by other premises. As such, there does not appear to be merit in establishing such a precinct around any existing area in Whangarei. There may be merit in establishing such a precinct as a planning tool to encourage bars to locate in a certain area, however this is a planning matter for consideration by WDC.

2. Dwellings are permitted in areas where there is an existing mix of bars, clubs and restaurants but where these are generally outside the main, densely developed night-club “precinct”. In these areas, it is recommended that dwellings be designed to achieve a “level difference” of around 35 decibels. This would result in an overall “dBA level difference” of around 25 decibels where the external

noise level is from entertainment and music noise. This would result in internal noise levels of around 30 dBA being achieved where external noise levels are 55 dBA. People noise is also excluded from the assessment of noise levels in these areas.

Note: This describes the Business 1 and Town Basin environments well, however it is noted that bars and restaurants in these areas are generally well separated from each other. Requiring residential buildings to achieve internal noise levels of 30 dBA is likely to require masonry construction together with non-standard acoustic glass and ceilings.

3. Dwellings are permitted in mixed-use areas where cafes and restaurants are also established. In these areas, a “level difference” of 30 decibels is required. This sound insulation requirement can be achieved by relatively standard constructions.

Note: This describes the Business 3 environment reasonably well.

In all areas above, the sound insulation requirements have generally been recommended for bedrooms only. This recognises that the main noise issue in entertainment areas is the impact on sleep disturbance. It also recognises that activity in living rooms is less sensitive to noise and that often no significant façade treatment is required to achieve an acceptable level of noise in these areas.

There are other environments within Whangarei which are proposed to have (or could have) a mix of industrial and residential. These include the Business 2 environment, Marsden Village and Port Nikau. In these areas, noise levels could be high during the daytime from activity such as manufacture, fabrication, etc. In these areas, it is considered appropriate to require dwellings to achieve a façade noise reduction in both living and sleeping areas. In Marsden Village and Port Nikau the existing Plan requirement is 35 dB L_{Aeq} (60 min) in bedrooms and 45 dB L_{Aeq} (60 min) in living areas.

Given the above, we recommend the following:

- The sound insulation rule should result in bedrooms in **Business 1, Business 2, Business 3, Town Basin, Kamo Activity Precinct, Mixed Use, Ruakaka Racecourse (Eastern), Rural Village Centre and Rural Village Industry** having noise levels of 30 dB L_{Aeq} during the night period. Noise levels in other living spaces should be designed to achieve 40 dB L_{Aeq} . Other sensitive land use activities (such as classrooms, etc) should be designed to achieve noise levels of 35 dB L_{Aeq}
- In **Port Nikau and Marsden Primary Centre Noise Zone 1 and 2** the noise level should be 35 dB L_{Aeq} in bedrooms and 45 dB L_{Aeq} in other spaces.

These sound insulations requirements will allow for the level of amenity envisaged in the Port Nikau and Marsden Primary Centre noise zones to be achieved. We note that this is not a particularly high level of amenity and is marginally above the levels recommended in Australian/New Zealand Standard AS/NZ 2107:2000 “Acoustics - Recommended design sound levels and reverberation times for building interiors”. It is expected that this level of amenity will be accepted by most people who choose to live within industrial environments, but does not ensure there will not be reverse sensitivity.

In addition to the sound insulation requirements, requirements for ventilation have also been included. We have recommended only the Building Code requirements be achieved as a minimum. It is noted that NZTA have produced a set of guidelines for ventilation of dwellings adjacent to State Highways. These requirements are understood to be somewhat better than the Building Code requirements and result in more satisfactory internal conditions. It is our experience that standard mechanical plant can achieve the NZTA requirements; this typically involves a heat exchanger and fan located in the ceiling void. The NZTA requirements could be considered as an alternative to the Building Code minimum.

2.5 Airport Engine Testing

The existing engine testing rules in the plan are appropriate and reasonable given that engine testing will not occur regularly. It is recommended that the noise rules simply be changed from L_{A10} to L_{Aeq} . As engine testing is likely to be a relatively constant source of noise, this does not represent a material change.

There are existing rules within Resource Areas – Airport Noise Rules which makes construction of new dwellings within the Air Noise Margin a controlled activity. Control is reserved over whether an internal noise level of 40 dB L_{dn} can be achieved within any habitable rooms. This is a reasonable approach and consistent with New Zealand Standard guidelines.

It is recommended that the airport noise rules accomplish the following (as they currently do):

- Ensure that dwellings and visitor accommodation are controlled activities within the Air Noise Margin (or inside the Outer Control Boundary)
- Makes visitor accommodation a discretionary activity inside the Air Noise Boundary. Note that we would support this being a prohibited activity also.
- Prohibit dwellings inside the Air Noise Boundary

2.6 Peak Sound Levels from Explosives

Peak noise levels from explosives use has typically been controlled to 120 dB L_{Cpeak} in most Districts in New Zealand. This guideline is drawn from New Zealand Standard NZS 6803: 1999 “Acoustics - Construction Noise”.

The most relevant standard for control of this noise source is Appendix J of AS 2187.2-2006 Explosives - Storage, transport and Use. Part 2: Use of Explosives. This standard was issued after NZS6803:1999 was issued. This standard sets out in detail the limits appropriate for various receivers. Our recommendations are based on this standard, notwithstanding that we recommend simplified limits in some cases. Note the following:

1. No allowance for 5% of blasts being louder than the limit has been made. It is considered that this measure would lead to complications in measurement and assessment and provides no real merit.
2. The building damage limit of 140 dB L_{Zpeak} is greater than recommended in the standard. It is considered that the approach taken by the standard is overly

conservative. A limit of 140 dB L_{Zpeak} should ensure that no material building damage will arise.

The noise limits recommended should ensure that the use of explosives is not overly intrusive.

2.7 Temporary Military Training Activities

Temporary military training activities are generally excluded from compliance with the noise rules for Living and Rural environments in most districts.

The NZDF is currently undergoing a process of submitting on all plan changes with the intention of developing consistent noise rules throughout New Zealand. Marshall Day Acoustics has recently reviewed this submission for the Far North District Council. The report is publically available at:

<http://www.fndc.govt.nz/services/environmental-policy-and-forward-planning/the-far-north-district-plan/plan-changes/plan-change-15-rural-provisions/>

The recommendations within this report are based on the findings from the FNDC study. Overall we consider it appropriate to provide an L_{Zpeak} noise limit for artillery, explosives and small arms fire, as well as a L_{Aeq} noise rule for the use of mobile sources. Fixed sources (e.g. generators) would be subject to the environment noise rules contained elsewhere in the plan. In addition to the recommended noise rules, the following is also considered appropriate:

- No more than 2 nights of small arms use in any 31 day period. Note an alternative approach of lower noise limits and 31 nights of operation could also be considered.
- “Temporary military training activities” are those conducted for no more than 31 days in any 365 day period.

It is considered the proposed noise rules are reasonable for permitted military training activities.

2.8 Wind Turbines and Wind Farms

It is considered appropriate for the plan to reference the New Zealand Standard NZS6808. This standard provides noise limits for general and “high amenity areas” as well as specific discussion of special audible characteristics, infra sound and ultrasound and methodologies for compliance assessment. The standard is comprehensive and provides a suitable approach for assessing noise from wind turbines and wind farms.

