



TAUPO DISTRICT PLAN NOISE REVIEW

PLAN REVIEW 2020
GREAT LAKE TAUPŌ

PREPARED FOR
Taupō District Council

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1.0 Introduction

Styles Group has been engaged by Taupō District Council to assist in their review of the Taupō District Plan noise provisions as part of a full District Plan review.

This advice includes:

- i. A review of the Operative Taupō District Plan (the ODP) noise management framework and opportunities for the Proposed District Plan (PDP) to address the issues we have identified;
- ii. Recommendations to comply with the mandatory directions of the National Planning Standards (NPS), specifically the Noise and Vibration Metrics Standard and Definitions Standard as they relate to the assessment, measurement and management of noise and vibration;
- iii. Identification and discussion of the noise sources that are not managed / not managed in accordance with best practice under the ODP, and recommendations to address the issues we have identified as part of the plan review.

The ODP noise management framework is reproduced in Appendix A of this report.

2.0 Terms of reference

Taupo District Council are undertaking a full review of the District Plan. The plan review objectives have been informed by initial research and consultation documents, including the District Plan Monitoring Report and Issues Identification report, the Taupo District 2050 (TD2050), the District Growth Management Strategy, the Demographic snapshot, the Challenges paper, and community consultation. TD2050 seeks to identify the resource management outcomes that will assist TDC to achieve the vision of being the “*heartbeat of the North Island*”, and the most prosperous and liveable district in the North Island.

We have reviewed the background documents to identify the key resource management issues facing the Taupo District, and to identify the potential role of the District Plan’s noise management framework in delivering the outcomes sought by the Council and community.

This review provides a high level overview of the issues, the noise related considerations, and our high level recommendations to ensure the noise management framework delivers the environmental outcomes sought by the plan review process. The noise management framework that is developed through the plan review process will be an important tool to deliver the strategic outcomes of TD2050.

The National Planning Standards *Zone Framework Standard* sets a template that District Plans must follow. This will involve the introduction of new zones to the current District Plan framework. At this point in time, TDC are refining the objectives and desired environmental

outcomes for the proposed zone framework. The PDP noise management framework will need to be prepared to deliver the environmental outcomes for each zone, and to manage the noise effects within and between the proposed zones.

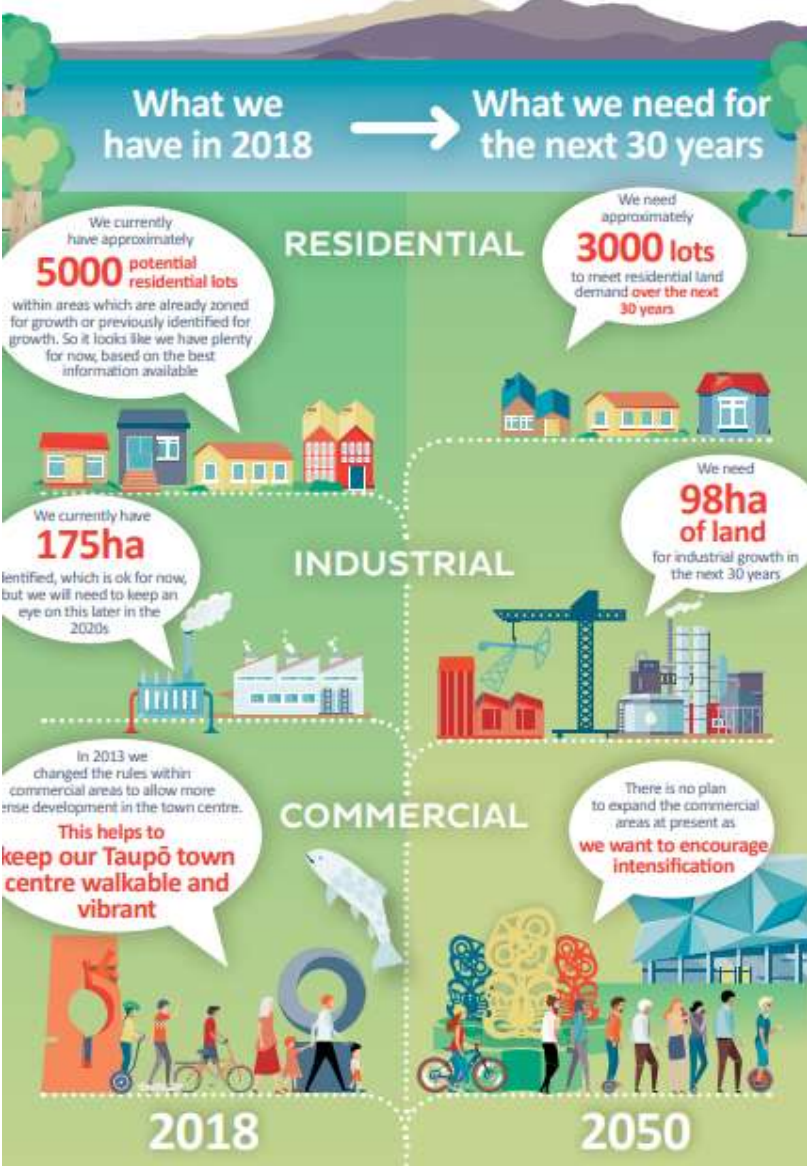


Figure 1 Taupo District 2050 background

Taupo District 2050 is a strategy that outlines the vision and strategy for managing projected urban growth in the District. The strategy identifies where future urban growth is expected to occur, and the strategic actions necessary to accommodate the projected land use and development patterns.

3.0 The National Planning Standards

The NPS' were gazetted in April 2019. As part of the review of the Taupō District Plan, the PDP will need to meet the requirements of the NPS, including the specific requirements

prescribed by the *Noise and Vibration Metrics Planning Standard* (NVMPs) as it relates to the measurement, assessment and management of noise (and vibration). The *Definitions Standard* also contains definitions for noise symbols and terms that must be adopted in the PDP.

The National Planning Standards prescribes a *Zone Framework Standard* that District Plans must follow. This will result in the introduction of more zones, and an accompanying noise management framework will need to deliver the environmental outcomes for each of the zones, and to manage the noise effects within and between the zones.

As the NVMPs does not provide any direction on managing effects, noise limits or rule frameworks, the appropriate noise levels and rules will need to be determined through this process to reflect the function of each zone, and to recognise and provide for the land use activities that are anticipated and provided for in each of the zones. Further direction will be required from TDC on the aural amenity objectives for the proposed zone framework.

The purpose of the NVMPs is to require the adoption of the measurement methods and symbols from the relevant New Zealand Acoustical Standards (NZAS) to be used in plan rules. This section contains a review of the existing ODP, to determine the relevant updates that will be required to address the NVMPs and Definitions Standard.

3.1 The Noise and Vibration Metrics Planning Standards (NVMPs)

3.1.1 Mandatory direction 1 of the NVMPs

Mandatory direction 1 requires the adoption of the noise measurement methods and symbols prescribed under the relevant NZAS. The direction requires:

1. Any plan rule to manage noise emissions must be in accordance with the mandatory noise measurement methods and symbols¹ in the applicable New Zealand Standards incorporated by reference into the planning standards and listed below:
 - New Zealand Standard 6801:2008 Acoustics – Measurement of environmental sound
 - New Zealand Standard 6802:2008 Acoustics – Environmental noise
 - New Zealand Standard 6803:1999 Acoustics – Construction noise
 - New Zealand Standard 6805:1992 Airport noise management and land use planning – measurement only
 - New Zealand Standard 6806:2010 Acoustics – Road-traffic noise – New and altered roads
 - New Zealand Standard 6807:1994 – Noise Management and Land Use Planning for Helicopter Landing Areas- excluding 4.3 Averaging
 - New Zealand Standard 6808:2010 Acoustics – Wind farm noise

¹ Terms includes noise metrics and symbols as defined within the Definitions Standard.

- New Zealand Standard 6809:1999 Acoustics – Port noise management and land use planning

3.1.2 Achieving compliance with Mandatory Direction 1

The ODP currently refers to three New Zealand Acoustical Standards: NZS 6801:1999 *Acoustics – Measurement of Environmental Sound*, NZS6802:1999 *Assessment of Environmental Sound* and New Zealand Standard 6803:1999 *Acoustics – Construction noise*. The PDP will need to be updated to reference the 2008 versions of New Zealand Standard 6801 and 6802.

The ODP references the correct Standard for the *New Zealand Standard NZS 6803:1999 Acoustics – Construction Noise*.

3.2 Mandatory direction 2 of the NVMPS- mandatory assessment methods

Mandatory direction 2 of the NVMPS requires:

2. Any plan rule to manage noise emissions must be consistent with the mandatory assessment methods in section 6 Rating Level and section 7 (L_{AFmax}) of New Zealand Standard 6802:2008 *Acoustics – Environmental Noise* (incorporated by reference into the planning standards), provided the type of noise emitted is within the scope of New Zealand Standard 6802:2008.

The New Zealand Acoustical Standard NZS6802:2008 is adopted by the NVMPS for the assessment of environmental noise. However, as identified in the scope of NZS6802:2008, this standard does not apply to noise that is managed by other acoustical standards, or impulsive sounds, including gunfire and blasting. Clause 1.2 *Applicability to Specific Sources* of NZS 6802:2008 identifies the following noise sources are excluded from the scope of the Standard

“In particular, assessment of specific sound including road or rail transport, flight operations of fixed or rotary winged aircraft associated with airports or helicopter landing areas, construction, port noise, wind turbine generators, and impulsive sound (such as gunfire and blasting).”

Further noise source exclusions in clause 1.2 include:

- Noise sources that are within the scope and subject of other New Zealand acoustical standards (including road traffic noise, port noise, airport noise, helicopter noise, wind turbine noise, construction noise).
- Structure-borne sound and vibration.
- Sound from rail-yards not attributable to vehicles on rails and sound from aircraft activities (except aircraft taxiing and in-flight).
- Light aircraft flight and ground movements not at airports.

- Impulsive sounds such as the noise from gunfire, and gas guns for bird scaring.

The ODP currently references only one NZAS that deals with noise sources outside the scope of NZS6802:2008, which is construction noise, assessed under New Zealand Standard 6803:1999.

Our review of the ODP has identified the opportunity to manage the following noise sources in accordance with the relevant NZAS that apply to them. These include:

- Noise from formal and informal helicopter landing areas under New Zealand Standard 6807:1994 – *Noise Management and Land Use Planning for Helicopter Landing Areas* (excluding 4.3 Averaging);
- New Zealand Standard 6805:1992 *Airport noise management and land use planning* – measurement only
- Road traffic noise under New Zealand Standard 6806:2010 Acoustics – Road-traffic noise – New and altered roads;
- Wind turbine noise under New Zealand Standard 6808:2010 Acoustics – Wind farm noise².

We recommend the development of noise standards to manage these noises sources in accordance with the relevant NZAS. This will require the incorporation of the above NZAS by reference. Further discussion on each noise source, the options to manage these noise sources and application of the relevant acoustical standard is provided later in this document

3.3 Mandatory direction 3- construction vibration metrics

Mandatory direction 3 of the NVMPS requires:

3. Any plan rule to manage damage to structures from construction vibration must be consistent with the metrics for peak particle velocity (ppv) in ISO-4866:2010 – Mechanical vibration and shock, incorporated by reference into the planning standards.

The ODP does not contain any provisions to manage construction vibration effects.

If the PDP includes construction vibration effects, it must adopt the metrics described above.

3.4 The Definitions Standard

In accordance with the mandatory directions of 6. *Introduction and General Provisions Standard* and 14. *Definitions Standard*, definitions of terms used in a District Plan must be located in the Definitions chapter of the District Plan, and be defined in accordance with the prescribed terms of the *Definitions List*.

² If required.

Definitions for the following symbols and terms are provided in the Definitions Standard. If these terms are referred to in the PDP, their definitions from the relevant NZAS must be used in the definitions chapter of the PDP.

- Best practicable option
- L_{A90}
- L_{Aeq}
- L_{AFmax}
- L_{dn}
- L_{peak}
- Noise
- Noise rating level
- Notional boundary
- Peak particle velocity
- Special audible characteristics.

Appendix B identifies the existing noise terms that will require updating to comply with the Definitions Standard.

Where a term is not defined in the *Definitions List*, the local authority may elect to define additional terms. The plan review process will result in the development of a new noise framework, and definitions for some additional terms that are used in the noise provisions will be required to ensure the District Plan is able to be administered efficiently and appropriately. The development of new definitions to support the new noise framework will be an important part of the plan review process. This review identifies the need for several definitions (such as 'noise sensitive activity and noise sensitive space'), however the need for other definitions will be developed as the proposed policy framework is refined.

4.0 Rural noise

Under the ODP, the Rural Environment covers a large proportion of the Taupō District outside of the urban areas. There are a wide range of activities occurring in the environment, including established activities and industries such as the Wairakei Tourist Park, power stations and commercial activities. The objectives and policies for the Rural Environment recognise rural land as an important resource for the district (and region).

TDC intend to replace the 'Rural Environment' with a 'General Rural zone' (GRZ) and 'Rural Lifestyle Zone' (RLZ) to align with the NPS Zone Framework Standard. TDC's anticipated environment outcomes for the Rural Zones are broadly summarised below:

Proposed Zone**Taupō District Council comment on proposed policy direction**

General Rural Zone

We have turned the existing Rural Environment into the General Rural Zone. This is the place where primary production will be enabled along with commercial activities reliant on the natural resources like milk processing. We also expect a range of tourism activities in the zone.

Housing will be permitted but the focus is on housing people working in the zone rather than creating lifestyle housing opportunities.

Lots will be maintained at 10ha with an emphasis on retaining flexibility of the land as a resource.

We anticipate that more sensitive activities like housing will be kept away from boundaries to ensure that noisy and smelly primary production can take place next door.

Rural Lifestyle Zone

We have a number of areas in the current Rural Environment where lifestyle housing has been incrementally established. We intend zoning those for that purpose. This is where people can have a horse or a pet lamb. We are looking at a 2ha minimum so there is some space between people but not a lot of wasted land.

We also recognise that the rural lifestyle areas are a useful place to operate smaller scale primary production, stuff that doesn't need the minimum 10ha in the General Rural Zone.

There is already a mix of commercial activities in these areas like firewood yards, truck depots, hairdressers, wedding venues and tourist activities.

Because these existing rural properties will be getting the right to intensify from the current 4ha minimum we see the potential for conflict on the boundary with the General Rural Zone. We are thinking of making those properties abutting the General Rural Zone maintain the 4ha minimum so they have more flexibility to insulate themselves from the farmer next door.

4.1 Key issues with the existing noise framework for the Rural Environment

We have identified the following issues with the existing noise management framework for the Rural Environment:

- i. The Rural Environment accommodates a wide range of rural, commercial, industrial and tourism activities, as well as noise sensitive activities (predominantly dwellings whose occupants may or may not be engaged in rural activity). The noise emissions and aural amenity requirements (and expectations) of these activities vary significantly, and can give rise to compatibility issues if their location and noise effects are not managed appropriately;
- ii. The wide range of non-rural activities within the Rural Zone can potentially give rise to noise conflicts and reverse sensitivity effects on 'legitimate' rural production activities;

- iii. The current District Plan “exclusions” to the Rural noise limits may authorise noise levels that may be unreasonable within the Rural Environment;
- iv. The Rural noise management framework does not promote the internalisation of noise effects within site boundaries where that is practicable;
- v. A combination of the maximum permitted noise levels, noise assessment location (notional boundary), permissive activity framework, and the exclusions to the Rural noise limits, may give rise to noise effects that will be incompatible with the aural amenity levels sought by occupants of the proposed Rural Lifestyle Zone (RLZ).

These issues are discussed in further detail below.