The standard states that it is not generally appropriate to apply the provisions to small wind turbines (those with a swept area of less than 200m²). On this basis, small wind turbines would be subject to the relevant environment noise limits contained elsewhere in the Plan.

2.9 Helicopter Landing Areas

It is considered appropriate for the District Plan to reference NZS6807:1994 “Noise Management and Land Use Planning for Helicopter Landing Areas”. This standard recommends an L_{dn} limit of 50 dBA over any rolling 7 day period for residential and rural

receivers. This limit is generally appropriate for helicopter operations near to noise sensitive premises. The standard also allows averaging provisions over the assessment period.

The standard specifically excludes infrequently used helicopter operations (less than ten movements per month) and emergency helicopter operations. For the avoidance of doubt, the exclusion of emergency helicopter operations has been included in the proposed rule.

It is noted that it may be preferable to make helicopter landing pads a discretionary or restricted discretionary activity to allow the cumulative effects of helicopter noise to be considered. This is appropriate if there are areas where intensive use of helipads are likely. It is noted that this approach has been used on Waiheke Island. This ensures that the residential amenity is not degraded through cumulative effects, but does create a “first in first served” situation with regard to the establishment of helipads.

2.10 Bird Scaring Devices

A rule for bird scaring devices that is consistent with other District Plan rules throughout New Zealand has been recommended. The general format of this rule has been reviewed by a number of consultants in the industry and has generally been found to be reasonable for residential development near horticulture or viticultural areas. The rule is defined using the L_{AE} parameter for each shot (or succession of shots) which can be easily measured.

2.11 Shooting Ranges

Noise from shooting ranges is a relatively complex topic that is complicated by a range of various metrics that are sometimes used to determine whether annoyance is likely to arise. These can include L_{AFmax} , L_{peak} , L_{Aeq} , L_E/SEL or CNR. Research on the effects of shooting noise has not yielded any absolute guidelines as to where annoyance is likely to arise and the matter is often the subject of debate.

Shooting noise levels of up to 65 dB L_{AFmax} may be acceptable from certain shooting ranges, however this depends on a number of factors including the hours of operation, the numbers of shots fired and the number of days of use. It is considered that noise levels of 55 dB L_{AFmax} and below are less likely to result in significant annoyance provided the overall L_{Aeq} noise level is reasonable.

It is recommended that the permitted standard for shooting ranges is set relatively low and that any shooting range that cannot achieve the low noise rule be assessed as a discretionary activity. To this end, we have proposed a noise rule of 50 dB L_{AFmax} during 0900 to 1700 hours at the notional boundary of any noise sensitive activity. No shooting would be permitted outside this time. No L_{Aeq} noise limit has been set on the basis that compliance with the stringent L_{AFmax} noise limit would result in an acceptable L_{Aeq} noise level also. It is expected that an L_{Aeq} noise limit would be set as part of any consent where required.

The above is a stringent rule. We note that an exceedance of this rule would not necessarily indicate noise would be unreasonable, however any proposed shooting range would need to demonstrate this as part of the application for resource consent.

2.12 Road Traffic Noise

2.12.1 New and Altered Roads

Road traffic noise from new or altered roads in New Zealand is generally controlled through NZS 6806:2010 *“Acoustics - Road-traffic noise - New and altered roads”*. This standard is used for all NZTA roading projects, where applicable.

This standard provides guidelines for appropriate levels of road traffic noise near new or altered roads. The standard takes a “best practicable option” approach in an attempt to ensure that any noise mitigation recommended for any project is cost effective; i.e. it provides a reasonable benefit for the given cost.

Referencing this standard within the Plan would require any roading project to give consideration to noise mitigation measures. This will likely result in the following outcomes:

- Existing and future dwellings adjacent to new and altered roads will receive reasonable levels of external noise;
- Noise barriers would be erected at the expense of the project where this is necessary to achieve reasonable levels of noise.
- Where reasonable levels of external noise cannot be achieved from the new or altered road, dwellings will be provided with mechanical ventilation at the expense of the project.
- The assessment of all of the above will incur consulting fees.

The standard is the only current guideline in New Zealand for the assessment of road traffic noise and thus is the only obvious choice to control road traffic noise in accordance with S16 of the RMA. We note that this standard has already been used in the assessment of noise from local roads within Whangarei notwithstanding that the existing plan does not currently include reference to it.

2.12.2 Road Traffic Sound Insulation

Many districts provide rules that require dwellings and noise sensitive premises constructed near busy roads to achieve appropriate internal noise levels. While the design noise levels vary from district to district, levels of around 35 dB $L_{Aeq(24\text{ hr})}$ in bedrooms and 40 dB $L_{Aeq(24\text{ hr})}$ in living rooms are often accepted as appropriate. These levels are generally in accordance with guidelines given in New Zealand Standard NZ 2107:2000 *“Acoustics - Recommended design sound levels and reverberation times for building interiors”*. The levels are also consistent with guidelines within New Zealand Standard NZS 6806:2010 *“Acoustics - Road-traffic noise - New and altered roads”* which requires dwellings to be insulated near new and altered roads to achieve an internal noise level of 40 dB $L_{Aeq(24\text{ hr})}$ when noise levels would otherwise be above 45 dB $L_{Aeq(24\text{ hr})}$.

These design noise levels are often achievable with standard constructions, even where external noise levels are around 60 dB $L_{Aeq(24\text{ hr})}$. Such noise levels may occur adjacent to city arterial roads, within around 30 metres of busy arterial routes (5000 vehicles per day with 400 heavy vehicles), or within around 50 metres of State Highway 1 (10,000 vehicles per day with 1000 heavy vehicles). While relatively standard building constructions can

result in reasonable internal noise levels at such distances, the noise levels cannot be achieved with windows and doors opened. In order for windows and doors to remain closed, air-conditioning and/or mechanical ventilation is generally required.

The objectives of the *road transport* section of the District Plan require that the adverse effects of road transport activities on the surrounding environment are avoided, remedied and mitigated and that the road transport network is protected from the adverse effects of development. It is therefore considered that there is merit in providing a sound insulation rule to new dwellings adjacent to busy roads. Note that this may require additional policies to be added to the Plan.

In order for this rule to be successful, the rule must refer to specific roads where sound insulation is required. The existing WDC road hierarchy is not considered appropriate for use, as there are many roads classified as “arterial” which should not be subject to a sound insulation rule. It is therefore proposed that “high, moderate and forestry noise routes” be established. These routes would need to be identified within the noise chapter (ideally on a plan, refer to Appendix B). Internal noise limits would then apply to any dwellings constructed near to these routes that would receive external noise levels of between 57 to 60 dB $L_{Aeq(24 \text{ hour})}$. Near forestry routes it is likely to be sufficient to ensure dwellings are not constructed within 20 metres of the nearside carriageway.

At this stage, we have not determined the roads that should be included as “high or moderate noise routes”. It is noted that this may require further discussion and investigation. However we understand the following routes may generate high traffic noise levels (in excess of 5000 vehicles per day and/or high volumes of heavy traffic):

High traffic noise routes:

- State Highway 1

Moderate traffic noise routes

- State Highway 14
- State Highway 15A
- Three Mile Bush Road
- Whangarei Heads Road / Onerahi Road / Riverside Drive

Forestry noise routes

- Otaika Valley Road
- Mangakahia Road

2.13 Emergency Generator Testing

Emergency generator testing generally occurs for 30 minutes per month. Because of this short duration, the noise effects are not the same as if the generator operated continuously. Specific noise rules are provided for this testing where it occurs for less than 10 hours per year.

2.14 Temporary Activities

Temporary activities, such as occasional music performances in parks, are generally considered to be positive community events. Such activities can often not comply with the environment standards, however provided the number of events held per year are reasonable and the events occur at an appropriate time of day, significant noise effects do not generally arise.

It is recommended that Council give consideration to their requirements to hold temporary amplified or non-amplified events throughout the city. As a guide, noise levels of up to 65 dB $L_{Aeq(15\text{ min})}$ at noise sensitive premises are generally appropriate for up to three events per year. Additional events may be acceptable at lower noise levels.

At this stage, no specific noise limit for temporary activities has been recommended.

2.15 Vibration

The existing vibration controls in Appendix 10 of the District Plan are out of date. These controls reference NZS/ISO 2631-2:1989 which has since been superseded by the 2003 version. It is understood that the assessment criteria were removed from the 2003 version of the standard due to international criticism. The 1989 version of the standard is still referenced by a number of legislative authorities. The New Zealand Standard authority is understood to have withdrawn the New Zealand version of the 1989 standard in 2005 and thus it is not considered appropriate to continue to refer to this standard within the District Plan.

Vibration generally is only an issue when significant construction and demolition activity is occurring adjacent to sensitive buildings. Activity potentially generating significant vibration includes demolition of large structures, some forms of piling, and rock breaking.

The most likely effect from these activities is human annoyance. Vibration at levels that are “just perceptible” can cause annoyance. However it is noted that such levels generally do not present a risk of building damage. Notwithstanding this, vibration limits to prevent building damage are appropriate to include within the plan.

Stationary machinery can also result in vibration that can cause human annoyance where it is improperly isolated from building structures.

Vibration from road traffic is not generally a significant issue.

It is recommended that the vibration provisions of the District Plan are straightforward to understand and measure. With this in mind we have recommended construction and demolition vibration limits in “Peak Particle Velocity” (mm/s PPV). Peak particle velocity values are referenced in British and German standards for the prevention of building damage. Peak particle velocity guidelines are also given in British construction standards to describe the level of annoyance that may result. These values have been used to form the vibration rule recommended.

Further rules have been provided for stationary machinery. These rules are given in terms of rms velocity as per the ASHRAE guidelines from which they were sourced. The rules provide control over vibration occurring within buildings that is transmitted to adjacent premises.

The guidelines recommended allow for reasonable levels of vibration during construction and demolition. In dwellings, these levels of vibration would be perceptible during the daytime, but would not present a risk of building damage. During the night period, vibration levels should be barely or only just perceptible. At all other receivers, the vibration rules are such that the impact on adjacent commercial activity will be reasonable and no damage to buildings would result.

3.0 SUMMARY

The Whangarei District Plan has been reviewed and recommendations proposed for a new noise chapter within the Plan. These proposed changes are summarised in the Appendix A (overleaf) with a discussion contained in the main body of this report.

APPENDIX A: PROPOSED DISTRICT PLAN NOISE SECTION

4.0 MEANING OF WORDS

Air Noise Boundary

The Air noise Boundary defines the area around Whangarei Airport within which the 24 hour daily aircraft noise exposure will be sufficiently high as to require appropriate landuse controls or other measures to avoid, remedy or mitigate any adverse effect on the environment, including effects on community health and amenity values, whilst recognising the need to operate an airport efficiently. The average night-weighted sound exposure over a 24- hour period at the Airnoise Boundary shall not exceed 65 dB L_{dn} . The Airnoise Boundary shall be established in accordance with NZS6805:1992

Notes[not for inclusion within final plan]

- 1) *Remove reference to pasques (Pa2s). It is the L_{dn} level that is most meaningful. While pasques are referred to in NZS6802:1992, this metric is not in general use in NZ and can be removed for simplicity.*
- 2) *Remove “current or future”. Airnoise boundaries are generally based on a forecast level of use at some future time. It is not necessary to repeat this from the standard verbatim.*
- 3) *Remove the requirement to average over 3 months and replace with reference to the current standard.*

Air Noise Margin

means the area of land that lies between the Air Noise Boundary and the Outer Control Boundary, as identified on Planning Map 46R

Notes[not for inclusion within final plan]:

The “Air Noise Margin” is essentially the Outer Control Boundary as defined in NZS6806 and elsewhere in this document. The “Outer Control Boundary” is not defined as a line, but rather as an area of land. The use of the term “Air Noise Margin in the District Plan is unusual and could readily be replaced with “Outer Control Boundary” provided that the text within the plan is also changed.

Day

means the period 0700 to 2200 hours unless specified otherwise.

Forestry noise route

is a road, or section of a road, that has been identified as generating traffic noise from a significant number of daily forestry and other heavy vehicle movements.

[REFER TO MAP OF HIGH AND MODERATE NOISE ROUTES]

High noise area

is an area where the average background sound level (L_{A90}) is greater than 45 dB L_{A90} between 0630 and 2130 hours; or greater than or equal to 35 dB L_{A90} between 2130 and 0630 hours.

Note: the definitions in Chapter 64 of the plan for high and low noise areas do not correlate well in that “low noise areas” are those with daytime noise levels below 45 dB L_{A90} whereas “high noise areas” are those with noise levels above 50 dB L_{A90} . Areas with noise levels of between 45 and 50 dB L_{A90} are not defined. This approach fixes this issue by reducing the threshold to become a “high noise area”.

High noise route

is a road, or section of a road, that has been identified as generating high levels of traffic noise within existing, proposed or future areas of noise sensitive development. High noise routes typically carry around 10,000 vehicles per day or more. **[REFER TO MAP OF HIGH AND MODERATE NOISE ROUTES]**

L_{dn} (Day/Night Level)

is the day-night sound level which is calculated from the 24 hour L_{Aeq} with a 10 dB penalty applied to the night-time (2200-0700 hours) L_{Aeq} to account for potentially increased annoyance during this time.

L_{Aeq}

is the time-averaged, A-weighted sound level measured in decibels (dB).

L_{AFmax}

is the maximum, A-frequency-weighted, fast-time-weighted sound level, in decibels (dB), in a given measurement period.

Low noise area

is an area where the average background sound level (L_{A90}) is less than or equal to 45 dB L_{A90} between 0630 and 2130 hours; or less than or equal to 35 dB L_{A90} between 2130 and 0630 hours.

Moderate noise route

is a road, or section of a road, that has been identified as generating moderate levels of traffic noise within existing, proposed or future areas of noise sensitive development. Moderate noise routes typically carry around 5,000 vehicles per day and/or carry a high percentage of heavy vehicles. **[REFER TO MAP OF HIGH AND MODERATE NOISE ROUTES]**

Night

means the period 2200 to 0700 hours unless specified otherwise

Noise

is sound which serves little or no purpose for the exposed person(s) and is unwanted.

Noise rule

is an L_{Aeq} , L_{AFmax} or L_{dn} sound level in decibels

Noise Sensitive Activities

are those that involve habitation within which concentration is required and includes: residential units, residential institutions, marae, hospitals, health care facilities and education facilities, excluding airport staff and aviation training facilities or aero clubs (other than airport staff training facilities).