4.1.1 Compatibility of land uses and potential reverse sensitivity effects

The maximum permitted daytime noise levels prescribed for the Rural Environment (55dBA L_{Aeq}) reflect the upper-most daytime noise limits for a zone which includes noise sensitive activities³ that are not acoustically insulated. The 55 dB L_{Aeq} noise limit has been prescribed to enable most rural production activities to operate without unreasonable restriction (while maintaining some degree of compatibility with residential activities). However, the lack of activity based controls for the Rural Zone means that these permissive noise limits can also be applied to non-rural activities, such as a wide range of commercial (including hospitality and tourism) and industrial activities.

The range of non-rural activities that are enabled within the Rural Environment can generate noise emissions that are more constant in level and duration than typical rural noise sources (which are often seasonal or intermittent in duration). Essentially, the Rural Environment accommodates a diverse range of land use activities, with varying degrees of noise emissions. The Rural Environment also contains activities with high amenity expectations (i.e noise sensitive activities and lifestyle living). As the diverse range of rural land use activities have contrasting (and often conflicting) aural amenity requirements/ expectations, the potential for reverse sensitivity effects increases where the noise emissions from land use activities are incompatible.

The plan review process will need to carefully manage the potential for conflicting land uses to establish within the GRZ and RLZ, to ensure that legitimate rural production activities can operate without unreasonable constraints within the GRZ, while protecting the amenity levels within the RLZ.

³ By way of context, noise levels of 55dB L_{Aeq} during the day and 45dB L_{Aeq} at night are the highest noise limits for residential receivers. Noise levels above 55dB L_{Aeq} during the day and 45dB L_{Aeq} at night would typically require the dwellings to be acoustically insulated, and could result in the outdoor living environment have a very low level of aural amenity.

4.1.2 Potential issues with relying on the notional boundary assessment location

District Plans typically require noise to be measured and assessed at the “notional boundary” of sites within Rural Zones. The notional boundary is defined as a line 20 metres from any side of a rural dwelling or the legal boundary where this is closer to the dwelling. Assessing noise compliance with reference to a notional boundary means that:

- Only the area immediately surrounding the dwelling is protected from potentially unreasonable noise levels. This approach may not be appropriate on RLZ allotments where outdoor noise amenity (across the entire allotment) may be of high importance to the zone occupants); and
- A residential dwelling or noise sensitive activity must exist to create an assessment point and trigger an acoustic assessment. If there is no noise sensitive activity on land adjacent to the noise maker, then there is no noise limit applying on that property, and noise makers may use the land as a buffer for their own effects.

Many intensive productive rural activities and rural industries can generate relatively high levels of noise at the source from sources such as truck movements, noisy machinery, air handling systems and 24hr operations. In many cases, these noise effects are not able to be wholly internalised within the site boundaries, and sometimes large separation distances are required to bring the noise levels down to a reasonable level.

Some noise generating activities are not able to internalise their noise effects within their site boundaries and rely on vacant land on adjoining sites to provide a ‘buffer’. This can lead to conflict when a noise sensitive activity lawfully establishes on the adjoining land that is being used as the buffer. The process is broadly summarised below:

- The noise maker establishes adjacent to an undeveloped site, and externalises their noise effects across the vacant land – essentially using someone else’ land as a buffer because there is no notional boundary from which noise levels to be assessed. The consenting process fails to accurately identify the level of noise propagation across the neighbouring land because there is no compliance point. As there is no assessment or compliance point applying on the vacant land, the owner of the vacant land is not considered to be an affected party in the consent process;
- The noise maker establishes and operates their activity.
- The vacant land is developed with a residential dwelling and is occupied (the noise receiver);
- The noise maker does not reduce their noise emissions to a reasonable level to take account of the new noise receiver and the noise limit that now applies on that land;
- The new noise receiver complains about the noise effects at their site;

- The Council is required to moderate the noise conflict, often resulting in significant time and cost to all parties involved. In some cases, enforcement action is required. The noise maker is ultimately required to reduce their noise emissions, often with significant adverse economic impact to their established operation.

Many District Plans require noise levels in rural lifestyle zones to be assessed at the site boundary of the noise generator and/ or the noise receiver to provide a greater level of aural amenity and noise protection beyond the site of the noise generating activity. This approach recognises that:

- Rural lifestyle zones are likely to be subject to subdivision and development (due to the development rights afforded by rezoning). As such, the vacant land should be protected from noise effects on the basis that it will include residential dwellings in the future.
- Rural lifestyle zones are often high amenity areas. The occupants of the zone often have a high aural amenity expectation, and seek to enjoy low noise levels throughout their property (not just around their dwelling). Outdoor living is often a key component of rural lifestyle zones.

To recognise and provide for these issues under the Proposed District Plan, we recommend that the relevant noise assessment locations for the GRZ and RLZ take account of the aural amenity expectations within and between the GRZ and RLZ.

For example, it is possible to prescribe two assessment locations in a plan rule, to require noise levels to be assessed at the site boundary and notional boundary of the noise receiver, with the maximum permitted noise levels applying at each location tailored appropriately for the GRZ and RLZ. This approach can enable a slightly higher noise level at the site boundary, while requiring a similar or lower noise limit at the notional boundary.

4.1.3 Promoting the internalisation of noise effects

Rule 4b.1.5 *Rural “Effects Area” Radius* requires that any residential unit or accommodation activity is setback (within the site) 100m from any Industrial Environment boundary and 50m from all other allotment boundaries (subject to the exceptions identified). This approach effectively places the burden of separation onto the incumbent noise sensitive receiver. However, it may not always be practicable for this setback to be achieved on a site. Depending on the noise generating activity, achieving a setback of 50m or 100m may not guarantee that the residential unit or accommodation activity will be provided with a sufficient level of aural amenity, including protection from sleep disturbance effects.

We recommend that the appropriate balance between a) relying on the “effects area” radius as a key means to prevent conflicts between incompatible land uses, rather than b) restricting the co-location of potentially incompatible land uses and promoting the internalisation of effects within site boundaries, is a balance that is carefully considered in the plan review process.

4.1.4 Managing reverse sensitivity conflicts

The concept of “reverse sensitivity” (as it relates to noise effects), refers to the vulnerability of an established and legitimate noise generating activity to complaint and restriction arising from the nearby establishment of a new noise sensitive land use. The Rural Environment accommodates both noise generating rural activities, and noise sensitive activities (mostly residential dwellings).

The ODP does not rely on activity-based controls as a mechanism to prevent incompatible land use activities locating adjacent to each other. Concerns are raised that this approach is not effective in protecting the productive function of the Rural Environment, restricting ‘out of zone’ activities, and preventing conflicts between incompatible land uses (and reverse sensitivity effects). Where the noise emissions from land use activities are incompatible, the potential for reverse sensitivity effects increases. Conflicting land uses must be carefully managed to ensure that legitimate rural production activities can continue to operate without unreasonable constraints.

Managing reverse sensitivity conflicts in the rural zones will be a key focus of the plan review process. There a range of mechanisms that can be adopted to manage reverse sensitivity effects, including:

- i. Ensuring the policy frameworks for the GRZ and RLZ clearly establishes the level of noise amenity that is provided for in the zone (i.e. to recognise the GRZ is a productive working environment, and characterising the nature of the noise sources expected within the zone);
- ii. Ensuring the noise level, timing and character of noise sources of the activities that are anticipated and provided for in each of the Rural Zones (including the noise effects authorised by the exclusions to the Rural noise limits) are generally compatible;
- iii. Providing noise levels and assessment locations that promote the internalisation of noise effects within boundaries as far as practicable.

4.1.5 Exclusions to the Rural noise limits

It is common for District Plans to identify activities that are excluded from the need to comply with the maximum permitted noise levels. This approach provides for certain noise sources that are anticipated and reasonable within the zone and enables them to occur without control. Examples include exclusions for lawn mowing, DIY work and normal household activities in a residential zone, and the noise of animals, tractors, seasonal harvesting machinery and working dogs in rural zones.

Rule 4b.1.14 of the ODP provides exclusions for the following the maximum permitted noise levels for the Rural Environment,

“Nothing in the foregoing Performance Standards shall apply to farm animals including working dogs, and to agricultural and forestry vehicles, agricultural and forestry machinery or equipment (including mobile plant at produce packing facilities but excluding sawmilling equipment), operated and maintained in accordance with the manufacturer’s specifications in accordance with accepted management practices (e.g. for milking, spraying, harvesting, packing, forest harvesting and the like). Provided that the activity shall comply with the requirements of S16 of the Resource Management Act 1991.”

The following issues have been identified with the exclusions currently set out in the ODP at part (i) of 4b.1.14:

- The phrase ‘farm animals’ is not clear, and could be interpreted to include intensive farming and other farming methods which can generate a level and character of noise that is not anticipated or reasonable in the GRZ⁴.
- The exclusions for machinery and mobile plant (especially at packhouse facilities) could easily lead to unreasonable noise effects on noise sensitive activities in the GRZ, especially where they are occurring through the night and not seasonal or intermittent;
- The use of the phrase ‘accepted management practices’ is unclear and undefined.
- The last sentence of the exclusion places a qualifier on all exclusions that requires activities to ‘comply with the requirements of s16’ of the RMA. This qualifier essentially forms a step in the determination of whether an activity is permitted by the ODP, or not. Determining whether any particular exclusion meets the requirements of s16 of the RMA can be a costly, time consuming and uncertain process. It is problematic to include this as a test for any permitted activity on that basis.

We recommend that the current Rural noise exclusions are refined through the plan review process to address these issues.

4.2 Key considerations for Rural noise in the plan review process

Noise management tool	Comment
Maximum permitted noise levels for the GRZ and RLZ	The maximum permitted noise levels for the GRZ need to be determined taking into account the exclusions to the maximum permitted noise levels, as well as prioritising the operation of productive rural activities and industries over a high level of aural amenity for noise sensitive activities.

⁴ By way of comparison, the Auckland Unitary Plan’s Rural noise exclusions apply to animal noise on farms “unless they are confined within a building or enclosure on a permanent or semi-permanent basis”.

Noise management tool	Comment
Noise assessment location	<p>The maximum permitted noise levels for the RLZ need to be determined taking into account the exclusions to the maximum permitted noise levels, as well as prioritising a high level of aural amenity for noise sensitive activities over a permissive regime for the operation of productive rural activities and industries.</p> <p>The range of daytime / night time maximum permitted noise levels typically applied to Rural Zones across NZ are (in order of permissiveness):</p> <ul style="list-style-type: none"> a) 55 dB L_{Aeq} daytime and 45 dB L_{Aeq} night time; b) 55 dB L_{Aeq} daytime and 40 dB L_{Aeq} night time (the ODP noise limits); c) 50 dB L_{Aeq} daytime and 45 or 40 dB L_{Aeq} night time; <p>Option (a) is very enabling, and can provide a reasonable level of flexibility for productive rural activities to operate during the day and night, whilst avoiding unreasonable noise levels in the GRZ. These noise limits are unlikely to support the desired amenity outcomes in the RLZ where a higher level of aural amenity may be sought.</p> <p>Option (b) retains the maximum permitted noise levels prescribed by the ODP. The daytime noise levels are very enabling, while the night time noise levels provided a good level of protection to noise sensitive activities. If these maximum permitted noise levels are to be retained, we recommend that the current exclusions to the noise limits are refined.</p> <p>Importantly, the effects authorised by the maximum permitted noise limits must be considered in the context of the noise sources that are anticipated and provided for in the Zone. By way of example, if the noise levels are prescribed to enable rural activities to operate without undue restriction, and there are no activity based controls to require activities to be 'rural' in character, other commercial activities (such as hospitality venues) will also be able to take advantage of these noise limits. As rural activities are often seasonal or intermittent, the noise effects of non-rural activities can be significantly greater (particularly in level, timing and duration) than the noise levels typically characteristic of a productive rural environment..</p> <p>Option (c) reduces the day time noise limits to provide a higher level of aural amenity, with options to tailor the night time noise limits to provide a very high level of noise protection at night. These noise limits are typically adopted in rural lifestyle zones where a high level of aural amenity is sought, and background noise levels are very low. Option (c) may be appropriate in the RLZ, depending on the purpose and objectives of the zone.</p>
	<p>The ODP requires noise levels to be assessed at the notional boundary of the receiving site. The plan review process will enable the assessment locations applying within the GRZ and RLZ to be prescribed taking into account the function of each zone, and desired aural amenity outcomes.</p>
	<p>Options for assessment locations include:</p> <ul style="list-style-type: none"> • Requiring noise levels to be assessed at the site boundary of the noise generator; • Requiring noise levels to be assessed at the site boundary of the noise receiver;

Noise management tool	Comment
	<ul style="list-style-type: none"> • Requiring noise levels to be assessed at the notional boundary of the noise receiver (status quo); • Requiring noise levels to be assessed at the notional boundary and site boundary of the receiver.
	<p>The above options can be tailored in conjunction with the specified maximum permitted noise levels. These options can be tailored to achieve a lower noise level (higher degree of acoustic amenity) at the notional boundary (around the dwelling) and a higher noise limit (slightly lower level of noise amenity) at the site boundary and across the balance of the site.</p>
<p>Exclusions to Rural noise standards</p>	<p>The noise levels authorised by the existing ODP exclusions are permissive, in some ways unclear, and difficult to administer. We recommend that the exclusions are refined under the PDP, in accordance with the following objectives:</p> <ol style="list-style-type: none"> The exclusions to the maximum permitted noise levels should be clear and certain, with the minimum degree of interpretation required (this may require use of definitions for terms used in the exclusions); Any exclusions to the maximum permitted noise levels should provide for appropriate productive rural activities and industries to operate; Any exclusions to the maximum permitted noise levels should permit only the effects that could be reasonably anticipated by noise sensitive activity located in the GRZ; The exclusions must not allow the generation of unreasonable levels of noise on noise sensitive activities located in the GRZ (or the RLZ if subject to the same exclusion); Ensure that the exclusions are clear, and that an assessment of effects is not required to determine whether any particular exclusion applies.
<p>Activity tables and use of activity based policy framework to guide the location of noise generating activities within the zone.</p>	<p>Under this approach, an activity-based policy framework is carefully prescribed to support the function of each rural zone. A permitted activity status is applied to activities that are anticipated and provided for within the zone. Other non-rural activities which have potential incompatibility effects with those land uses are required to obtain resource consent. This approach enables any non-rural activity of a character, intensity or scale to be subject to a more rigorous assessment process.</p> <p>This approach would require resource consent to be obtained for activities that may generate noise effects at a timing, level and/or character that is not reasonably expected in the GRZ (such as entertainment / hospitality venues and shooting activities). The resource consent process would enable the specific noise effects to be assessed on a case by case basis, against the objectives and policies and assessment criteria for the zone, before consent can be granted.</p> <p>The success of this approach relies on the development of clear definitions for those 'rural' land use activities which are permitted. By way of example, the AUP relies on nesting tables and definitions to control the establishment and operation of land use activities⁵ within each zone.</p>

5

<https://unitaryplan.aucklandcouncil.govt.nz/Images/Auckland%20Unitary%20Plan%20Operative%20Sealed%2015%20Nov%202016/Chapter%20J%20Definitions/Chapter%20J%20-%20Definitions.pdf>

5.0 Industrial noise

Under the ODP, the Taupō Industrial Environment and Centennial Industrial Environment provide an area for industrial activity to operate. The ODP recognises that the industrial zones are an important resource, providing a location where certain activities can operate, and enabling “the community to provide for its economic and cultural wellbeing through the provision of employment opportunities and production of energy and value added products within the District”.