Notional Boundary

means a line 20 metres from the facade of any noise sensitive activity, or the legal boundary, where this is closer to the noise sensitive activity.

Bird Scaring Device

is a gas gun, avian distress alarm, firearm or other such device used primarily for the purposes of bird scaring.

Recognised Acoustician

means a recognised member of the Acoustical Society of New Zealand or equivalent as determined at Whangarei District Council's discretion

Outer Control Boundary

defines an area outside the Air Noise Boundary within which there shall be no further incompatible land uses. The predicted 3 month average night-weighted sound exposure at or outside, the outer control boundary shall not 55 dB L_{dn} .

Visitor Accommodation

means short stay accommodation such as short stay apartments, hotels, motels, hostels or boarding houses

Wind Turbine

means a wind turbine used to extract kinetic energy from the wind and having a swept area of greater than 200m².

5.0 NOISE / SOUND

5.1 Potential Noise Effects

The environmental effects of noise from incompatible activities can compromise the amenity values of a locality. Noise generating activities can also be restricted by other activities that demand a higher level of amenity.

Noise can adversely affect amenity by interfering with rest, relaxation or sleep of residents. Noise can also affect commercial activities where noise intrudes on staff

concentration or customer satisfaction. The adverse effects of noise can include the following:

- Physiological and chronic health effects
- Annoyance
- Interference with speech communication
- Interference with the learning process, thinking and education
- Interference with rest and sleep

Noise rules are designed provide an adequate level of protection from the above effects. These rules provide certainty about the level of ambient sound within each environment. The District Plan rules recognise that there will some noise associated with activities. The rules strike a balance between the need for land to be used for its intended purpose while ensuring that other land users are not exposed to unreasonable levels of noise.

Noise rules must be realistic and consistent with the environment objectives and policies. It is unsustainable to set noise limits that are actually restrictive of the very activities objectives and policies seek to enable.

5.2 Issues

5.2.1 Living Environments

Living environments allow for typical residential activity. These environments must allow for non-residential activities to establish within them, however such activities have the potential to generate noise that detracts from the existing level of amenity.

Residential environments require rules that are consistent with activities occurring in urban backyards such as maintenance of a section, buildings, engaging in hobbies, play, family and neighbourhood sports and recreation. The noise rules must allow for these “typical” activities and provide limits to ensure that any non-residential activity does not conflict with residential amenity.

5.2.2 Business and Industrial Environments

Industrial and Business are least sensitive to noise, notwithstanding that some control of noise is required within these environments. Noise emissions from heavy industry and refining of primary products must be controlled to reasonable levels at Living environment boundaries. However the encroachment of residential activities on such land use must also be appropriately managed to ensure that these facilities can continue to operate.

Business environments require noise rules that enable a range of business activities to take place without undue interference with other similar activities within the environment. Rules must also ensure that noise does not adversely affect noise sensitive activities in neighbouring environments or within the Business where these activities are permitted.

5.2.3 Rural Environments

A wide range of activities are expected in the Countryside and Coastal Countryside environment. This can include the operation of machinery and plant during noise

sensitive times. Such activity can be acceptable to surrounding land users who are themselves involved in agricultural or farming activities, but may not be acceptable to those who are not. The development and subdivision of rural land for residential purposes can encroach on the productive use land through increased sensitivity to noise. Such development can also encroach on established secondary activities in rural environments, such as sawmilling or milk processing.

5.2.4 Other Activities

A range of other activities are expected throughout the District which may result in specific localised noise issues. The District Plan rules must allow for these through specific noise controls:

- Construction noise and vibration can be intrusive in the short term. Construction processes often have no practicable alternative and must occur where land is to be developed. This must be managed through the provision of noise and vibration limits that recognise the potential high noise levels together with the increased tolerance of communities to construction noise.
- Noise from aircraft operation in and around the airport can result in significant effects on residential amenity. This issue must be managed through the provision of appropriate limitations on aircraft operations, together with restrictions on where residential dwellings can establish without appropriate levels of sound insulation.
- Noise from heavy vehicle movements on local roads can significantly reduce residential amenity. Such noise effects cannot be controlled by noise limits within the District Plan and often cannot be internalised within the road corridor. Where noise sensitive activities are to be established adjacent to busy roads, the District Plan rules must ensure that the envelope of these buildings are appropriately designed to ensure internal noise levels are acceptable.
- Wind farms, shooting ranges, temporary military training, explosives and bird scaring devices generate noise with a specific character that cannot be assessed against the general noise rules for the environment. Noise rules that are specific to the source must be developed.

5.3 Objectives – Noise and Vibration

5.3.1 Objective 1

The characteristic acoustic and vibration amenity values of each Environment are maintained and, where appropriate enhanced.

5.3.2 Objective 2

Adverse acoustic and vibration effects on amenity values do not result in a reduction of amenity value below that which is desirable for people's health and safety.

5.3.3 Objective 3

Activities that demand a high level of acoustic and vibration amenity do not unduly compromise other land uses

5.4 Policies

5.4.1 Policy 1

To provide noise and vibration rules enabling reasonable activity on a site while providing for reasonable protection of amenity on another site or in another environment.

5.4.2 Policy 2

To provide noise and vibration rules within all types of Business that enable the functioning of anticipated activities while being pleasant places to visit and work..

5.4.3 Policy 3

To ensure Business avoid or mitigate unreasonable noise and vibration in more sensitive environments without unduly compromising the ability of business activities to function by applying reasonable limits at the interface of these environments.

5.4.4 Policy 4

To provide an adequate internal design sound level in habitable rooms where residential activities are permitted to occur in any type of business, industrial or mixed-use environment or beside any road, railway line or airport that is considered to require protection from reverse sensitivity effects.

5.4.5 Policy 5

To avoid restricting normal primary production activities recognising their seasonal characteristics and transitory periods of noisiness.

5.4.6 Policy 6

To ensure that noise associated with activities in open spaces and on public recreational areas is appropriate to the amenity values anticipated in the surrounding environment.

5.4.7 Policy 7

To protect important economic and cultural assets within the District through the restriction of noise sensitive activities in areas where high noise levels have been provided for.

5.5 Methods of Implementation

Via the District Plan

- The use of noise limits in rules to set performance standards for noise during specified time frames.
- Continuing the separation of environments that generate higher levels of noise from those that contain noise sensitive activities.
- Provision of acoustic insulation requirements for buildings containing noise sensitive activities that are located in areas receiving high noise levels.

By statutory duties

- Section 35 of the Resource Management Act 1991 – Monitoring of noise levels

- Section 38 of the Resource Management Act 1991 – Enforcement
- Section 16 and 17 of the Resource Management Act 1991 – Duty to avoid unreasonable noise

By other means

- Guidance and information in the form of publications which do not form part of the District Plan will assist people and communities to plan for and understand the statutory obligations on makers of noise and the planning measures designed to minimise adverse effects of noise.

5.6 Environmental Results Anticipated

1. The health and amenity of people and communities is adequately protected from the adverse effects of noise.
2. Businesses can engage in the activities intended in each environment without being unduly impacted by the requirements of more sensitive land users.
3. Mixed use environments will function without conflicting expectations over differing amenity values held by people living, working in, and visiting such areas.
4. Adequate controls on residential development ensure inherently noisy activities that are important to the economic prosperity of the District can function.
5. Primary production and industry will function utilising the fullest extent of productive land possible without unreasonably impacting on the amenity of noise sensitive activities.
6. Activities for overall community benefit will not be unduly restricted by noise rules.

5.7 Reasons for Rules, Objectives and Policies

Daytime noise rules are typically set to ensure that noise levels during the daytime are appropriate for outdoor amenity. Night-time noise rules are intended to provide suitable levels of amenity for sleep. For this reason, L_{AFmax} noise limits are only set for the night period; this is because transient noise events can cause sleep disturbance but are less likely to have a significant effect on outdoor amenity.

Residential activities within Living environments often generate noise, however this noise is typically expected and tolerated by residents as a product of day-to-day living. For this reason, typical residential activities such as home maintenance, backyard play and lawn mowing is excluded from compliance with the Living environment noise rules. The Living environment noise rules are intended to provide a standard to which non-residential activities (such as childcare centres, supermarkets, etc) would need to meet to be considered a permitted activity. These rules ensure that the characteristic amenity of the Living environments will be maintained. A stringent noise rule has been set to ensure a high level of amenity is maintained.

Dwellings are permitted within most Business Environments throughout the District. Lower night-time noise limits have been set in these environments to allow for the “mixed-use” nature of these environments and to protect the sleep of any people who

may choose to live within these areas. Sound insulation requirements for dwellings have also been set to ensure that internal noise levels are generally reasonable within these environments, notwithstanding that residents may experience some reduction in amenity as a result of living there.

Living environments adjacent to Business 2 and 4 Environments can be subject noise from those activities at levels greater than would be permissible from an adjacent site in a living environment. The noise rules require those activities to meet reasonable noise limits at the interface between the environments, without generally compromising the ability of activities in the Business to operate.

Noise levels from farming and forestry activities vary; this is a feature of the Countryside environment. Noise from such activities has been exempted from compliance with the noise rules where it occurs in the Countryside environment. This is to ensure that restrictions on farming and horticulture operations do not occur on the Countryside environment, as the loss of this productive land would result in significant economic effects. Specific noise limits apply to bird scaring devices due to its character.

Noise levels from construction and demolition are typically elevated. However the duration of such activities are generally limited. People and communities will tolerate a higher noise levels during construction provided sound levels are no louder than necessary and occur at appropriate times. The construction noise rules recognise this and apply higher noise limits during the daytime at dwellings.

Noise associated with emergency service activities or public warning alarms are exempt from compliance with the noise rules. Although noise effects from sirens and alarms may be loud, they are transitory in character and the overall public benefit of such essential services contributes directly to the health and safety of the District.

Noise from airport operation is required to meet specific noise rules based on forecast operation. Noise from engine testing is subject to more liberal rules than would otherwise be permitted in Living environments on the basis that this source of noise occurs infrequently. Activities establishing in and around the airport are required to achieve reasonable levels of façade sound insulation to reduce the potential for reverse sensitivity effects on the aircraft operation.

Noise limits for temporary military training are of necessity less stringent than normal noise limits applicable within the various environments. Explosions are an inherent characteristic of most military training as is night-time activity; such training serves an overall national benefit. Noise limits in this Plan are designed to enable military training of a temporary nature while providing a reasonable degree of protection from adverse noise effects for people in the vicinity. The number of night-time training activities has been controlled to ensure that while residents may be subject to high levels of noise for a period of time, sleep will not be significantly impacted on.

Noise from explosives use is also a special case given the high sound pressure levels but short duration. Limits are proposed to ensure that residential amenity is not unreasonably affected and that damage to buildings does not occur from high peak noise levels.

Wind turbines and wind farms generate sound levels that vary with wind speed. This source of noise is best assessed against the existing levels of background sound rather than against the general District Plan noise limits. A specific standard for the assessment of wind farm noise has been referenced to account for this.

Helicopter landing areas generate high transient noise levels, however annoyance from these activities depends on not only noise from individual departures and arrivals but also the number of helicopter movements per day. In general, a noise limit of 50 dB L_{dn} is appropriate for dwellings. A specific standard has been referenced to ensure that noise from this source is assessed appropriately.

Annoyance from shooting ranges depends on the level and character of noise from firearms, the number of shots fired, the time of day of operation and the number of days of shooting per year. Noise limits for shooting ranges have been set at a relatively low threshold to ensure that permitted shooting ranges do not result in unreasonable noise effects.

Road traffic is one of the greatest contributors to unwanted noise at noise sensitive activities. Road traffic noise is controlled through the provision of noise barriers, bunds and road surface treatments. A specific standard has been referenced to ensure that a balance between the cost of noise mitigation measures and overall noise levels from new and altered roads is achieved. A sound insulation standard is recommended for new dwellings establishing adjacent to strategically important transportation routes.

Vibration is generally only cause for concern adjacent to construction or demolition projects. Road traffic can create some vibration, however it is rare for this to cause significant effects. Vibration from mechanical plant near or attached to structures also has the potential to generate perceptible vibration. Vibration limits have been provided to ensure that vibration from construction, demolition or fixed mechanical plant does not exceed a reasonable level. A simplified approach has been taken where single value velocity limits have been specified. This approach is considered to be the least complicated and should ensure the required level of amenity is achieved.

6.0 GENERAL NOISE STANDARDS

6.1 Permitted Activities

Unless specifically stated otherwise, any activity shall be a permitted activity provided it complies with all of the noise standards given in the following section(s) and all other relevant environment and district wide rules.

6.2 Discretionary Activities

Unless specifically stated otherwise, any activity shall be a discretionary activity where it does not comply with all of the noise standards given in the following section(s).

6.3 Noise Measurement and Assessment

Unless specified otherwise, sound shall be measured and assessed in accordance with New Zealand Standard NZS 6801:2008 "*Acoustics – Measurement of environmental sound*" and assessed in accordance with New Zealand Standard NZS6802:2008 "*Acoustics - Environmental Noise*"

6.4 Noise Arising from Activity within Environments

The following noise rules 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	Night-time		Notes ^{8,9}
		0700 to 2200 hours	2200 to 0700 hours		
		dB L _{Aeq}	dB L _{Aeq}	dB L _{AFmax}	
Business 2 Business 4 Marsden Pt Port	Living 1, 2, 3 Kamo Low/Med Density Living Open Space Ruakaka Racecourse – <i>Southern</i> Ruakaka Racecourse – <i>Western</i> Coastal Countryside Urban Transition Rural Living Countryside Rural Village Residential	55	45	75	
All environments other than: -Business 2 -Business 4 -Marsden Pt Port	As above (excluding Countryside and Open Space) Countryside Open Space	50 55	40 40	70 70	1, 2, 3 1, 2, 3
All environments	Business 1 Town Basin Business 2 Bulk Format Retail Airport Rural Village Industry Ruakaka Racecourse – <i>infield and track</i> Ruakaka Racecourse - <i>Eastern</i> Kamo Activity Precinct Business 3 Mixed Use Rural Village Centre	60 65 60	55 60 50	80 80 75	4, 5
	Business 4 Marsden Point Port	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
Mineral Extraction Areas	Any noise sensitive activity not owned or controlled by the quarry owner or operator	Low noise environment 50 40 70			6, 7
		High noise environment 55 45 75			

Notes:

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/Med Density Living • Open Space • Ruakaka Race Course • Business 1,2,3,4 • Town Basin • Bulk Format Retail • Airport • Kamo Activity Precinct • All rural village environments • Mixed Use • Marsden Point Port • Port Nikau - Noise Zone 1 and 2 • Marsden Primary Centre - Noise Zone 1 and 2 • Marsden Primary Centre - Town Centre 	<ul style="list-style-type: none"> • Living 3 • Coastal Countryside • Urban Transition • Rural Living • Countryside • Any noise sensitive activity not owned or controlled by the quarry owner or operator in a mineral extraction area

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.