To align with the NPS Zone Framework Standard, TDC intend to replace the Taupō Industrial Environment and Centennial Industrial Environment with a Light, General and Heavy Industrial Zone. TDC’s anticipated environment outcomes for the proposed Industrial Zones are broadly summarised below:

ODP Zoning	Proposed District Plan Zoning	TDC comment
Industrial Environment Taupo and Centennial Industrial Environment	Light Industrial Zone	<i>We reviewed the industrial chapters a few years ago. We created a differentiation between Taupo Industrial (light) and Centennial Industrial (heavy). It is reasonable to expect those areas to stay consistent, along with the mix of activities. We tried to make it clear that we didn't want sensitive activities like residential in here. We might need to strengthen that. We also have tight controls over office and retail activities. That is about protecting the town centre, but also making sure dirty and noisy industrial activities don't suffer from reverse sensitivity.</i>
	General Industrial Zone	
	Heavy Industrial Zone	<i>There are some residual areas that are still just Industrial. They are limited and tended to have specific uses on them like power stations... They will likely get consolidated into either the light or heavy industrial zones.</i>

5.1 Key issues with the existing ODP industrial noise framework

We have identified the following issues with the existing noise management framework for the Industrial Environments:

- The Taupō Industrial Environment is intended to provide for light industrial activities, and the Centennial Industrial Environment is intended to provide for heavy industry. However, the maximum permitted noise levels prescribe in either zone provide for very high noise levels (75 dB L_{Aeq}) at any time, at any other site. These noise limits

reflect the highest District Plan noise limit, with such noise levels typically anticipated and provided for only in heavy industrial zones (and usually in conjunction with activity based controls to ensure the land use activities within the zone are compatible with the high zone noise levels)⁶;

- Despite the very high maximum permitted noise levels enabled within the Industrial Environments, the effects based plan framework enables a wide range of activities to establish in the industrial environments. The TDC District Plan Monitoring Report and Issues Identification Report notes that while Plan Changes 28-33 increased the supply of industrial land, the centres-based approach it promulgates also enables non-industrial activities to locate in the industrial environments. The permissive approach of the ODP facilitates a wide range of activities and land uses to operate within the industrial environments, however the maximum permitted noise levels enabled within the zone are incompatible with the level of aural amenity that many of non-industrial activities require to function and operate. For example, any site subject to an external noise level of 75 dB L_{Aeq} and containing activities which rely on communication to operate effectively (i.e. office, retail or educational activities) would require a high degree of specific acoustic treatment to achieve sufficient protection from the noise of the adjacent activity. Due to this inherent conflict, there is a strong likelihood that reverse sensitivity effects will arise on the industrial activities. In turn, this compromises the extent to which the industrial environments provide a zone in which noise generating activities can operate effectively, and without constraint from more sensitive land uses.
- Residential and accommodation activities are able to establish within the Taupō Industrial and Centennial Industrial Environment subject to them being acoustically insulated to achieve an internal noise level of 40 dB L_{Aeq} . We note this approach is extremely unusual. To ensure industrial zones can operate effectively and without constraint or conflict between land uses, most District Plans restrict (i.e apply a non-complying or in some cases, a prohibited activity status) to residential, accommodation and other noise-sensitive activities⁷. In some District Plans, some provision for overnight accommodation is provided for (e.g. worker accommodation) however this is controlled through activity status and performance standards (i.e. purpose and number of accommodation facilities);
- Rule 4h.1.9 of the ODP permits residential/ accommodation activity where a building achieves an outside to inside noise level reduction of 40 dB. Compliance is required to be demonstrated through the provision of an acoustic report at the time of building

⁶ By way of comparison, the Auckland Unitary Plan (**AUP**) prescribes a noise limit of 70 dB L_{Aeq} (all times) between sites in the Heavy Industry Zone and a noise limit of 65 dB L_{Aeq} (all times) between sites in the Light Industry Zone.

⁷ The ODP does not refer to the term “noise sensitive activities” so there are no acoustic insulation requirements pertaining to educational or healthcare facilities

consent. There are a number of issues associated with the implementation of this plan rule, including that the provision of the acoustic design report is not linked to the resource consent process. We note that any site subject to an external noise level of 75 dB L_{Aeq} would require a very high degree of specific acoustic treatment to achieve sufficient protection from the noise of the adjacent activity.

5.2 Key considerations for industrial noise in the plan review process

Noise management tool	Comment
Prescribed timeframe (i.e. daytime and night time)	<p>District Plan rules prescribe maximum permitted noise levels based on the prescribed timeframe for the daytime and night time period (and in some cases, an evening period).</p> <p>The noise levels applying under the ODP industrial environments apply <i>at any time</i>. This approach is common in industrial zones where a lower night time noise limit is not required to protect noise sensitive occupants from sleep disturbance effects, and the zone is well separated from other noise sensitive zones (i.e. Rural and Residential).</p> <p>The maximum permitted noise levels applying to each of the prescribed timeframes for the proposed Industrial Zones will need to be determined, taking into account:</p> <ul style="list-style-type: none"> • The land use activities anticipated and provided for within the zone (including any noise sensitive activities) and whether they operate at night; • The proximity and location of the zone in relation to other zones containing noise sensitive activities (that may require protection from sleep disturbance effects); • The overall function and purpose of the zone.
Maximum permitted noise levels for Industrial Zones	<p>Most District Plans prescribe a maximum permitted noise level of between 70- 75dB L_{Aeq} between sites in Heavy Industrial Zones.</p> <p>The maximum permitted noise level prescribed for General and Light Industrial Zone ranges from 60 - 65 dB L_{Aeq} between sites.</p> <p>Authorising noise levels as high as 75 dB L_{Aeq} between sites will require careful control on the nature of land use activities permitted within the zone. As a general note, we consider that the ODP noise limit of 75 dB L_{Aeq} at all times is too high for the General or Light Industrial Zones.</p> <p>A key consideration for re-zoning the existing industrial activities will need to recognise the noise generating requirements of the activities within the zone, and whether they can operate under the proposed Light, General or Heavy Industrial Zone noise limits.</p>
Activity tables and use of an activity based policy framework to guide the location of noise generating activities within the Industrial zones	<p>Under this approach, an activity-based policy framework is carefully prescribed to support the function of each of the industrial zones. This approach seeks to ensure that the operation of each of the industrial zones can operate efficiently, and without unreasonable constraint from other activities. Activities which do not support the primary function of the zone, or are likely to hinder the operation of other activities, are precluded through the use of a more restrictive activity status, and a robust policy framework to guide the resource consent assessment and decision making process.</p>

Noise management tool	Comment
Acoustic insulation controls for noise sensitive activities/spaces	<p>The success of this approach relies on definitions to accompany the activity table that sets out the activity status applying to specific land use activities. This ensures plan users understand which activities are permitted or require resource consent. By way of example, the Definitions Chapter⁸ of the AUP uses five nesting tables which gather specific land use activities into general groups: Commerce, Community, Industry, Residential and Rural. Definitions are also provided for various land use activities that sit within each of these groups (i.e. retail, commercial services, warehousing and storage etc).</p> <p>If the District Plan provides for noise sensitive activities in Industrial Zones, subject to acoustic insulation controls being met (through a plan standard), it signals that noise sensitive activities are generally appropriate in the zone. As a general note, any site exposed to 75 dB L_{Aeq} will require a very high degree of specific acoustic treatment to achieve sufficient protection from the noise of the adjacent activity. Outdoor amenity would be extremely poor.</p> <p>Conversely, if the plan does not specific acoustic insulation controls, and affords a restrictive activity status (e.g. non-complying) to the establishment of noise sensitive activities, it signals that noise sensitive activities are not anticipated or provided for in the zone, and are only permitted in unusual or specific circumstances (i.e. workers accommodation). The required level of acoustic insulation can then be determined on a case by case basis, through the resource consent process.</p>
Interface noise controls	<p>The ODP protects noise sensitive zones (rural and residential) from noise generated within the Industrial Environments by requiring the noise generating activity to meet the lower noise limits applying in the residential and rural environment (55 dB L_{Aeq} daytime and 45 dB L_{Aeq} at night). These are referred to as “interface” noise limits.</p> <p>Interface noise limits require the noise generator to comply with the noise limits applying at the receiver. This approach ensures that activities are designed and operated to be compatible with the activities within the same zone, and the surrounding zones. Interface noise limits applying between industrial and residential/rural zones are standard practice across District Plans throughout New Zealand. They ensure an appropriate level of amenity is provided to zones containing noise sensitive activities. Such noise limits only apply to the noise generators if the more sensitive zones are nearby.</p> <p>Interface noise limits between the industrial zones (i.e. heavy industry to light industry) may also be required. This will depend on the activities authorised in the zone, the maximum permitted noise levels authorised within the zone, and whether noise conflict between the zones is likely to arise at the interface. Typically, the noise limit of the receiving zone is adopted to control noise arising from any other zone. For example, an activity in the Heavy Industrial Zone would need to comply with the Light Industrial Zone noise limits at any neighbouring site in the Light Industry Zone.</p>
Determining the Industrial zoning pattern	<p>When TDC determine the location of each of the proposed Industrial Zones, it will be important to take into account the proximity of the zone in relation to residential and rural zones, and whether the maximum permitted noise levels of the Heavy Industrial Zone can realistically be achieved- taking into account the requirement to comply with</p>

⁸<https://unitaryplan.aucklandcouncil.govt.nz/Images/Auckland%20Unitary%20Plan%20Operative%20Sealed%2015%20Nov%202016/Chapter%20J%20Definitions/Chapter%20J%20-%20Definitions.pdf>

Noise management tool	Comment
<p>Defining “noise sensitive activity” and “noise sensitive space”</p>	<p>lower noise limits that will apply at the noise-sensitive zones. Depending on separation distance, it may be more appropriate to apply an intermediary or buffer zone (with lower noise limits) at the direct interface of residential/ rural zones.</p> <p>By way of example, if a Heavy Industry Zoning is applied to an area that is directly adjacent to a Residential Zone, industrial activities may choose to establish within the Heavy Industrial Zone due to the very high enabling noise limits that the zone appears to offer. However, any noise generators who elect to locate, design and operate their operations in industrial zones adjacent to other noise-sensitive zones, will need to undertake very careful due diligence to ensure they can conduct their activities in compliance with the more restrictive noise limits applying at any nearby Residential and Rural zones. This requirement will be particularly important for activities which operate during the night time period, and particularly where the industrial zones are directly adjacent to the noise sensitive zones.</p> <p>As a general comment, due to the inherent conflict between noise generating and noise sensitive activities, we recommend that noise sensitive activities are restricted within industrial zones. The level of restriction will depend on the maximum permitted noise levels authorised within each of the zones, the purpose and function of the zone, and the range of land use activities anticipated and provided for within the zone</p> <p>It is common for District Plan rules to restrict “noise sensitive activities” in industrial zones to varying extents. Noise sensitive activities include residential dwellings and accommodation, but also a range of other activities which rely on a reasonable level of aural amenity to function and operate, such as educational and healthcare facilities. As the term encompasses a broader range of activities than dwellings and accommodation, it is necessary for the District Plan to define the land uses and spaces which are “noise sensitive”, so that the relevant performance standards/ restrictions applying to these activities can be articulated in the plan rules.</p> <p>The ODP does not contain a definition of a noise sensitive activity/ space, and the NPS Definitions Standard does not provide a standard definition. We recommend that the plan review process considers the definition that will be applied to “noise sensitive spaces” and “noise sensitive activities”.</p> <p>By way of example, the AUP defines these terms as:</p> <p><i>Activities sensitive to noise:</i></p> <p><i>Any dwelling, visitor accommodation, boarding house, marae, papakāinga, integrated residential development, retirement village, supported residential care, care centres, lecture theatres in tertiary education facilities, classrooms in education facilities and healthcare facilities with an overnight stay facility.</i></p> <p><i>Noise sensitive space:</i></p> <p><i>Any indoor space within an activity sensitive to noise excluding any bathroom, water closet, laundry, pantry, walk in wardrobe, corridor, hallway, lobby, stairwell, clothes drying area, kitchens not part of a dwelling, garage or other space of a specialised nature occupied neither frequently nor for extended periods.</i></p>

6.0 Residential noise

The ODP's maximum permitted noise levels for the residential zones are generally consistent with other District Plans across New Zealand. The limits are essentially 50dB LAeq daytime, 45 dB LAeq evening and 40 dB LAeq and 70 dB LAFmax at night. These noise levels provide a good level of protection for residential amenity, and good protection from sleep disturbance effects.

By way of context, daytime noise levels of 55dB LAeq during the daytime and 45 dB LAeq at night are recognised as being the *upper desirable level* of noise to affect a residential environment, before day time amenity is seriously compromised, and acoustic insulation is required to ensure adequate sleep protection. In other words, limits of 55dB LAeq during the day and 45dB LAeq at night are the highest noise limits for residential receivers before the receiving dwellings would need acoustic insulation and limits on or modified expectations for outdoor living environments.

The implementation of the NPS Zone Framework Standard will result in the introduction of new residential zones, including zones to recognise large lot, low density, general and medium residential areas. A noise management framework will need to be prepared to recognise and provide for the desired amenity outcome for each of the new zones.

TDC's anticipated environment outcomes for the Residential Zones are broadly summarised below:

ODP Zoning	Proposed District Plan Zoning	TDC comment
Residential Environment	Large lot residential zone	<i>While the zone names might change the actual mix of activities is unlikely to change. We will continue to have a mix of small scale commercial and community uses like churches and day cares.</i>
	Low density residential zone	<i>The KTHD area is located in the block to the east of Taupo town centre. It has traditionally been higher density residential with a real mix of community and office activities. We have some special rules in there to protect the existing use rights of the established activities. We may well look at the potential for higher density residential in there along with the mix of other activities.</i>
	General residential zone	
	Medium residential zone	

6.1 Key considerations for residential noise in the plan review process

Noise management tool	Comment
<p>Determining the maximum permitted noise levels in each of the proposed residential zone</p>	<p>The ODP has three prescribed timeframes: 50dB LAeq daytime, 45 dB LAeq evening and 40 dB LAeq and 70 dB LAFMax at night.</p> <p>District Plans typically apply prescribe daytime noise levels of between 50 - 55dB LAeq.</p> <p>The maximum permitted noise levels applying in each of the proposed residential zones will depend on the desired level of aural amenity for the zone, and the nature of land use activities that are anticipated and provided for. By way of example, a 55dB LAeq noise level may be appropriate for the medium density residential zone within the urban area, particularly if it contains an existing mix of community and office activities. These noise levels would be more enabling for the noise-generating activities, but would result in the upper desirable level of noise in the residential zones. This is acceptable in terms of the relevant guidance, but the trade of amenity for greater flexibility should be considered with care.</p> <p>A daytime noise limit of 50dB LAeq would be appropriate in suburban residential zones subject to low-to-moderate ambient noise levels.</p> <p>We expect that the current ODP limits would be suitable for all Residential Zones.</p>
<p>Acoustic insulation from traffic noise</p>	<p>The Operative District Plan rule does not contain any specific criteria to mitigate dwellings from high levels of traffic noise. The plan review process will need to identify whether some controls are appropriate, noting that NZTA is likely to seek the adoption of their reverse sensitivity policy. Traffic noise (and the NZTA reverse sensitivity policy) is discussed later in this review.</p>
<p>Whether to enable childcare centres in residential zones</p>	<p>Under the ODP, noise emissions from ECE's (Early childhood education centres, including kindergartens, kohanga reo, pre-schools and childcare centres) are controlled by the underlying zone noise performance limits.</p> <p>As ECE's are educational facilities (and inherently noise sensitive), conflicts can result where they establish adjacent to noise generating activities that operate in accordance with the industrial or town centre noise limits. The establishment of noise sensitive activities in high noise environments not only compromises the overall function and integrity of these zones, but can give rise to reverse sensitivity conflicts on legitimate noise makers.</p> <p>ECEs have a functional need to locate in residential zones, however it can often be difficult for ECEs to achieve compliance with residential noise limits (50dB LAeq), especially where a facility seeks to provide for more than 20 or 30 children. Compliance with a limit of 50dB LAeq often requires the use of extensive acoustic barriers (fences) and complex management regimes. The cost of mitigation often drives many facilities to establish in other zones with more permissive noise limits (such as the industrial and town centre environments).</p> <p>While achieving compliance with a noise limit of 50dB LAeq can be problematic (requiring expensive and often undesirable noise mitigation measures, and requiring them to below levels that make them efficient), ECEs can often be designed and operated to achieve compliance with a noise limit of 55dB LAeq. To respond to the locational constraints faced by ECEs, many District Plans are providing specific noise standards that can enable them to operate in residential zones. Increasing the efficiency of ECECs by providing them with specific (and slightly higher) noise limits means that they will be less in number across the district (because each centre can cater for more children), they can be located in residential environments, close to</p>

Noise management tool	Comment
	<p>where they are needed, (avoiding unnecessary travel time) whilst the noise effects remain reasonable. This approach can also be effective in preventing these activities from seeking to establish in industrial zones (where they can give rise to potential reverse sensitivity conflicts).</p> <p>ECECs only generate noise during the day between 7am and 6pm and generate essentially no noise in the evenings, at night and on the weekends and public holidays (aside from when maintenance is required). These are significant mitigating factors when considering whether to prescribe a noise standard that provides for slightly higher noise limits during the daytime.</p> <p>We support controls for ECECs in the residential zones that enable a slightly higher noise limit of 55dB $L_{Aeq(15min)}$ (compared to the level of 50dB $L_{Aeq(15min)}$ that normally applies in the residential zone). The 5dB increase would only apply between the hours of 7am and 6pm on weekdays. To put the 5dB increase in noise level in context, a 3dB increase would be just noticeable, a 5dB increase would be clearly noticeable, an 8dB increase would be a substantial change in noise level and a 10dB increase would sound subjectively twice as loud as the original level. In our view, providing for a noticeably louder level of noise in the day time on weekdays only, essentially in exchange for no noise in the evenings, at night and on weekends and public holidays is efficient and acceptable.</p>

7.0 Commercial and mixed use zones

The ODP includes two town centre Environments, the Taupō Town Centre Environment (applying to the Taupō CBD, Tongariro Domain and Landing Reserve at the Taupō Boat Harbour) and the Turangi and Mangakino Town Centre Environment (applying to the Turangi and Mangakino shopping centres).