² These noise rules do not apply to mobile machinery used for a limited duration as part of agricultural or horticultural activities occurring in the Countryside, Coastal Countryside, Urban Transition or Rural Living 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:

- Spraying and harvesting of crops and/or weeds for horticultural or agricultural purposes
- Primary forestry activities (not including milling or processing)

This exemption does not apply to static irrigation pumps or motorbikes that are being used for recreational purposes.

This rule shall also not apply to noise which originates from animals that are under the control of humans (e.g. milking cows)

³ If the activity under consideration is a mineral extraction activity and is located within a mineral extraction area then these rules shall not apply. Where this occurs the mineral extraction rules shall apply.

- 4 Noise generated by temporary activities in the Town Basin environment may exceed the noise rules in any environment on 12 days every year provided that noise does not exceed a level of 65 dB L_{Aeq} between 0900 and 2300 hours at any Living Environment.
- 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.
- 6 Except that 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 Plan [Reference B.2 of this document] 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 The noise rules shall not apply to the following specific activities which are provided for elsewhere:
- Construction activities. Refer to Section [6.5] for specific rule.
 - Engine testing at the airport. Refer to Section [6.7] for specific rule.
 - Noise from explosives. Refer to Section [6.9] for specific rule.
 - Temporary military training activities. Refer to Section [6.10] for specific rule.
 - Wind turbines and wind farms. Refer to Section [6.11] for specific rule.
 - Helicopter and aircraft landing areas. Refer to Section [6.12] for specific rule.
 - Bird Scaring devices. Refer to Section [6.13] for specific rule.
 - Frost fans. Refer to Section [6.14] for specific rule
 - Shooting ranges. Refer to Section [6.15] for specific rule
 - Road traffic noise. Refer to Section [6.16] for specific rule
 - Emergency Generator Testing. Refer to Section [6.17] 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.
 - Aircraft movements
 - Unamplified noise from sporting events in Open Space environments where these occur for up to 20 hours per week between 0700 and 2100 hours.

- 6.5 Construction Noise** Noise from demolition and construction, including that undertaken as part of temporary military training activity, shall comply with the guidelines and recommendations of NZS 6803: 1999 “Acoustics - Construction Noise”. Noise levels shall be measured and assessed in accordance with New Zealand Standard NZS 6803: 1999 “Acoustics - Construction Noise”.

The above shall not apply to the use of explosives.

Essential work within road carriageways

The above does not apply to permitted essential maintenance or utility works undertaken within the road carriageway of a road where:

- i. It has been demonstrated to Council that these works cannot reasonably comply with the referenced noise guidelines at the time when they must be carried out; and
- ii. A construction noise and vibration management plan, as prepared by a recognised acoustician, has been provided to Council.

- 6.6 Sound Insulation Requirements** Any noise sensitivity activity established within a Business 1, 2, 3, 4, Kamo Activity Precinct, Mixed Use, Town Basin, Rural Village Centre, Rural Village Industry, Ruakaka Racecourse – eastern, Port Nikau Noise Zone 1 or 2, or Marsden Primary Centre Noise Zone 1 or 2 environment shall be designed and constructed to ensure the following internal design noise levels are achieved.

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
<ul style="list-style-type: none"> • Business 1 • Business 2 • Business 3 • Ruakaka Racecourse - Eastern • Mixed use • Town Basin • Kamo Activity Precinct • Rural Village Centre • Rural Village Industry 	30 dB L _{Aeq}	40 dB L _{Aeq}	35 dB L _{Aeq}
<ul style="list-style-type: none"> • Port Nikau and Marsden Primary Centre Noise Zone 1 and 2 	35 dB L _{Aeq}	45 dB L _{Aeq}	35 dB L _{Aeq}

Sound Insulation Requirements (Continued)

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 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	dBA
Bedrooms and Sleeping Areas								
<ul style="list-style-type: none"> • Business 1 • Town Basin 	66	65	55	54	49	42	38	55
<ul style="list-style-type: none"> • Business 2 • Port Nikau and Marsden Primary Centre Noise Zone 2 	67	64	61	58	55	52	49	60
<ul style="list-style-type: none"> • Business 3 • Kamo Activity Precinct • Mixed use • Rural Village Centre • Ruakaka Racecourse - Eastern 	57	54	51	48	45	42	39	50
<ul style="list-style-type: none"> • Port Nikau and Marsden Primary Centre Noise Zone 1 	72	69	66	63	60	57	54	65
Other Habitable Rooms								
<ul style="list-style-type: none"> • Business 1 • Town Basin • Business 3 • Kamo Activity Precinct • Mixed use • Rural Village Centre • Ruakaka Racecourse - Eastern 	71	70	60	59	54	47	43	60
<ul style="list-style-type: none"> • Business 2 • Port Nikau and Marsden Primary Centre Noise Zones 1 and 2 	72	69	66	63	60	57	54	65

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.

6.7 Airport Engine Testing

Aircraft engine testing in the Airport environment shall comply with the following:

- i. Between the hours of 0700 and 2300, the noise generated by aircraft engine testing, assessed at any point within the boundary of any Living Environment, shall not exceed 55 dB L_{Aeq} (16 hours) and 65 dB L_{Aeq} (15 minutes);
- ii. Between the hours of 2300 and 0700, noise generated by aircraft engine testing assessed at any point within the boundary of any Living Environment, shall not exceed 45dB L_{Aeq} (8 hours) and 65 dB L_{AFmax} ;
- iii. Between the hours of 2300 and 0700, for the purposes of essential, unscheduled maintenance and engine testing on a maximum of 15 occasions within any calendar year, noise generated within the boundary of any Living Environment shall not exceed 55 dB L_{Aeq} (8 hours) and 70 dB L_{AFmax} . In these circumstances the noise limits set out in ii), above shall not apply;
- iv. The time, duration and other essential details of any testing undertaken in accordance with the requirements of c) above shall be recorded and advised to the Whangarei District Council within two weeks of any such event;

6.8 Activities establishing near the Airport Environment

6.8.1 Within the Outer Control Boundary

The following are **controlled** activities within the Outer Control Boundary

- i. The addition of a habitable room;
- ii. The construction of a new residential unit if:
 - The net site area associated with each residential unit is at least 1000m²
 - The proposed construction is the first residential unit upon an allotment that is less than 1000m² and that allotment existed before 1 December 2005
- iii. Visitors accommodation

Control is reserved over:

- i. The effect of aircraft noise on the living standard within buildings or habitable rooms. Whether the design and materials used in the construction achieves an internal design level of 40 dB L_{dn} for noise within any habitable room.