The maximum permitted noise levels enabled within each of the Town Centre Environments are extremely permissive, enabling very high noise levels of up to 75dBA L_{eq} (daytime) and 65dBA L_{eq} and 90dBA L_{max} (night time). These noise levels represent the highest District Plan noise limits, typically observed only in heavy industrial zones, and often only in conjunction with specific controls over the type of land use activities that are able to establish in the zone. In our view, it is unlikely that any activities are making use of the full allowance provided by these noise limits, and if they did, we expect that complaints would be received. The ODP noise limits for these zones are very permissive.

The Spa Road Mixed Use Environment applies to the southern side of Spa Road between Kaimanawa Street and Totara Street, and activities on the northern side of Spa Road to the west of Motutahae Street. This zone seeks to provide a mixed use environment in which a range of small scale businesses, light industrial, commercial, community and office activities can operate in conjunction with residential activity. The noise standards for the Spa Road Mixed Use Environment cater to the noise sensitive activities within the Environment by requiring compliance with residential noise limits (both within the Mixed Use Environment

sites, or at the boundary of any adjacent Residential Environment Site). Due to the low noise limits applying within the Spa Road Mixed Use Environment, there is no requirement for noise sensitive activities to be acoustically insulated.

TDC’s anticipated environment outcomes for the proposed Commercial and Mixed Use Zones of the PDP are broadly summarised below:

ODP Zoning	Proposed District Plan Zoning	TDC comment
<p>Turangi and Mangakino Town Centre Environment</p> <p>Taupō Town Centre Environment</p> <p>Spa Road Mixed Use Environment</p>	<i>Neighbourhood Centre Zone</i>	<p><i>We currently have a “shop” overlay for the suburban shopping centres in the residential areas. We expect to move them to one of these new zones. Not expecting much in the way of change to the mix of activities. Clearly need to manage the relationship with nearby residential activities. At the moment these shopping areas are almost exclusively commercial operations without second storey residential.</i></p>
	<i>Local Centre Zone</i>	<p><i>There is a bigger neighbourhood centre being created in Council’s East Urban Land on the southern side of Taupo township toward the airport. It will have a supermarket getting close to 3000m2 and a range of smaller shops and things like a doctor’s surgery. This scale might require a separate zone.</i></p>
	<i>Commercial Zone</i>	<p><i>The Taupo town centre is split into three precincts. The pedestrian precinct is all about finer grained retail and hospitality and creating a nice place to walk around.</i></p>
	<i>Large Format Retail Zone</i>	<p><i>The retail expansion precinct is where we have many of our larger format stores like Briscoes and the Warehouse. Amenity levels are lower here. Over both of those precincts we get office activity although most of it is located in the pedestrian precinct.</i></p>
	<i>Mixed Use Zone</i>	<p><i>The commercial fringe is a bit grungy. Very car orientated with a real mix of operations like mechanics, pet stores, Countdown and day cares. Amenity levels are low, and we are not looking for pretty buildings.</i></p>
	<i>Town centre zone</i>	<p><i>We have pushed the benefits of commercial accommodation and private residential accommodation in the town centre. We wanted to encourage multi story development, make it more economic to do so and create more vibrancy. A new 6 storey hotel is anticipated in Taupo town centre.</i></p>

7.1 Key issues with the existing ODP commercial/ mixed use noise framework

We have identified the following issues with the existing noise management framework for the ODP commercial and mixed use environments:

- Under the ODP, any building containing residential or accommodation activity in the Taupō Town Centre Environment is required to ensure the level of noise received within any *habitable space* does not exceed 40dB L_{Aeq} . The Turangi and Mangakino Town Centre Environment controls do not include a similar requirement for acoustic insulation, and there is no restriction on other noise sensitive activities establishing within this environment. Our consultation with Council staff has identified that the current acoustic insulation controls are not effective in managing the effects of low frequency noise from hospitality venues, and the use of appropriate low frequency controls should be considered in the review process.
- We note that the low (residential) noise limits applying within the Spa Road Mixed Use Environment are relatively unusual and may frustrate the ability of this environment to accommodate the range of activities it is intended for. Typically, mixed use environments provide for higher noise levels (to enable the operation of non-residential activities) while requiring noise sensitive activities to be acoustically insulated from the activities around them.
- In summary, we consider that the noise limits applying within the town centre environments are far too permissive, and the residential noise limits (and lack of acoustic insulation requirements for noise sensitive activities) applying within the mixed use environment are too restrictive to promote a vibrant, mixed use environment.

7.2 Key considerations for commercial/ mixed use noise in the plan review process

Noise management tool	Comment
Maximum permitted noise levels	The maximum permitted noise levels prescribed for each of the commercial zones will depend on the function and purpose of the zone, range of land use activities that are anticipated and provided for under the zone (and the legitimate noise requirements of the activities), whether noise sensitive activities are authorised in the zone (subject to acoustic insulation controls). Noise limits of 60-65dB L_{Aeq} during the day and 50-55dB L_{Aeq} and 75dB L_{AFmax} during the night are typical.
Acoustic insulation requirements	We understand that TDC seeks to enable residential and other noise sensitive activities in zones which are inherently noisy (such as the in the Town Centre). Without any specific controls to ensure that the noise sensitive activities are not

Noise management tool	Comment
Recommended internal design levels	<p>exposed to unreasonable levels of noise from legitimately operating neighbouring activities, the mix of noisy and noise sensitive activities may be incompatible. It is therefore necessary to ensure that the noise from noisy activities are controlled to a reasonable level, and that the noise sensitive activities are insulated to ensure that a reasonable level of noise is achieved in the noise sensitive spaces, and that sleep disturbance is avoided.</p> <p>We support the application of acoustic insulation criteria to parts of the city where noise sensitive activities are going to be permitted or provided for in zones which permit relatively high noise levels, particularly at night.</p> <p>Council may wish to consider whether it provides an exemption to the insulation rules for noise sensitive activities that existed prior to the rules becoming operative. Alternatively, the insulation rules are included without any such limitations and made operative. This latter approach been adopted successfully in numerous other District Plans.</p> <p>Where noise sensitive activities are provided for in the commercial/ mixed use zones, we recommend the internal noise design noise levels should be based on achieving:</p> <ul style="list-style-type: none"> • 35dB L_{Aeq} between 10.00pm and 7.00am the next day in bedrooms and any other space within a building that is designed for sleep, including bedrooms and wards in hospitals or healthcare facilities, hotel rooms etc; and • 40dB L_{Aeq} at all times in other habitable rooms of dwellings, and any other noise sensitive space within a noise sensitive activity. <p>The external noise limit informs the level of outside to inside noise level reduction. The costs of acoustic insulation will depend on the maximum permitted noise level of the zone. As above, we consider the ODP noise levels to be too high in many of the zones. If an appropriate balance is struck between the outdoor noise limits and insulation controls, the cost of any additional specific acoustic insulation is typically very modest, and most modern buildings can achieve the targets without any additional cost, other than to ensure that spaces are mechanically ventilated and air conditioned.</p>

8.0 Open space/ recreation zones

The current ODP zone framework does not include an open space or recreation zone.

To address the NPS Zone Framework Standard, the PDP will include new zones to manage and provide for the use and enjoyment of open space land and recreation facilities. This will likely include new zones to manage natural open space (passive use), open space (mixture of active and passive use), and a sport and active recreation zone. The zones will likely include land administered by the Department of Conservation, parks, reserves and other community facilities administered by TDC, and private sporting clubs and facilities (such as golf courses).

TDC’s anticipated environment outcomes for the proposed Open space/ recreation zones of the PDP are broadly summarised below:

ODP Zoning	Proposed District Plan Zoning	TDC comment
No open space zone	<p>Natural open space zone</p> <p>Open space zone</p> <p>Sport and active recreation zone</p>	<p><i>The operative Plan didn’t have a specific zoning for this type of land, it just took on the zoning of the surrounding activities for eg a residential park was zoned residential or a stormwater reserve next to factories became Industrial.</i></p> <p><i>We will utilise these new zoning opportunities. Of particular interest will be the management of Owen Delany Park and the Tongariro Domain and lakefront areas where events take place.</i></p>

8.1 Key issues with the existing open space noise framework

We have identified the following issues with the existing noise management framework for open space under the ODP:

- There is no open space noise management framework under the ODP, and the PDP’s noise management framework will need to respond to the open space objectives and aural amenity outcomes for the proposed zones.

8.2 Key considerations for open space noise in the plan review process

Noise management tool	Comment
Maximum permitted noise levels	<p>The noise framework for each of the open space and recreation zones will need to recognise and provide for the specific social, recreation and land use activities within each of the zones, whilst ensuring that adverse noise effects beyond the zone are controlled to acceptable levels.</p> <p>The sport and active recreation zone should be applied to those sites where higher noise levels are anticipated, from amplified noise sources (use of PA systems), spectators and game play. There are a variety of options to manage noise from sport and active recreation zones; including:</p> <ul style="list-style-type: none"> • Authorising slighter high noise levels for a set number of hours per day/week. For example, a noise level of 55dB LAeq except that for a cumulative period of: (i) 3 hours per day between 7am and 9.30pm Monday to Friday; and (ii) 6 hours between 7am and 10pm on Saturdays. the noise level must not exceed 60dB LAeq; or

Noise management tool	Comment
	<ul style="list-style-type: none"> Exclusions to the noise controls (i.e. <i>unamplified noise from sporting events where these occur for up to 20 hours per week between 0700 and 2100 hours is exempt from the noise limits</i>); or Prescribing separate controls for the use of amplified noise systems, specifying permitted hours of use, noise levels and total duration per week; or Recognise that activities occurring in the sport and active recreation zone may at times generate high levels of noise, prescribing a slightly higher interface noise limits between sport and active recreation zones and adjacent residential zones (i.e. 55dB L_{Aeq} rather than 50dB L_{Aeq}). <p>If the amenity values of the Natural Open Space and Open Space zones are expected to be high, noise limits applying at the boundary of the Open Space zones could be applied. These would be applicable to any activity in any other zone.</p> <p>For a high level of amenity, noise limits of 45dB L_{Aeq} during the day and 35dB L_{Aeq} at night would be appropriate.</p> <p>For a good level of amenity, noise limits of 50dB L_{Aeq} during the day and 40dB L_{Aeq} at night would be appropriate.</p> <p>Such noise limits would preserve the interior of these spaces as peaceful or tranquil. If such qualities are not desired, higher noise limits could be applied (up to 55dB L_{Aeq} during the day and 45dB L_{Aeq} at night).</p>
Temporary activity controls	<p>The Open space zone framework should align with the temporary activity provisions, recognising that sporting and community events, circus, fairs, and markets often occur on open space land. It is possible to refer to specific sites (i.e Owen Delany Park) in the proposed plan provisions.</p> <p>Noise limits for temporary activities should be set at relatively high levels, along with careful and limited controls on the frequency and duration of events. Noise limits of 75dB L_{Aeq} for events generating noise for 6 hours per day, no more than 6-10 times per year during the day time period are typical.</p>

9.0 District wide provisions

9.1 Temporary activities

Taupō District aspires to be the “*events capital*” of New Zealand. The District currently hosts the annual Ironman NZ, Lake Taupo Cycle Challenge, Great Lake Relay and Across the Lake Swim, Taupo Winter Festival, Graffiato, the Taupo Summer Concert, as well as a variety of other sporting and music events. These major events contribute significantly to the economic, social and cultural well being of the District and assist to create a vibrant atmosphere. Some temporary activities involving high noise levels (particularly those

involving the use of amplified music) have the potential to cause significant adverse effects, where the intensity, timing and duration of the noise levels are not controlled.

The temporary activity rule in the ODP (Rule 4a.2.2) allows for temporary activities to exceed the zone noise standards for up to three days, in addition to five non-operational days, to the extent “reasonably necessary” to undertake any “relevant aspect” of the activity.

9.1.1 Key issues with the noise management framework for temporary activities

- The temporary activity rule authorises noise levels of a duration and level likely to give rise to significant adverse effects on adjacent noise sensitive receivers;
- The reference in the current plan rule to what is “reasonably necessary” to exceed the noise limits is open to interpretation, and does not provide sufficiently clarity to plan-users to determine whether any particular activity is permitted or not.

9.1.2 Key considerations for the management of temporary activities in the plan review process

The NPS requires the PDP to include a chapter that specifically addresses temporary activities. We recommend the temporary activity noise controls are updated under the PDP.

There are a wide range of options to manage noise from temporary activities, including:

- Restricting the location in which temporary activities generating high noise levels can be undertaken within the District;
- Prescribing a set number of days per year that noise events can be undertaken from the identified sites (e.g. events on Owen Delany Park and others identified by TDC);
- Prescribing maximum permitted noise levels for amplified music, and times which the noise levels can be generated (i.e. to ensure the noise levels do not give rise to sleep disturbance effects).

We understand that major events are important for the city and should be provided for, but at reasonable noise levels and durations. If the proposed controls would restrict any regular events from occurring, it may be that those venues (e.g. Owen Delany Park) could enjoy bespoke noise controls, rather than relaxing the temporary event controls for the entire district to cater for a select range of existing activities on a small number of sites.

The ODP rule does not provide a noise limit or control on the timing and duration of noise levels. In our experience, noise limits of 75dB L_{Aeq} or 80dB L_{Aeq} are more common and generally easily achievable for temporary events. In our opinion, such levels are reasonable, and would not require hearing protection for those nearby (when using workplace health and safety criteria as the benchmark) and would be consistent with the highest construction noise limits that would be permitted in most District Plans in New Zealand. Whether 75dB L_{Aeq} or 80dB L_{Aeq} is selected as the limit should be determined with reference to the duration of each event, the finishing time and the number of events permitted per year, and the day of the week.