Any activity that does not comply with the standard for a **controlled** activity is a **discretionary** activity

6.8.2 Within the Air Noise Boundary

The following are **discretionary** activities within the Air Noise Boundary:

- i. Visitor accommodation

The following are **Prohibited** activities within the Air Noise Boundary:

- ii. New noise sensitive activity

6.9 Explosives Use

Peak noise levels from explosives use shall not exceed the following when measured within the notional boundary of any building set out in the following table

Affected building type	Permissible blasting time window	Number of blasts per year	Maximum peak sound level applying to all blasts dB L _{Zpeak}
Occupied noise sensitive activity and visitor accommodation	0700 to 1900 hours	≤ 20	120
		>20	115
Occupied commercial and industrial buildings	All hours of occupation	All	125
Unoccupied buildings	All times	All	140

6.10 Temporary Military Training Activities

Temporary military training activity shall comply with the following noise rules at the relevant assessment location of any noise sensitive activity or visitors accommodation in any other environment:

Type of military noise source	Hours	Level	Duration limitation
Weapons firing and the use of explosives conducted on any site for up to 31 days in any 365 day period.	Artillery and explosives (cannons, grenades, mortars, rockets)	0700 to 1900	120 dB L _{Zpeak}
		1900 to 0700	90 dB L _{Zpeak}
	Small arms	0700 to 1900	90dB L _{Zpeak}
		1900 to 0700	90dB L _{Zpeak}
Mobile noise sources, (other than construction activities) and fixed noise sources (including power generation, heating, ventilation or air condition systems, or water or wastewater systems)	All sources	0700 to 1900	55 dB L _{Aeq}
		1900 to 2200	50 dB L _{Aeq}
		2200 to 0700	40 dB L _{Aeq} 70 dB L _{AFmax}
Other activities	The relevant environment noise rules		

- 6.11 Wind Turbines and Wind Farms** Noise from wind turbines and wind farms shall comply with NZS6808:2010 *“Acoustics – Wind farm noise”*.
- 6.12 Aircraft and Helicopter Landing Areas** Helicopter landing areas, including those used for military training activities, shall comply with and be measured and assessed in accordance with New Zealand Standard NZS 6807:1994 *“Noise Management and Land Use Planning for Helicopter Landing Areas”*. This clause shall not apply to emergency helicopter movements.
Noise from aircraft other than helicopters shall comply with NZS6805:1992 *“Airport Noise Management and Land Use Planning”*
- 6.13 Bird Scaring Devices** The use of bird scaring devices is permitted in the Countryside or Coastal Countryside environments provided it shall comply with the following:
- i. Bird scaring devices shall not operate between sunset and sunrise
 - ii. Each device shall operate 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 L_{AE} within the notional boundary of any noise sensitive activity not owned by the operator of the device.
 - iii. The sound level from any event shall not exceed 65 dB L_{AE} within the notional boundary of any noise sensitive activity not owned by the operator of the device.
- The use of bird scaring devices in other environments is a discretionary activity.
- 6.14 Frost Fans** The use of frost fans is permitted in the Countryside or Coastal Countryside environments provided it shall comply with the following:
- i. Noise generated by single or multiple frost fans shall not exceed 55 dB $L_{Aeq(10\text{ minute})}$ at any time when assessed at the notional boundary of any noise sensitive activity on a separate allotment under different ownership. 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.
 - ii. 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.
 - iii. 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.
- 6.15 Shooting Ranges** Sound levels from shooting range activity shall not exceed 50 dB L_{AFmax} at the notional boundary of any noise sensitive activity or visitor accommodation. No shooting shall occur between 1700 and 0900 hours

6.16 Road Traffic Noise

6.16.1 New and altered Roads

Noise from any new or altered road shall be assessed in accordance with and meet the provisions of New Zealand Standard NZS 6806:2010 “Acoustics - Road-traffic noise - New and altered roads”

6.16.2 New dwellings adjacent to Moderate, High or Forestry Noise Routes

Any new noise sensitive activity shall be located at least 20 metres from the nearside carriageway of a forestry noise route.

Any new noise sensitive activity within 80 metres of any high noise route and 40 metres of any moderate noise route shall be designed and constructed to achieve the following indoor sound levels:

- i. Sleeping areas: 35 dB $L_{Aeq(24\text{ hr})}$
- ii. Other habitable rooms: 40 dB $L_{Aeq(24\text{ hr})}$

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 at minimum.

6.17 Emergency Generator Testing

The testing of emergency generators is a permitted activity in all environments provided it shall comply with the following:

- i. The duration of testing shall not exceed 10 hours total per annum;
- ii. Testing shall occur between 0900 and 1700 hours only;
- iii. Noise levels shall not exceed the following:
 - 60 dB $L_{Aeq(15\text{ min})}$ within the relevant boundary assessment location of any Living, Open Space, Ruakaka Racecourse – *Southern*, Ruakaka Racecourse – *Western*, Coastal Countryside, Urban Transition, Rural Living, Countryside, Marsden Primary Centre – Town Centre or Rural Village Residential environment
 - 65 dB $L_{Aeq(15\text{ min})}$ within the site boundary of any Business 1, 3, Town Basin, Ruakaka Racecourse – *infield and track*, Ruakaka Racecourse – *Eastern*, Kamo Activity Precinct, Mixed Use, Port Nikau Noise Zone 2, Marsden Primary Centre Noise Zone 2 or Rural Village Centre environment
 - 70 dB $L_{Aeq(15\text{ min})}$ within the site boundary of any Business 2, Bulk Format Retail, Airport, Rural Village Industry, Port Nikau Noise Zone 1, Marsden Primary Centre Noise Zone 1 environment
 - 85 dB $L_{Aeq(15\text{ min})}$ within the site boundary of any Business 4 or Marsden Point Port environment.

6.18 Vibration

6.18.1 Construction Vibration

Vibration from construction and demolition activity shall not exceed the following levels when measured in the horizontal plane of the highest floor level of the activity or building.

Affected occupied building	Activity	Time	Maximum vibration level mm/s ppv	Notes
Occupied noise sensitive activity or visitor accommodation in any environment	General construction activity	2200 to 0700 hours	0.3	¹
		0700 to 2200 hours	1	¹
	Blasting	0700 to 2200 hours	5	²
Occupied commercial or industrial activity in any environment	General construction activity	2200 to 0700 hours	5	
		0700 to 2200 hours	1	
	Blasting	All times	5	
Unclassified structures of great intrinsic value such as historic buildings	All activity	All times	2.5	
Non-occupied dwellings and buildings of similar design	All activity	All times	5	
Non-occupied commercial and industrial buildings	All activity	All times	10	

Notes:

- ¹ Except that in surgery rooms of hospital facilities, maximum vibration levels from construction and demolition activities shall not exceed 0.1mm/s rms between 8 and 80Hz
- ² Construction blasting shall not occur outside of the hours of 2200 to 0700 hours

6.18.2 Continuous Vibration from Stationary Machinery

Vibration from building services: i.e. vibrating, reciprocating and rotating machinery and all piping, ducting and other equipment attached to such machinery shall be installed and maintained so that any resulting vibration does not exceed the levels in the following table when measured in adjacent buildings or areas of buildings under different ownership from the source of vibration:

Affected occupied building type	Time	Maximum vibration level in mm/s rms between 8 and 80 Hz
Industrial	All	0.8
Commercial	All	0.4
Noise sensitive activity	0700 to 2200 hours	0.2
	2200 to 0700 hours	0.14
Surgery rooms of healthcare facilities	All	0.1

7.0 ASSESSMENT MATTERS

- i. The level of sound likely to be received
- ii. The existing ambient sound levels
- iii. The nature and frequency of the noise including the presence of any special audible characteristics
- iv. The effect on noise sensitive activities within the environment
- v. The likely time when noise will be audible and the extent of the exceedance of the noise rule at that time
- vi. Whether the level and character of the noise is below recognised guidelines or standards for the preservation of amenity
- vii. The potential for cumulative effects to result in an adverse outcome for receivers of noise
- viii. The extent to which noise may detract from the enjoyment of a recreation or conservation area
- ix. The value and nature of the noise generating activity and the benefit to the wider community having regard to the frequency of noise intrusion and the practicality of mitigating noise or using alternative sites.
- x. Any proposed measures to avoid, remedy or mitigate noise received off-site
- xi. The potential for any reverse sensitivity effects
- xii. The level of involvement of a recognised acoustician in the assessment of potential noise effects and/or mitigation options to reduce noise.