We also recommend that the limit is specified as a 5-minute L_{Aeq} level where every 5 minute sample must comply with the stated limit. This avoids the need for the entire event to be monitored to calculate a rating level (for comparison with the limit in accordance with NZS6802) and also provides a clearer, certain and more enforceable limit for the Council and event organiser to administer and comply with. We have also suggested a clause that removes the need to apply a 'penalty' or adjustment of -5dB for event noise that contains special audible character in accordance with NZS6802. Again, this simplifies the requirements and avoids the need for any interpretations of acoustical standards and further rating level adjustments during field measurements. The net effect of shortening the measurement duration and removing the duration adjustment, as well as removing the special audible character adjustment is effectively no change to the overall level of noise permitted compared to a limit requiring full assessment in terms of NZS6802.

In terms of timing and duration, we suggest the noise controls adopt a 10pm curfew with an optional 11pm (night before a weekend or public holiday) curfew arrangement.

9.2 Noise from helicopter take-off and landing areas

Currently, the ODP does not contain any provisions to control the noise emission controls or a policy framework to assess new "airports"⁹, or the noise emissions associated with effects of helicopter landing and take-offs at "informal" landing areas.

Our consultation with Council staff has identified that noise effects from helicopter movements at informal landing areas are becoming an increasing source of noise complaints in the District, and the PDP should respond to this policy gap (particularly as the use of helicopters is increasing). The primary concern relates to the management of noise from regular landing and take-offs from private land. The noise from low flying helicopters and fixed wing aircraft (i.e. for rural land use such as spraying, production forestry), is of lesser concern.

When the aircraft is engaged in a landing or take off procedure, and operating below 500ft, local authorities have jurisdiction to impose land use controls (including noise performance standards) subject to Section 9(5) of the RMA.

Helipads are becoming increasingly popular on private land in order to facilitate:

- Personal helicopter movements to, from and within the District;
- Commercial tourism helicopter operations (e.g. scenic flights);
- As a base for agricultural/ forestry aviation work (e.g. for rural airstrips and agricultural aviation operations).

⁹ The RMA defines an "airport" as 'any defined area of land or water intended or designed to be used, whether wholly or partly, for the landing, departure, movement or servicing of aircraft'. Under this definition, helipads on public and private land are therefore 'airports'.

9.2.1 Key considerations for the management of noise from helicopter take off and landing areas in the plan review process

There are a wide range of approaches used by District Plans can manage the noise emissions associated with the regular use of land for a helicopter landing area.

Under the NVMPs, any District Plan rule relating to helicopter noise is required to adopt the noise measurement methods and New Zealand Standard 6807:1994 – *Noise Management and Land Use Planning for Helicopter Landing Areas*, with the exception of Section 4.3 *Averaging*. This means that the District Plan must adopt NZS6807:1994 as a reference document, however is not required to adopt the averaging provisions (which enable noise levels to be averaged over a period of up to 7 days) or the Standard's guidance on noise limits. This ensures that District Plans are able to establish appropriate noise limits and assessment methods to manage helicopter noise based on the amenity objectives for any particular zone.

We consider that the guideline noise exposure limits in NZS6807:1994 are very permissive. Even if a landing area just complied with the guideline noise limits, the acoustic amenity of the surrounding area could be compromised significantly. For example, in a rural area it would be possible to carry out several dozen or even more than 100 movements per day, every day of the year with only 150-250m separation from a residential subdivision.

In fact, clause 4.1.1 of NZS6807:1994 states (emphasis added):

The following criteria [the same as the guideline limits in Rule 57.15) represent the minimum acceptable degree of protection for public health and the environment. In some cases, controls that provide for a greater degree of protection may be appropriate when taking into account community expectations, local conditions, or the maintenance and enhancement of amenity values.

In our view, the straight application of the guideline noise limits in NZS6807:1994 would be appropriate for zones where the use of helicopters might be important for one or more primary industries (such as tourism or agriculture¹⁰) and where the noise from helicopters in the zone is expected and likely to be tolerated.

For the control of noise from helicopter landing areas where amenity expectations are high, it may be appropriate to require all landing areas to require consent, perhaps as a Restricted Discretionary activity, or perhaps permitted subject to lower noise limits.

We recommend that the PDP incorporates a rule that includes maximum permitted noise levels and restrictions on the timing and number of flights. This approach may authorise

¹⁰Most districts containing rural areas where helicopter use is important will exempt the noise from helicopter use where it is directly related to agricultural or horticultural purposes. Examples might include spraying, lifting, or access to remote areas for farming purposes. Exemptions are usually only applied for the daytime hours and where helicopter use is a recognised activity in the zone, as well as for frost protection of crops at night where no other practicable alternative exists.

noise levels arising from landing and take-offs, where there is sufficient separation distance to adjacent receivers to ensure the effects will be acceptable¹¹.

The helicopter controls in the proposed Queenstown District Plan for the rural zone have recently been settled through the appeal process, and provide a helpful example of the application of relatively tight controls in an area where amenity expectations are reasonably high. In concise terms, the provisions provide a permitted activity status for 'informal airports' (helicopter landing areas), subject to the compliance with the following standards (where a flight equals two movements):

- Use of the informal airport must not exceed any of the following:
 - (a) 2 flights per day;
 - (b) 5 flights per week; or
 - (c) 12 flights per month.
- The informal airport must be located a minimum distance of 275 metres from any other zone or the notional boundary of any residential unit or approved building platform not located on the same site.
- Within 275 metres of the informal airport, flight paths must be a minimum of 250 metres from the notional boundary of any residential unit or approved building platform not located on the same site.

The last two controls are better explained by the accompanying diagram as set out in Figure 2 overleaf (adapted for this document).

Landing areas that do not comply with the permitted standards are Restricted Discretionary and there is a noise limit of 40dB L_{dn}. Exceeding the 40dB L_{dn} limit would make the landing area Non-Complying.

- A limit of 40dB L_{dn} is considerably stricter than the standard limit of 50dB L_{dn} recommended by NZS6807:1994 for rural and residential receivers, and would permit only 1/10th of the flights (that 50dB L_{dn} would permit).
- We suggest that a similar regime may be appropriate in the proposed Taupō District Plan if there are zones where amenity expectations are higher than affording the "minimum acceptable degree of protection for public health and the environment" that NZS6807:1994 provides for.
- For zones that contain activities that would not have high amenity expectations, the standard guidance in NZS6807:1994 may be appropriate to apply.

¹¹ Note: Helicopters used in emergency service operations may occasionally land on land (other than their base) as part of emergency response. We recommend that any PDP rule excludes emergency services from compliance with the rule, to ensure that the requirement for resource consent is not invoked during an emergency event. This approach is adopted in many other District Plans (i.e. E25.6.32 of the Auckland Unitary Plan).

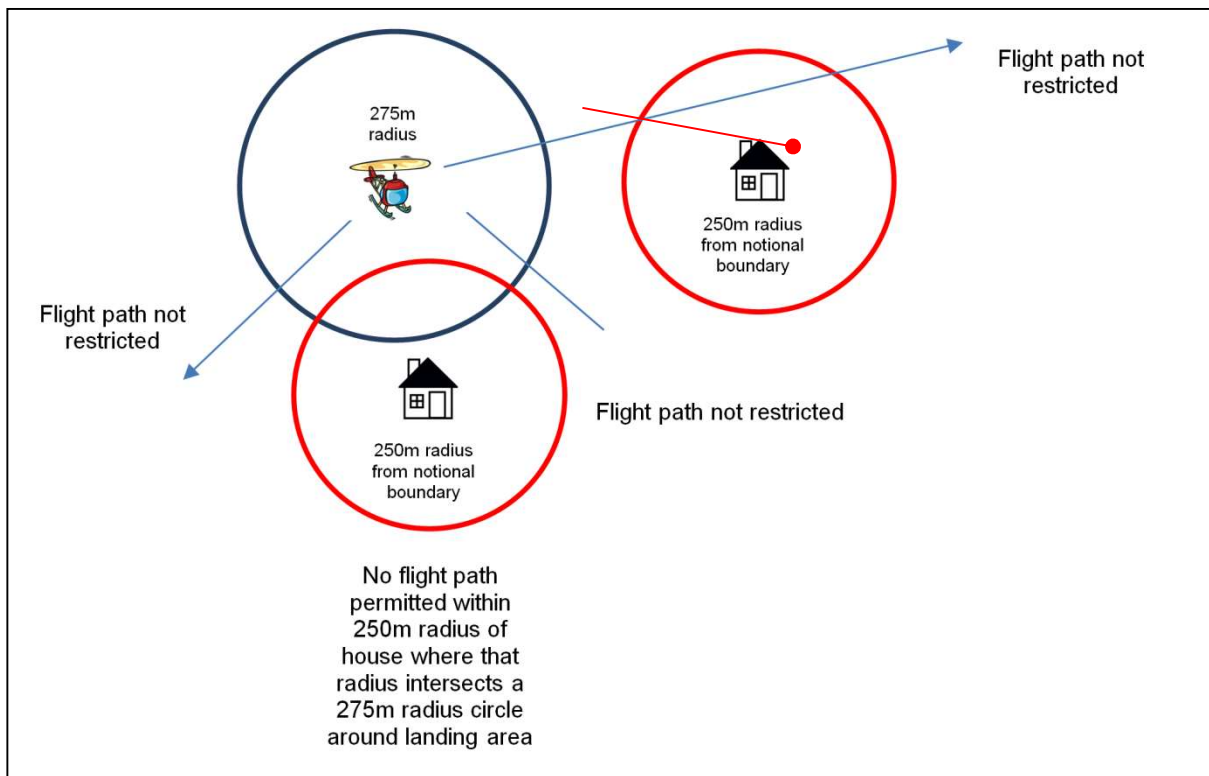


Figure 2 Example: Helicopter Flight Path Restrictions

9.3 Gunfire noise from shooting ranges

The ODP does not contain any specific provisions to control the gun fire noise emissions from shooting ranges.

Under the ODP, noise effects from shooting ranges are subject to the underlying zone controls, which require assessment against the zone noise limits, measured using the L_{Aeq} measurement metric and assessed under NZS6802. Due to the impulsive nature of gunfire noise, measurement and assessment under these methods is not appropriate for the following reasons:

- The L_{Aeq} metric (an energy average) is not appropriate for the assessment of impulsive gun fire noise. There are no stand metrics or criteria for shooting noise in New Zealand.
- Due to its impulsive nature, gun fire noise is explicitly excluded from the measurement/ assessment scope of NZS6801 and NZS6802. Due to the special audible characteristics and impulsive nature of gun fire noise, specific measurement and assessment methods should be prescribed in District Plans to address the level and character of this noise source.

Our consultation with Council staff has identified that the absence of appropriate noise controls to manage noise emissions from shooting ranges is an issue, particularly in the rural zones. We recommend that the PDP responds to this issue through the development of a specific noise control that specifies the maximum permitted noise levels (using the L_{AFmax} metric), and the specific process for the measurement and assessment of gunfire noise from shooting ranges.

The L_{AFmax} noise limit could be set at 50dB to provide a reasonably high level of acoustic amenity.

The measurement and assessment location could be the Notional Boundary alone, or the Notional Boundary and the boundary of the site that the shooting is undertaken on to encourage the internalisation of effects. If the former (Notional Boundary only) position is adopted, TDC may wish to consider making shooting ranges a Restricted Discretionary activity, with a matter for assessment being the degree to which the activity relies on land beyond the subject site as a buffer for noise emissions.

9.4 Construction noise and vibration

The ODP contains a construction noise standard (for each zone) requiring that *“All construction noise shall meet the requirements of New Zealand Standard NZS 6803:1999 Acoustics Construction Noise”*.

There are no construction vibration controls in the ODP.

9.4.1 Key issues with the construction noise and vibration management framework

We have identified the following issues with the existing noise management framework for the management of construction noise and vibration effects under the ODP:

- To determine compliance with the guideline noise limits of 6803:1999, a plan user is required to hold a copy of the Standard, as the limits are not set out in the rule. This rule requires the plan user to hold a copy of NZS6803:1999. At the time of writing, the price of NZS6803:1999 from Standards New Zealand is approximately \$150 including GST. Furthermore, section 7.3 of the Standard recommends that the limits should be prescribed in any rule or consent condition, rather than referring to the Standard.
- There are no construction vibration controls in the ODP.

9.4.2 Key considerations for the management of construction noise and vibration in the plan review process

- We consider that plan users should be able to determine compliance with construction noise limits, without having to refer to an external reference document. To address this, we that the guideline noise limits from NZS6803:1999 are

reproduced in the PDP along with a tailored version of the sections of NZS6803:1999 that follow, including the adjustments for project duration.

- If the PDP includes controls to manage construction vibration, the controls must give effects to Mandatory direction 3 of the NVMPS. This direction requires that any plan rule to manage damage to structures from construction vibration must be consistent with the metrics for peak particle velocity (PPV) in ISO-4866:2010 – Mechanical vibration and shock.

9.5 Noise generated from the surface of water

Under the ODP, noise emissions from the surface of water are controlled by a standard that required the activity to comply with the noise standard applying to the land adjacent to the water body. This standard exempts all commercial activities that were established prior to July 2000, or which have received resource consent since that date, subject to the scale, intensity and character of the use remaining the same or similar.

We understand there are a number of existing commercial operations which either have been established for some time or hold resource consent.

Taupō's lakes and waterways are a significant feature of the District, and are a key attraction for visitors to the District. Many adventure and tourism activities are undertaken on Taupō's lakes and rivers, such as jet boating at Huka Falls, trout angling, hire of motorised vessels, and float plane tours. District residents also enjoy recreational activities on the lakes and waterbodies.

9.5.1 Key considerations for noise generated from the surface of water in the plan review process

The PDP noise management framework should protect the amenity, character and values of waterbodies, and adjacent land use activities from unreasonable noise levels, while enabling appropriate recreational, commercial and cultural activities to utilise the District's water resources.

There are a range of options to manage noise generated on water and received on land, including prescribing maximum permitted noise levels (that may exclude recreational activities).

We understand that Ngati Tuwharetoa has recently had a court declaration clarify the 2007 deed between the Crown and Tuwharetoa Maori Trust Board, and confirm that the Trust Board has full ownership rights of Taupō Waters. Ngati Tuwharetoa seek to ensure that the mana and mauri of the waterways are enhanced. Ongoing consultation by TDC will need to determine the specific aural amenity outcomes that are sought by iwi, taking into account commercial and recreational use, and which sources of noise are to be controlled, and which

are not. Once those matters are clarified, we can provide guidance on noise controls that could be applied.

9.6 Noise from new or altered roads

District wide rule 4e.14.6 of the ODP requires that the “construction of new roads” are a restricted discretionary activity. The assessment criteria includes noise effects, however the rule does not contain specific criteria to guide the assessment of effects, including whether the scope of the assessment includes both the construction and operational effects of the road.

9.6.1 Key issues with the traffic noise management framework

- The rule is also unclear as to whether it applies to alterations to existing roads that may increase the traffic volume (and noise effects).
- The existing rule does not refer to the appropriate standard for the assessment and management of traffic noise from new or altered roads, being New Zealand Standard NZS6806:2010 “Acoustics – Road Traffic Noise – New or Altered Roads”.

9.6.2 Key considerations for traffic noise in the plan review process

The current rule is unclear in terms of the effects it seeks to manage, and we recommend it is revised as part of the plan review process.

The application of NZS6806:2010 requires the anticipated traffic flow of a new or altered road to exceed 2000 vehicles per day to trigger an assessment under the Standard. We expect that this would preclude its application to roads constructed within subdivisions or developments, potentially before being vested with the Council for long term ownership and management. The provisions of this standard are designed for major roads that could generate noise effects worthy of assessment and control.

We suggest that the ODP rule is amended to require an assessment of the effects of road traffic noise on people with any resource consent application (or Notice of Requirement if applicable) given that NZS6806:2010 does not require one. In most recent cases where road traffic noise has been assessed for large projects, the road controlling authorities have submitted an assessment of noise effects along with the assessment against NZS6806:2010. A rule that requires the assessment to be undertaken will ensure it is always included.

10.0 Proposed Special Purpose Zones

10.1 Airport Zone

Taupo Airport is located eight kilometres south of Taupo's town centre. We understand the airport facilitates approximately 35,000 aircraft movements per year between the North Island's main centres¹². Chapter 3f of the ODP recognises the airport is an important resource (essential to the community and District), and that its continued operation and expansion is also essential to the District¹³. 3f.2.2 of the ODP notes that the noise boundary identified in the Plan has taken into consideration the future increase in flights. The explanation to 34.2.2 states "*Development and operation of the site is exempt from the standards of the Rural Environment except for the noise standard, which must be met at the Airport's outer noise boundary, defined on the Planning Maps, to provide a reasonable level of protection for the community.*"

10.1.1 Key issues with the airport noise management framework

Our review of the ODP has identified several administration issues that we recommend are addressed under the plan review. These include the following:

- Method 34.3(v) refers to the "*definition of an **Airport Noise Boundary** to control the effects of noise on the surrounding environment*". This term is not used or defined anywhere else in the District Plan (other than on the Planning Maps), including the definitions section. We recommended that definitions for the inner and outer control noise boundary should be adopted, to ensure plan users understand the spatial propagation of aircraft noise at the relevant contours.
- The Planning Maps (below) identify that the Outer Control boundary includes land in the Rural and Residential Environments. Rural Environment rule 4b.1.11 *Maximum Noise Airport Noise* does not include a standard, and instead, directs the plan user to "refer to Section 4h". This is the chapter for the Taupo Industrial Environment and Centennial Industrial Environment, and we cannot identify include any acoustic insulation controls for the rural or residential environment land within the outer control boundary.

¹² <https://www.taupodc.govt.nz/transport-and-water/taupo-airport>

¹³ Chapter 3f identifies that future extensions to the runway are unlikely for topographical constraints, however the frequency of flights and plan size is anticipated to increase.



Figure 3 Taupo Airport and airport noise contours over the Rural and Residential Environment

10.1.2 Key considerations for airport noise in the plan review process

We understand that TDC proposes to apply a Special Purpose Airport Zone to the airport land, and seek to understand best practice for managing noise effects on the surrounding land. The use of air noise contours and land use planning controls in accordance with NZS6805 reflects best practice. There are a number of issues with the existing controls that will need to be identified and remedied to ensure best practice is adopted.

We recommend that the PDP noise management framework clarifies the land use development controls applying within the proposed airport zone, and across the adjacent zones within the airport noise control boundaries. We recommend that TDC consults with the airport to confirm whether the location of the current air noise contours are accurate (taking into account projected growth). Only the airport has the information to be able to produce future noise air noise level contours as it relies on information about future business activities, aircraft types, hours of operation and flight numbers.

We recommend that the approach specified in NZS6805 is adopted for the management of noise from the Airport Zone, and to ensure that land uses around the Airport Zone are managed appropriately to avoid reverse sensitivity effects occurring.

10.2 Corrections Zone

The maximum permitted noise levels applied to the proposed Corrections Zone will depend on its location and context in relation to the surrounding zones. Corrections facilities do not typically require high noise levels to operate, and also contain activities sensitive to noise (overnight accommodation).

Our initial suggestion is to control noise levels from and into this zone at the same noise limits of 55dB L_{Aeq} during the day and 45dB L_{Aeq} and 75dB L_{AFmax} during the night.

10.3 Maori Purpose Zone

The maximum permitted noise levels applied to the proposed Maori Purpose Zone will depend on the nature of land use activities that are anticipated and provided for within the Zone, and the context of the zone in relation to other surrounding zones.

Typically, noise levels into this zone require a degree of control as activities within a likely to fall within the definition of a noise sensitive activity.

Further guidance on the controls for this zone can be provided when we can understand what activities are likely to be undertaken within it.

10.4 Hospital Zone

The Taupō Hospital is located in a predominantly residential context, and is therefore unlikely to require protection from external noise generating activities/ zones. However, to ensure an appropriate level of acoustic amenity is afforded to the hospital and hospital related activities, the maximum permitted noise levels for noise generated beyond the hospital and received within the hospital zones, should be the same noise limit applying to the adjacent Residential Zones. In terms of the maximum permitted noise levels applied to noise generated from within the Hospital Zone and received in the adjacent Residential Zones, there are two options:

- i. Preserve the same noise level applying to the adjacent residential zones;
- ii. Increase the noise levels by 5 dB (e.g. 55dB L_{Aeq} during the day time and 45dB L_{Aeq} and 70dB L_{AFmax} at night time).

Both of these options are commonly applied to the interface between Hospital and Residential Zones across New Zealand.

The slightly higher levels (55dB L_{Aeq} day and 45 dB L_{Aeq} night) would enable a higher degree of intensity of activities within the Hospital Zone. This would come at the expense of a minor reduction in amenity to the point where the 'ceiling' of reasonable levels for residential receivers is reached before acoustic insulation or other measures are required. The slightly

higher levels (55dB L_{Aeq} day and 45dB L_{Aeq} night) would provide a 'more enabling' rule to the Hospital.

A review of several other District Plan noise frameworks applying to other hospitals highlights that it is common for the noise arising from helicopter movements to and from the hospitals to be exempt from having to comply with the relevant noise limits. This approach reflects the importance of patient care during emergencies and the prioritisation of the welfare of sick or injured people over the (often relatively infrequent) effects on sleep disturbance and amenity of the surrounding residential receivers.

The degree of weighting afforded to the prioritisation of human life / patient care over short term amenity effects is beyond the scope of an acoustics expert, but if the approach of exempting emergency helicopter noise helicopters is to be adopted, we support a rule that would only allow the use of helicopters at Taupo Hospital for the various emergency scenarios associated with the hospital and hospital related activities. The application of this rule would require the development of a clear definition of the emergency scenarios that are anticipated and provided for. We recommend that the exemption (and associated definition) should only allow emergency helicopter movements that are critical to the function of the hospital in terms of patient care. It should not allow exemptions for non-critical helicopter movements.

10.5 Proposed Significant Mineral Extraction Zone

The ODP does not include a mineral extraction zone, planning overlay or wider policy framework to recognise and provide for the operation of the District's significant mineral extraction activities. To address the NPS Zone Framework Standard, the PDP will introduce a new zone for regionally significant mineral extraction activities. Smaller scale activities will continue to be assessed under the relevant underlying zone provisions.

District Plans across New Zealand typically rely on the following planning mechanisms to recognise and provide for the noise emissions from quarrying and extraction activities, whilst seeking to avoid or manage conflicts between adjacent land uses. These include:

- Noise performance standards;
- Restricting hours of operations;
- Noise management plans;
- Buffer zones/ setbacks;
- Requiring acoustic insulation of nearby dwellings.
- Use of restrictive 'no complaints' covenants for incumbent noise sensitive activities;
- Use of a 'time stamp' approach to require noise compliance at dwellings which existed at a certain point in time, with no noise controls applying to more recent dwellings;
- Higher maximum permitted noise levels (i.e. 55 dB L_{Aeq} during the day).

10.5.1 Key considerations for managing noise from mineral extraction activities in the plan review process

TBC

10.6 Motorsport Park noise

The ODP does not identify any specific controls applying to Bruce McLaren motorsport park. We are unaware if the noise emissions from this facility are authorised by a resource consent, or whether the facility relies on separation distance as a means to comply with the District Plan noise levels at adjacent receivers.

We understand that the park is a high-noise generating activity and that the noise levels do not approach a reasonable level for residential activity for some distance away from the park. We also understand that there are no controls in place to prevent noise sensitive activities from encroaching on the park and potentially giving rise to reverse sensitivity issues.

The plan review process will result in the application of a new zone (or potentially a precinct) to this site, and the surrounding land. To ensure the noise effects of the facility are considered in the rezoning process, we recommend that TDC consider the zoning of this site (and the surrounding site), to consider:

- The extent to which the motorsport park has existing use rights to externalise its noise effects across the adjacent land;
- The extent to which the zoning applied to the land surrounding the facility may authorise residential intensification and potential encroachment residential activity, and the degree to which this may give rise to reverse sensitivity effects on the motorsport park;
- Whether the use of noise control boundaries (similar to an airport) should be applied to the adjacent land, to ensure the noise levels across the surrounding environment are clearly understood and that any noise sensitive activity seeking to establish close to the activity are avoided or appropriately managed;
- Whether land use controls should be imposed on the adjacent land to protect the facility from reverse sensitivity effects (i.e. acoustic insulation controls for new noise sensitive activities);

We note that a resource consent cannot control the effects arising from the encroachment of new noise sensitive activities, beyond the boundaries of the facility.

We recommend that the Council consider these issues and once a direction is known we can provide guidance on a rule framework to enable the continued operation of the park and to adequately manage potential reverse sensitivity issues.

11.0 Traffic noise and NZTA Reverse Sensitivity Policy

The ODP does not include any controls to protect noise sensitive activities from high levels of traffic noise (i.e. from State Highways and arterial roads). We support the inclusion of acoustic insulation and thermal comfort controls for noise sensitive activities that are established or added to (with new noise sensitive spaces etc) near to existing or planned road and rail transport infrastructure. These will ensure that the noise levels and associated health and amenity effects will be reasonable for the occupants of those noise sensitive activities, and in turn, that potential reverse sensitivity effects on the road controlling authority will be avoided or adequately managed.

The New Zealand Transport Agency actively seek to protect the operation and maintenance of the state highway network from potential reverse sensitivity effects through participation in RMA planning processes, including District Plan review processes. The agency has recently published a policy set, “the Reverse Sensitivity Policy”, for inclusion in District Plans across New Zealand. We expect that NZTA is likely to submit on the proposed plan, seeking the adoption of the policy in the District Plan noise controls.

We have provided a review of the Reverse Sensitivity Policy to inform the determination of whether the policy should be adopted in the Taupō District Plan, (in whole or in part with modifications) taking into account the specific acoustical factors of the District, and noting the associated implications such as cost and practicability of compliance.

11.1 Taupō high traffic noise routes

The NZTA have prepared a [online mapping tool](#) map of the state highway network across New Zealand showing the buffer and effects areas¹⁴. The maps are updated nationwide biennially. We recommend that the TDC Policy Team review the maps to understand the buffer and effects area, as it relates to the Taupō District, and any implications arising from the proposed re-zoning patterns (i.e whether the proposed zoning patterns will authorise intensification along the State Highway Corridor).

¹⁴ As defined in <https://www.nzta.govt.nz/resources/effects-on-noise-sensitive-land/>

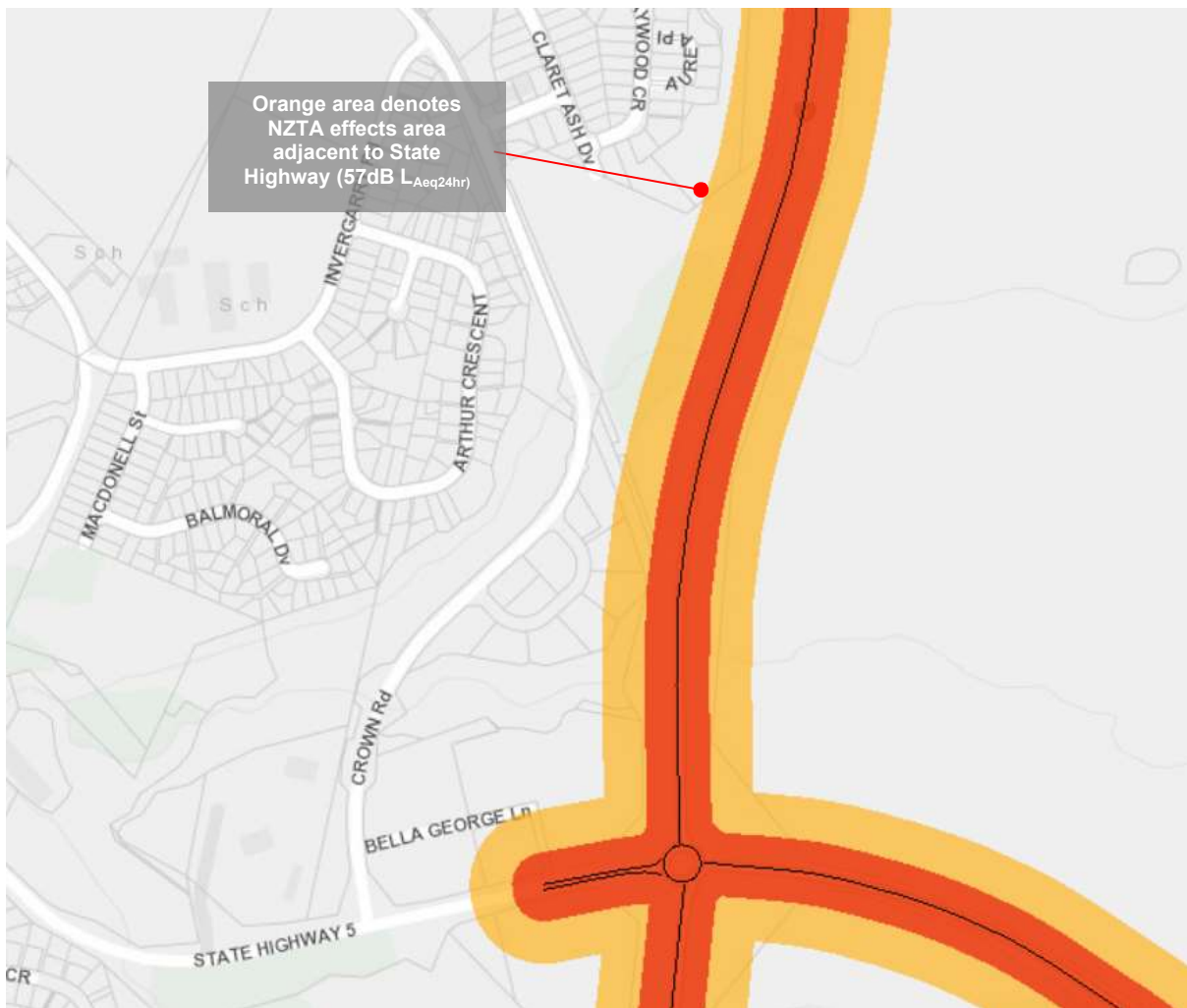


Figure 4 NZTA example of buffer and effects area through Taupo

11.2 Traffic noise controls applied in other District Plans

The table below provides examples of the various district plan rules. Due to the nature of these rules they are relatively complex and other variations within the details of the rules have not been shown above. For example, some district plans use varying sound level measurement units (e.g. $L_{Aeq(24hr)}$), have different definitions of ‘noise sensitive activities’, and have different rules relating to building additions and alterations compared to new buildings. However, at a high level the table indicates there is a degree of variance between the rules in operative plans.