APPENDIX B - APPENDICES TO “NOISE” SECTION

B.1 High, Moderate and Forestry Noise Routes

[insert map identifying high noise routes]

B.2 Schedule of Existing Mineral Extraction Activities

Quarry Name	Mineral Extraction Area	Planning Map Number	Noise Limit
Golden Bay Cement – Portland Quarry	ME1	15, 50	Daily, between the hours of 0630 and 2130 - 55dBA L10; and Daily, between the hours of 2130 and 0630 - 45 dBA L10; and 70 dBA Lmax.
Winstone Aggregates – Otaika Quarry and access way	ME3	12, 45	Daily, between the hours of 0630 and 2130 - 55dBA L10; and Daily, between the hours of 2130 and 0630 - 45 dBA L10; and 70 dBA Lmax; and Subject to any restrictions on night time operation of the access way contained in LUC RC38907, as may be amended from time to time.
McBreen Jenkins – Takahiwai Quarry	ME4	15	Daily, between the hours of 0630 and 2130 - 50 dBA L10; and Daily, between the hours of 2130 and 0630 - 40 dBA L10; and 65 dBA Lmax
Balance Agriculture – Mata Quarry	ME6	15	
United Carriers – Woods Road Quarry	ME5	11	
Mountfield Rd Quarry	ME7	18	
Dicksons Transport – Dicksons Road Quarry	ME8	12, 36	The noise limit imposed by Land Use Consent RC 37434
Golden Bay Cement – Wilsonville Quarry	ME2	7, 28	The noise limit imposed by Land Use Consent LU 00/573
J Pullman – Robsons Quarry, Otaika	ME9	45	The noise limit imposed by Land Use Consent LU 98/904

APPENDIX C CHANGES TO DESIGNATION CONDITIONS

The following changes to the designation conditions are recommended:

85.2.17 Whangarei District Council

5. DW 130: Landfill Puwera: Portland

e) Noise

All noise associated with the site and access construction and shall comply with the requirements of New Zealand Standard NZS 6803: 1999 “Acoustics - Construction Noise” limits as per Section [refer Section 6.5] of the District Plan

All other activities undertaken, including transport of refuse on the site, placement of refuse on the site, covering of refuse and stripping of placement of top soil shall be conducted to ensure that noise rules for the receiving environment are not exceeded. levels, within the notional boundary of any dwelling, do not exceed 50 dBA L_{A10} between the hours of 7 a.m. and 10 p.m. Any on-site activities outside of these hours shall not exceed 35dBA(L_{A10}) & 60dBA(L_{max})

- i. Access to the landfill by vehicles transporting refuse shall be permitted only between ~~the hours of 0700 to 1800 hours~~ 7.00 am and 6.00 pm, Monday to Saturday inclusive, excluding Good Friday and Christmas Day.
- ii. This restriction does not apply to the transportation of overburden material from Golden Bay Cement Ltd site using the internal haul road.

85.2.10 Northpower Limited Conditions to DNP 16

That additional to the design and construction condition RC40137 and the Court’s instructions the following conditions as determined in RQ1000005 to the designation will be applicable.

1. All activities within the designation area shall be conducted so as to ensure the noise rules for the receiving environment are not exceeded. ~~following noise limits are not exceeded outside of the designation:~~
 - a) ~~45dBA L_{10} dB $L_{Aeq}(15min)$ between 0700 and 2200; and 35dBA L_{10} dB $L_{Aeq}(15min)$ at any other time; and~~
 - b) ~~60dBA L_{max} dB L_{AFmax} on any day between 2200 and 0700, except for emergency service vehicles and the operation of emergency service call out sirens; and~~
 - c) Sound levels shall be measured in accordance with NZS 6801:1999 Measurement of Sound and assessed in accordance with NZS 6802:1991 Assessment of Environmental Sound.

85.2.18 The New Zealand Refining Company Limited (DREF)

3. Conditions

- 3.7. The noise from maintenance works, repair, upgrade and renewal activities shall be measured, assessed and controlled in accordance with the procedures and limits set out in New Zealand Standard NZS 6803: 1999 “*Acoustics - Construction Noise*” as per Section [refer Section 6.5] of the District Plan.

85.2.19 Vector Gas Limited

3. Conditions

- 3.8. The noise from maintenance, repair, upgrade and renewal activities shall be measured, assessed and controlled in accordance with the procedures and limits set out in New Zealand Standard NZS 6803: 1999 “*Acoustics - Construction Noise*” as per Section [refer Section 6.5] of the District Plan.

85.2.13 Telecom New Zealand Limited

Conditions Relating to DTP

A)

4. Within three months of the implementation of the noise attenuation measures referred to the Conditions 1 and 3, Transpower shall provide the Whangarei District Council with a report based on Condition 2 from a suitably qualified acoustic engineer, detailing whether compliance is being achieved with the required ~~noise levels~~ noise limits. If the report shows compliance is not being achieved, the report shall also detail remedial measures which are to be taken on an urgent basis, to ensure that compliance is achieved.

8.0 APPENDIX 14 CHANGES

The following changes to Appendix 14 are recommended

Golden Bay Cement – Portland Quarry

Noise Limit

Daily, between the hours of 0630 and 2130 - 55 dBA L₁₀ dB L_{Aeq}; and

Daily, between the hours of 2130 and 0630 - 45 dBA L₁₀ dB L_{Aeq}; and 70 dBA L_{max} dB L_{AFmax}.

Winstone Aggregates – Otaika Quarry and access way

Noise Limit

Daily, between the hours of 0630 and 2130 - 55 dBA L₁₀ dB L_{Aeq}; and

Daily, between the hours of 2130 and 0630 - 45 dBA L₁₀ dB L_{Aeq} and 70 dB dBA L_{max} dB L_{AFmax}; and

Subject to any restrictions on night-time operation of the access way contained in LUC RC38907, as may be amended from time to time.

McBreen Jenkins – Takahiwai Quarry

Balance Agriculture – Mata Quarry

United Carriers – Woods Road Quarry

Mountfield Rd Quarry

Noise Limit

Daily, between the hours of 0630 and 2130 - 50 dBA L₁₀ dB L_{Aeq}; and

Daily, between the hours of 2130 and 0630 - 40 dBA L₁₀ dB L_{Aeq} and 70 dBA L_{max} dB L_{AFmax}.