District Plan	State Highway buffer area	Maximum noise levels	Mechanical ventilation requirements
Christchurch District Plan (2017)	80m	40dB road noise in habitable spaces	Ventilation system above and beyond the

District Plan	State Highway buffer area	Maximum noise levels	Mechanical ventilation requirements
Dunedin District Plan (Appeals version)	40m	Noise sensitive activities must achieve a $\underline{DnT, w + Ctr} > 30$	Building Code
Hamilton District Plan (2017)	<ul style="list-style-type: none"> 100m from Waikato Expressway 80m from any other SH with speed limit >70km/hr or with AADT ≥10,000 vehicles per day 40m from any other SH 	35dB in bedrooms 40dB in all other habitable rooms	
Hauraki District Plan (2019)	Ranges for each zone from 40m in the Residential Zone to 80m in the Rural Zone	40dB in all habitable rooms	Section G4 of the Building Code
Hutt City District Plan (2018)	40m	45dB road noise within noise sensitive activities	
Otorohanga District Plan (2014)	80m	40dB in habitable rooms in the Rural Effects Area 45dB in habitable rooms in the Urban Services Effects Area and Urban Limited Services Effects Area	
Palmerston North District Plan (2018)	80m	40dB road noise within noise sensitive activities	Ventilation system above and beyond the Building Code
Tauranga City Plan (2017)	Specifically mapped areas as shown on the planning maps	40dB road noise within dwellings	

11.3 The NZTA reverse sensitivity policy

The NZTA Reverse Sensitivity Policy enables the establishment of new noise sensitive activities within 100m of the state highway carriageway, where the development is designed and constructed to meet the minimum internal noise levels, mechanical ventilation requirements and vibration levels specified in the Policy. The internal noise levels are prescribed according to the building type/ occupancy/ activity¹⁵. Residential use exposed to traffic noise is required to achieve 40dB $L_{Aeq(24hr)}$ in sleeping spaces and all other habitable rooms, and 35dB $L_{Aeq(24hr)}$ for sleeping spaces

The Policy set also prescribes requirements to mitigate the effects of road noise on the outdoor areas of any new building or alteration.

¹⁵ Including residential, education, health, cultural.

11.3.1.1 Outdoor road noise

The Reverse Sensitivity Policy seeks to require that any new building or alteration to a building containing a noise sensitive activity that receives road noise levels greater than 57dB $L_{Aeq(24h)}$ ¹⁶ is permitted where there is a noise barrier (at least 3m in height) that completely blocks line-of-sight to the road surface (from all points 1.5m above ground level within the proposed notional boundary). The purpose of this control is to ensure that outdoor areas (such as backyards) are not subject to unreasonably high noise levels.

To determine compliance with this requirement, an applicant is required to obtain an acoustic report to establish the traffic noise levels received at the notional boundary. The costs of construction the noise barrier and the cost of maintenance over its life fall on the applicant.

We agree with the intent of the outdoor noise control in the policy, but we note that the cost of compliance could be significant, both in the immediate requirement to establish a significant noise barrier (3m high) and in the long term when taking into account the maintenance requirements. Although it is outside of our expertise, we expect that such a high barrier may give rise to other adverse effects, such as shading and dominance.

We also question whether such a barrier would be appropriate in all circumstances, such as where terraced housing or apartments are constructed near to a busy road, with little or no outdoor space near to the road is provided for residents, and where any balconies or decks would overlook the barrier, negating any effect.

Nonetheless, we consider that there would be considerable benefits arising from the implementation of this policy where housing developments are close to major roads, and where outdoor space is a core component of the intended lifestyle. The benefits of reducing road traffic noise levels to reasonable levels are generally significant in terms of adverse health effects, and the quality of the living environment.

If this aspect of the policy were to be adopted, we suggest that its application be tailored to the situations where it would be appropriate. This may mean that it is only required in the general residential zones where yards form an important part of the living environment, and where reduced road traffic noise levels outdoors would be beneficial. We recommend that this aspect of the policy is not applied to zones where apartments are anticipated, and where no appreciable outdoor space near to major roads is likely to exist.

11.3.1.2 Mechanical ventilation

The Reverse Sensitivity Policy prescribes mechanical ventilation requirements for habitable rooms for a residential activity¹⁷ to ensure noise sensitive spaces can be cooled or heated, while providing adequate air ventilation¹⁸. The requirement applies to any building

¹⁶ At all points 1.5m above ground level within the proposed notional boundary.

¹⁷ Requirements for other spaces are required to be determined by a 'suitably qualified and experienced person'.

¹⁸ In accordance with clause G4 of the NZBC and providing for at least 6 air changes per hour.

constructed in accordance with the construction schedule set out in the Policy, or for any room where windows must be closed to achieve the prescribed indoor noise levels.

In our view, it is critical that the occupants of noise sensitive spaces that are to be insulated from external noise are able to remain comfortable without having to open windows or doors for fresh air and cooling, in a manner consistent with the NZTA policy. In our experience, simple compliance with clause G4 of the Building Code will supply a relatively low volume of fresh air, but will not provide any appreciable cooling. This will lead to occupants opening windows and doors for thermal comfort, thereby negating any benefits of the acoustic insulation and invalidating the cost and effort to meet the acoustic controls.

The Reverse Sensitivity Policy states the following regarding thermal comfort:

Clause G4 of the Building Code (Schedule 1 of the Building Regulations 1992) is not designed to provide thermal comfort. District plans that specify compliance with Clause G4 for ventilation systems as part of reverse sensitivity controls are unlikely to achieve the intended outcome. Occupants would be likely to experience hot/stuffy conditions at least in summer, and would probably open the windows, which should remain closed to achieve appropriate indoor noise levels.

Systems that seek to simulate cooling through provision of high air flow rates (up to 15 air changes per hour), have a number of drawbacks and will not always achieve the desired cooling effect. Issues with a high air flow rate ventilation-only system include relatively high capital and maintenance costs, larger components, and higher levels of system noise to control.

Provision of a ventilation system including cooling, such as from a reverse cycle heat pump, is likely to be the most effective way of achieving reasonable thermal comfort, commensurate with the effect that would be obtained by opening windows. However, in cooler regions such as the lower North Island and coastal and southern parts of the South Island, mechanical ventilation alone would be sufficient.

Where mechanical ventilation or cooling is provided as an alternative to opening windows it should be a genuine alternative such that occupants are not forced to choose between excess noise or hot/stuffy conditions. Prior to 2014, to achieve this outcome the Transport Agency generally sought either a high air flow rate or cooling, when ventilation systems were required as part of reverse sensitivity controls. On the basis of this review, the following specifications are now recommended:

- Ventilation must be provided to meet clause G4 of the New Zealand Building Code. At the same time as meeting this minimum provision, the sound of the system shall not exceed 30 dB $L_{Aeq(30s)}$ when measured 1 m away from any grille or diffuser.
- The occupant must be able to control the ventilation rate in increments up to a high air flow setting that provides at least 6 air changes per hour (more than is specified in clause G4). At the same time the sound of the system shall not exceed 35 dB $L_{Aeq(30s)}$ when measured 1 m away from any grille or diffuser.

- The system must provide cooling that is controllable by the occupant and can maintain the temperature at no greater than 25°C. At the same time, the sound of the system must not exceed 35 dB $L_{Aeq(30s)}$ when measured 1m away from any grille or diffuser.

(The last item can be omitted for cooler regions such as the lower North Island and coastal and southern parts of the South Island.)

Insofar as acoustics is concerned, we agree with the assessment above. It is our practical experience that if adequate cooling is not provided, it is very likely that the occupant will choose higher noise levels over hot/stuffy conditions, and will seek to open a window or door for cooling.

We therefore support controls that provide for thermal comfort, as well as meeting the mandatory requirements of clause G4 of the Building Code (fresh air).

We recommend that TDC take advice from a suitably qualified mechanical engineer to determine whether the ventilation and cooling provisions in the policy are acceptable for the Taupō district.

11.3.1.3 Acoustic Design report

The Reverse Sensitivity Policy requires compliance with the Policy to be demonstrated by the submission (to the council) of a design report/ construction schedule that demonstrates compliance with the clauses 1-4 of the policy.

We consider that if rules are implemented in the Proposed Plan that require insulation of dwellings from external noise and controls on thermal comfort, then provisions requiring such a design report would be prudent to include.

12.0 Acoustic insulation controls in the PDP

In order to achieve compatibility between noise sensitive activities located in or adjacent to inherently noisy transport infrastructure and noisy zones, we support the concept of acoustic insulation provisions in the PDP. We consider that they should be generally consistent with the Reverse Sensitivity Policy in terms of noise levels and thermal comfort provisions, but should not adopt the vibration mitigation requirements without a thorough analysis of the potential costs and benefits. We also agree that the outdoor noise mitigation provisions are sensible in cases where housing involving an appreciable use of outdoor space is proposed near to major transport infrastructure. However, they should not be applied as 'blanket' provisions as some housing typologies do not rely on open space (backyards) as an important part of the lifestyle.

12.1.1 The D_{tr} standard or internal noise level?

When drafting an insulation rule, the performance standard can be defined as either:

- a) An outside-to-inside insulation specification such as the D_{tr} method, with a numerical target,
- b) A simple internal noise level that must be designed for, (e.g. 35dB L_{Aeq}) with a specified outdoor noise level and frequency spectrum to be adopted for the design, (such as in the Reverse Sensitivity Policy).

In our view it is likely that both methods would require the involvement of an acoustics expert, with a slightly greater cost being likely for option (b) if the external noise level is not specified in the rule. For the town centre zones the external noise level would be specified, but it is difficult to specify an external noise level for road traffic noise.

The advantage of option (b) is that through the design process, the acoustics expert will be able to tailor the design of each facade according to the level of noise it is exposed to. For traffic noise, the noise level on the facades facing away from the road can be significantly lower than at the facades facing the road. There is therefore potential for significant cost savings in only having to insulate some facades, or only having to insulate some facades heavily, and others in only a moderate fashion.

The outside-to-inside insulation standard in (a) does not afford this benefit as it requires every facade to be designed to achieve the stated reduction, unless resource consent is sought to infringe the control.

These cost savings can be significant on medium-to-large projects, far outweighing the cost of involving an acoustics expert at the design phase. However, the cost savings on a single house development would likely be modest, and may not be as great as the cost of engaging an acoustics expert. There is also the cost of the insulation measures themselves.

13.0 Conclusion

This document provides a review of the ODP noise management framework to inform the plan review process.

At this point in time, TDC are continuing to develop and refine the proposed zone framework, including the environmental outcomes sought within each zone.

The noise management framework of the PDP will be an important tool to drive the anticipated environmental outcomes for each of the proposed zones. This advice includes high level recommendations to address existing policy gaps, and to ensure the PDP's noise management framework reflects contemporary best practices for the assessment and management of noise effects within and between zones. Our advice will be refined as the proposed planning framework is developed.

Appendix A: ODP noise framework

4A Residential Environment

4a.1.18 Maximum Noise Limits

The noise level arising from any activity measured within the boundary of any residential environment site or the notional boundary of any rural environment site, other than from the site where the noise is generated, shall not exceed the following limits:

- i. 7.00am – 7.00pm 50dBA Leq
- ii. 7.00pm – 10.00pm 45dBA Leq
- iii. 10.00pm – 7.00am 40dBA Leq and 70dBA Lmax

4a.1.19 Maximum Noise Measurement

The noise levels shall be measured in accordance with the requirements of NZS 6801:1999 Acoustics – Measurement of Environmental Sound and assessed in accordance with the requirements of NZS 6802:1991 Assessment of Environmental Sound.

4a.1.20 Maximum Noise

Construction Noise

All construction noise shall meet the requirements of New Zealand Standard NZS 6803:1999 Acoustics Construction Noise

4a.1.21 Maximum Noise

Telecommunication and electricity equipment

Noise from telecommunication equipment and electricity substations and transformers located in the road reserve permitted by the plan shall comply with the noise limits specified in 4a.1.18 above as measured at a point 1m from the closest façade of the nearest dwelling.

4a.2.2 General Rules

Any temporary activity, being an activity of up to a total of three operational days in any one calendar year, which exceeds any performance standard(s), is a permitted activity, provided that:

- i. There are no new permanent structures constructed; and
- ii. Once the activity has ceased, the site (including vegetation and the surface of the ground of the site) is retained or re-instated to its condition prior to the activity commencing; and
- iii. An allowance of five non-operational days associated with the activity is not exceeded, during which time any breach of any performance standard(s) shall only be to the extent reasonably necessary to undertake any relevant aspect of the activity.

4a.7.8 Assessment Criteria

NOISE

- a. Ambient sound levels and the impact of any cumulative increase.
- b. The degree to which the sound is intrusive and contrasts with the level, character, duration and timing of the existing sound environment.
- c. The length of time and the level by which the noise limits will be exceeded, particularly at night.
- d. The nature and location of nearby activities and the effects they may experience resulting from the increase in sound levels.
- e. Whether the noise levels are likely to detract from the amenity or general environmental quality of the immediate area.
- f. The topography of the allotment and any influence this may have on sound propagation.
- g. Proposed methods for the avoidance, remedying or mitigation of potential adverse effects and the degree to which they would be successful including:
- i. Insulation, barriers and isolation of the source of the noise.

4b Rural Environment

4b.1.8 Maximum Noise

Measurement The noise levels shall be measured in accordance with the requirements of NZS 6801:1999 Acoustics – Measurement of Environmental Sound and assessed in accordance with the requirements of NZS6802:1999 Assessment of Environmental Sound.

4b.1.9 Maximum Noise Limits

The noise level arising from any activity measured within the notional boundary of any rural environment site or within the boundary of any residential environment site, other than the site where the noise is generated, shall not exceed the following limits:

- i. 7.00am – 10.00pm 55dBA Leq
- ii. 10.00pm – 7.00am 40dBA Leq and 70dBA Lmax

EXCEPTIONS: for specific noise refer to following Performance Standards:

4b.1.10 Maximum Noise

Construction Noise

All construction noise shall meet the requirements of New Zealand Standard NZS 6803: 1999 Acoustics Construction Noise.

4b.1.11 Maximum Noise

Airport Noise

Refer to section 4h.

4b.1.12 Maximum Noise

Electricity Generation Core Sites

Noise from uses at Electricity Generation Core Sites established either prior to the notification of this Plan (July 2000) or approved by way of resource consent shall comply with the noise limits specified in 4b.1.9 above as measured:

- i. outside the noise control boundary relating to each Electricity Generation Core Site as shown on the Planning Maps; or
 - ii. within the Notional Boundary of any Dwelling within the Rural Environment where this is beyond the noise control boundary; or
 - iii. within the boundary of any site within the Residential Environment where this is beyond the noise control boundary.
 - iv. Any new Buildings with habitable rooms (i.e. Dwellings, retirement homes, etc), built within the noise control boundaries shall be required to ensure they are appropriately designed to achieve suitable internal noise levels (35dBA Leq).
 - iv. The noise control boundary will be either the Electricity Generation Core Site boundary or the existing 40dBA Leq and 75dBA Lmax contour where this is beyond the Core Electricity Generation Site boundary, as shown on the planning maps.
-

4b.1.13 Maximum Noise

Well Drilling and Testing within Electricity Generation Core Sites

Noise from well drilling and testing within any Electricity Generation Core Site boundary as measured:

- i. within the boundary of any site within the Residential Environment;
- ii. within the notional boundary of any dwelling or accommodation activity within the Rural Environment shall not exceed the noise levels set out in the following table measured and assessed in accordance with the provisions of NZS 6803:1999 Acoustics – Construction Noise, if the occupiers do not agree to vacate the premises at the noise generator's expense during the drilling period.

Time Period Monday to Sunday

Leq Lmax

- a. 7.00am – 10.00pm 70 85
 - b. 10.00pm – 7.00am 60 75
-

4b.1.14 Maximum Noise

Other Noise

- i. Nothing in the foregoing Performance Standards shall apply to farm animals including working dogs, and to agricultural and forestry vehicles, agricultural and forestry machinery or equipment (including mobile plant at produce packing facilities but excluding sawmilling equipment), operated and maintained in accordance with the manufacturer's specifications in accordance with accepted management practices (e.g. for milking, spraying, harvesting, packing, forest harvesting and the like). Provided that the activity shall comply with the requirements of S16 of the Resource Management Act 1991.
- ii. Nothing in the foregoing Performance Standards shall apply to sirens, circuit breakers and hydro spills associated with the operation of Electricity Generation Core sites. Provided that the activity shall comply with the requirements of S16 of the Resource Management Act 1991.

4b.4.5 Assessment Criteria

- NOISE
- a. Ambient sound levels and the impact of any cumulative increase.
 - b. The degree to which the sound contrasts with the characteristics of the existing sound environment in terms of level, character, duration and timing.
 - c. The length of time, and the level by which the noise limits will be exceeded, particularly at night.
 - d. The nature and location of nearby activities and the effects they may experience resulting from the increase in sound levels.
 - e. Whether the sound levels are likely to detract from the amenity or general environmental quality of the surrounding Residential Environment. [399/03]
 - f. The topography of the allotment and any influence this may have on sound propagation.
 - g. Proposed methods for the avoidance, remedying or mitigation of potential adverse effects and the degree to which they would be successful including:
 - i. insulation and barriers and the isolation of the source of the noise.

4cTurangi and Mangakino Town Centre Environment

4c.1.7 Maximum Noise Limits

- i. The noise level arising from any activity measured within the boundary of any town centre environment or industrial environment, other than the site where the noise is generated, shall not exceed:
 - a. 7.00am – 10.00pm 75dBA Leq
 - b. 10.00pm – 7.00am 65dBA Leq and 90dBA Lmax
- ii. The sound level (leq) shall not exceed 80dB in the 63Hz octave band range within the allotment boundary.
- iii. The noise level arising from any activity measured within the boundary of any residential environment site or the notional boundary of any rural environment site shall not exceed the following limits:
 - a. 7.00am – 10.00pm 55dBA Leq
 - b. 10.00pm – 7.00am 40dBA Leq and 75dBA Lmax.

- iv. The noise levels shall be measured in accordance with the requirements of NZS6801:1999 Acoustics – Measurement of Environmental Sound and assessed in accordance with the requirements of NZS6802:1999 Assessment of Environmental Sound.
- v. All construction noise shall meet the requirements of New Zealand Standard NZS 6803:1999 Acoustics – Construction Noise.

4d Industrial Environment

4d.1.6 Maximum Noise Measurement

The noise levels shall be measured in accordance with the requirements of NZS6801:1999 Acoustics – Measurement of Environmental Sound and assessed in accordance with the requirements of NZS6802:1999 Assessment of Environmental Sound.

4d.1.7 Maximum Noise Limits

- i. The noise level arising from any activity measured within the boundary of any industrial environment, other than the site where the noise is generated, shall not exceed 75dBA Leq at any time.
- ii. The noise level arising from any activity measured within the boundary of any residential environment site or the notional boundary of any rural environment site shall not exceed the following limits:
 - a. 7.00am – 10.00pm 55dBA Leq
 - b. 10.00pm – 7.00am 45dBA Leq and 75dBA Lmax

4d.1.8 Maximum Noise Construction Noise

All construction noise shall meet the requirements of New Zealand Standard NZS 6803:1999 Acoustics – Construction Noise

4d.1.9 Maximum Noise

Electricity Generation Core Sites

Noise from uses at Electricity Generation Core Sites established either prior to the notification of this Plan (July 2000) or approved by way of resource consent shall comply with the noise limits specified in 4d.1.7.i. above as measured:

- i. outside the noise control boundary relating to each Electricity Generation Core Site as shown on the Planning Maps; or
- ii. within the notional boundary of any dwelling within the Rural Environment where this is beyond the noise control boundary; or
- iii. within the boundary of any site within the Residential Environment where this is beyond the noise control boundary.
- iv. Any new buildings with habitable rooms (i.e. dwellings, retirement homes, etc) built within the noise control boundaries shall be required to ensure they are appropriately designed to achieve suitable internal noise levels (35dBA Leq).

- v. The noise control boundary will be either the Electricity Generation Core Site boundary or the existing 40dBA Leq and 75dBA Lmax contour where this is beyond the Core Electricity Generation Site boundary, as shown on the planning maps.
-

4d.1.10 Maximum Noise

Well Drilling and Testing within Electricity Generation Core Sites

Noise from well drilling and testing within any Electricity Generation Core Site boundary as measured:

- i. within the boundary of any site within the Residential Environment;
- ii. within the notional boundary of any dwelling or accommodation activity within the Rural Environment

shall not exceed the noise levels set out in the following table measured and assessed in accordance with the provisions of NZS 6803:1999 – Construction Noise, if the occupiers do not agree to vacate the premises at the noise generator’s expense during the drilling period.

Time Period Monday to Sunday

Leq Lmax

- a. 7.00am – 10.00pm 70 85
 - b. 10.00pm – 7.00am 60 75
-

4d.1.11 Maximum Noise

Other within Electricity Generation Core Sites

Nothing in the foregoing maximum noise performance standards shall apply to sirens, circuit breakers and hydro spills associated with the operation of Electricity Generation Core Sites. Provided that the activity shall comply with the requirements of S16 of the Resource Management Act 1991.

4d.4.6 Assessment Criteria

- NOISE
- a. Ambient sound levels and the impact of any cumulative increase.
 - b. The degree to which the sound is intrusive and contrasts with the characteristics of the existing noise environment in terms of level, character, duration and timing.
 - c. The length of time and the level by which the noise limits will be exceeded, particularly at night.
 - d. The nature and location of nearby activities and the effects they may experience resulting from the increased sound levels.
 - e. Whether the sound levels are likely to detract from the amenity or general environmental quality of the surrounding Residential Environment.
 - f. The topography of the allotment and any influence this may have on sound propagation.
 - g. Proposed methods for the avoidance, remedying or mitigation of potential adverse effects and the degree to which they would be successful including:
 - h. insulation and barriers and isolation of the source of the noise.
-

4e District wide rules

4e.8.4 MAXIMUM NOISE

The noise standard for the environment that adjoins the water body, on which the activity occurs, shall apply.

Exemption: Is provided for all commercial activities lawfully established before the date of notification of the Proposed Plan (July 2000), or those to which resource consent has been granted since then, subject to the scale, intensity, and character remaining the same or similar.

4e.14.6 NEW ROADS

The construction of new roads is a restricted discretionary activity.

The Council restricts the exercise of its discretion to the following matters:

- a. noise
 - b. ecological effects
 - c. landscape/visual amenity
-

4g Taupo Town Centre Environment

4g.1.1 MAXIMUM NOISE

- i. The noise level arising from any activity measured within any Taupō Town Centre Environment property, other than the site where the noise is generated, shall not exceed:
 - a. 7.00am – 10.00pm 75dBA Leq
 - b. 10.00pm – 7.00am 65dBA Leq and 90dBA Lmax
 - ii. The sound level (leq) shall not exceed 80dB in the 63Hz octave band range within the allotment boundary.
 - iii. The noise level arising from any activity measured within the boundary of any Residential Environment site shall not exceed the following limits:
 - a. 7.00am – 10.00pm 55dBA Leq
 - b. 10.00pm – 7.00am 40dBA Leq and 75dBA Lmax
 - iv. Any new buildings with habitable spaces (i.e. dwellings, retirement homes, etc) built within the noise control boundaries shall be required to ensure they are appropriately designed to achieve suitable internal noise levels (40dBA Leq).
 - v. The noise levels shall be measured in accordance with the requirements of NZS6801:1999 Acoustics – Measurement of Environmental Sound and assessed in accordance with the requirements of NZS6802:1999 Assessment of Environmental Sound.
 - vi. All construction noise shall meet the requirements of New Zealand Standard NZS 6803:1999 Acoustics – Construction Noise.
-

4g.1.2 Maximum Noise Received

Any building containing residential or accommodation activity must be constructed to ensure that the level of noise received within any habitable space does not exceed 40dBA Leq. An acoustic design certificate from an acoustic engineer will be required to demonstrate compliance with the above performance standard at the time of lodging a Building Consent.

4g.4.4 Assessment Criteria NOISE

- a. Ambient sound levels and the impact of any cumulative increase.
- b. The degree to which the sound is intrusive and contrasts with the characteristics of the existing noise environment in terms of level, character, duration and timing.
- c. The length of time and the level by which the noise limits will be exceeded, particularly at night.
- d. The nature and location of nearby activities and the effects they may experience resulting from the increased sound levels.
- e. Whether the sound levels are likely to detract from the amenity or general environmental quality of the surrounding Residential Environment.
- f. The topography of the allotment and any influence this may have on sound propagation.
- g. Proposed methods for the avoidance, remedying or mitigation of potential adverse effects and the degree to which they would be successful including:
- h. Insulation and barriers and isolation of the source of the noise.
- i. The necessity for soundproofing any noise sensitive room having regard to the design, construction and room layout of the proposed building, along with any mitigating site characteristics such as location, topography, proposed ground contouring, vegetation or nearby structures.
- j. The impact of any residential or accommodation activity that does not provide the required noise insulation on the ability of existing or future permitted business activity to operate or establish without undue constraint.

4h Taupo Environment and Centennial Industrial Environment

4h.1.8 MAXIMUM NOISE

- a. The noise level arising from any activity measured within the boundary of any industrial environment, other than the site where the noise is generated, shall not exceed 75dBA Leq at any time.
- b. The noise level arising from any activity measured within the boundary of any residential environment site or the notional boundary of any site within the Rural Environment shall not exceed the following limits:
 - i. 7.00am – 10.00pm 55dBA Leq
 - ii. 10.00pm – 7.00am 45dBA Leq and 75dBA Lmax
- c. All construction noise shall meet the requirements of New Zealand Standard NZS 6803:1999 Acoustics – Construction Noise.
- d. Noise from uses at Electricity Generation Core Sites shall comply with the noise limits specified in 4t.1.8.a and b above as measured:

- i. outside the noise control boundary relating to each Electricity Generation Core Site as shown on the Planning Maps; or
 - ii. within the notional boundary of any dwelling within the Rural Environment where this is beyond the noise control boundary; or
 - iii. within the boundary of any site within the Residential Environment where this is beyond the noise control boundary.
- e. Any new buildings with habitable spaces (i.e. dwellings, retirement homes, etc) built within the noise control boundaries shall be required to ensure they are appropriately designed to achieve suitable internal noise levels (35dBA Leq).

The noise control boundary will be either the Electricity Generation Core Site boundary or the existing 40dBA Leq and 75dBA Lmax contour where this is beyond the Core Electricity Generation Site boundary, as shown on the planning maps.

- e. Noise from well drilling and testing within any Electricity Generation Core Site boundary as measured:
- i. within the boundary of any site within the Residential Environment;
 - ii. within the notional boundary of any dwelling or accommodation activity within the Rural Environment shall not exceed the noise levels set out in the following table measured and assessed in accordance with the provisions of NZS 6803:1999 – Construction Noise, if the occupiers do not agree to vacate the premises at the noise generator’s expense during the drilling period.
- | | |
|------------------------------|-------|
| Time Period Monday to Sunday | |
| Leq | Lmax |
| 7.00am – 10.00pm | 70 85 |
| 10.00pm – 7.00am | 60 75 |
- f. Nothing in the foregoing maximum noise performance standards shall apply to sirens, circuit breakers and hydro spills associated with the operation of Electricity Generation Core Sites. Provided that the activity shall comply with the requirements of S16 of the Resource Management Act 1991.
- g. The noise levels shall be measured in accordance with the requirements of NZS6801:2008 Acoustics – Measurement of Environmental Sound and assessed in accordance with the requirements of NZS6802:2008 Assessment of Environmental Sound.

Exception: for Taupō Industrial site identified on Planning Map D5, 10.00pm – 7.00am 40dBA Leq and 70dBA Lmax.

4h.1.9 Maximum Noise Received Any building containing residential or accommodation activity must be constructed to ensure that the level of noise received within any habitable space does not exceed 40dBA Leq. An acoustic design certificate from an acoustic engineer will be required to demonstrate compliance with the above performance standard at the time of lodging a Building Consent.

4h.4.6 NOISE

- a. Ambient sound levels and the impact of any cumulative increase.

- b. The degree to which the sound is intrusive and contrasts with the characteristics of the existing noise environment in terms of level, character, duration and timing.
- c. The length of time, and the level by which the noise limits will be exceeded, particularly at night.
- d. The nature and location of nearby activities and the effects they may experience resulting from the increased sound levels.
- e. Whether the sound levels are likely to detract from the amenity or general environmental quality of the surrounding Residential Environment.
- f. The topography of the allotment and any influence this may have on sound propagation.
- g. Proposed methods for the avoidance, remedying or mitigation of potential adverse effects and the degree to which they would be successful including:
 - i. Insulation and barriers and isolation of the source of the noise.

4i Spa Road Mixed Use Environment

4i.1.20 Maximum Noise Limits

The noise level arising from any activity measured within the boundary of any Spa Road Mixed Use Environment site or the boundary of any Residential Environment site, other than from the site where the noise is generated, shall not exceed the following limits:

7.00am – 7.00pm	50dBA Leq
7.00pm – 10.00pm	45dBA Leq
10.00pm – 7.00am	40dBA Leq and 70dBA Lmax

4i.1.21 Maximum Noise Measurement

The noise levels shall be measured in accordance with the requirements of NZS 6801:1999 Acoustics – Measurement of Environmental Sound and assessed in accordance with the requirements of NZS 6802:1991 Assessment of Environmental Sound

4i.1.22 Maximum Noise

Construction Noise All construction noise shall meet the requirements of New Zealand Standard NZS 6803:1999 Acoustics Construction Noise.

4i.2.2 General Rules

- i. Any temporary activity, being an activity of up to a total of three operational days in any one calendar year, which exceeds any performance standard(s), is a permitted activity, provided that:
- ii. There are no new permanent structures constructed; and
- iii. Once the activity has ceased, the site (including vegetation and the surface of the ground of the site) is retained or re-instated to its condition prior to the activity commencing; and

- vi. An allowance of five non-operational days associated with the activity is not exceeded, during which time any breach of any performance standard(s) shall only be to the extent reasonably necessary to undertake any relevant aspect of the activity.
-

4i.4.16 NON RESIDENTIAL ACTIVITIES

- a. The extent to which the activity is likely to be incompatible with existing and permitted future residential activities, and the potential for reverse sensitivity effects.
 - b. The extent to which the activity, either alone or in association with other nearby activities, is likely to have an adverse effect upon the safety and efficiency of the road network.
 - c. The extent to which the activity (having regard to its proposed size, composition and characteristics) is likely to have an adverse effect upon the amenity values and functions of the Taupō Town Centre Environment and its ongoing ability to provide for the future needs of their communities.
 - d. The extent to which the convenient access of communities to community facilities may be positively or adversely affected by the proposed activities.
 - e. The extent to which the site is self-contained in respect of appropriate off-street parking for customers and employees and as to goods delivery service arrangements.
 - f. The extent to which the activity reinforces an identified existing or potential community focus by its co-location with other community facilities, and/or increased population base.
 - g. The extent by which a comprehensive development would result in significant amenity improvements to the Spa Road Mixed Use Environment.
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Appendix B: Updates to existing definitions to comply with Definitions Standard

ODP	NPS Term	Operative Definition	NPS Definition	Comment
Leq or L _{eq}	L _{Aeq}	means the sound level averaged over a stated time period which has the same A weighted sound energy as the time varying sound during the same period.	“has the same meaning as ‘time-average A-weighted sound pressure level’ in New Zealand Standard 6801:2008 Acoustics - Measurement of Environmental Sound.”	Update noise measurement symbol and define in accordance with defined term in the Definitions Standard:
L _{max} or L _{max}	L _{Amax}	means the maximum A-frequency weighted sound level (dBA L _{max}) during a stated time period.	“has the same meaning as the ‘maximum A-frequency weighted, F-time weighted sound pressure level’ in New Zealand Standard 6801:2008 Acoustics – Measurement Of Environmental Sound.”	Update noise measurement symbol and define in accordance with defined term in the Definitions Standard:
Notional Boundary	Notional Boundary	the notional boundary as defined as a line 20 metres from any side of a rural dwelling or the legal boundary where this is closer to the dwelling.	“means a line 20 metres from any side of a residential unit or other building used for a noise sensitive activity, or the legal boundary where this is closer to such a building”.	Update definition in accordance with defined term in the Definitions Standard: