



**SECTIONAL DISTRICT PLAN REVIEW  
PLAN CHANGE 22  
SECTION 6 GENERAL NOISE RULES**

**For**

**PALMERSTON NORTH CITY COUNCIL**

N2461 PC22 General – Final V1

29 November 2016

**ACOUSAPE CONSULTING & ENGINEERING LTD**

A handwritten signature in black ink that reads "Nigel Lloyd". The signature is written in a cursive style with a large, looped 'L' at the end.

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## 1. Introduction

The general noise rules in Section 6 of the District Plan provide a background to the treatment of noise and its effects throughout the balance of the Plan. As such, Section 6 provides background information on noise issues and specific rules related to noise measurements, etc. Section 6 is intended to be read with the specific noise rules provided for in each zone.

We recognise the assistance provided by the RMA Quality Planning Resource<sup>1</sup>.

## 2. Brief

Acousafe's brief is to review Section 6 noise information and specifically:

1. A review of Section 6.2.2 – Resource Management Issues and 6.2.3 – Noise and the Environment, to provide assessment of the content, relevance and level of information contained within these sections.
2. A review of Section 6.2.4 – Noise Survey, to evaluate the relevance of the survey and provide recommendations on its relevance and inclusion within Part 6 of the Plan.
3. A technical assessment of Section 6.2 – Noise, to identify the areas that do not align with current Noise standards and industry best practice.
4. A technical review of the all noise rules within operative plan to ensure alignment and consistency.
5. Technical review of provisions in operative plan relating to noise effects from State Highways and Roads, and review the need for inclusion of provisions within Section 6.2.
6. Technical input as to the required information necessary to be included within any noise assessment report submitted to the Council through the Resource Consent process.
7. Identify any noise issues, concerns or industry best practice that are relevant to Palmerston North City Council but are not captured within the current Operative Plan provisions.
8. Technical input and overview of the approach taken within each zone of the Operative Plan to noise, with a view to informing the development of Section 6.2 as an overarching context for all noise provisions within the Plan.

The scope of work excludes review of the airport noise controls, as these were considered during the PC15 process.

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<sup>1</sup> <http://www.qualityplanning.org.nz/>

### **3. Noise Rules in the District Plan**

#### **Section 5**

Section 5 Information Requirements contains a number of references to noise requirement in relation to different activity statuses. These include:

- 5.4(d) Land Use Consents - Matters to be covered as part of an Assessment of Effects on the Environment,
- 5.4(j) - Identifying methods of construction where noise attenuation is required,
- 5.4(j) - Provision of a noise insulation report by a suitably qualified and experienced acoustical consultant for aircraft noise insulation requirements,
- 5.4(k) - Particular requirement relating to mitigation of noise and reporting for land use applications in the North East Industrial Zone, by an appropriately qualified acoustical engineer,
- 5.5 Subdivision Consents (b)(v) the RMA Fourth Schedule requirements on the effects arising from noise.

These requirements are appropriate as they stand.

The following Sectional Reviews have taken place (or are in the process of taking place) with the noise rules updated:

PC1	Inner and Outer Business Zones
PC 5	Local Business Zones
PC 6	Whakarongo Residential Area
PC 9	Industrial Zone
PC 11	Institutional Zone
PC 19	Caccia Birch
PC 20	Residential Zone
PC 15A-H	Rural Zone Wind Farms NE Industrial Zone Braeburn Industrial Area (Longburn) Airport Zone
PC 21	Recreation Zones and Race Training Zone.

### **4. Technical Assessment of Section 6.2**

Amendments are recommended for Section 6.2 which are included in Appendix A of this report. The changes update the Plan to the 2008 version of NZS 6801 and NZS 6802.

We have reviewed the section (6.2.2) on Resource Management Issues and deleted references to the old versions of the Standards and the general discussions on noise monitoring in the different areas. This general discussion is now inappropriate given the Sectional reviews that have been undertaken of the District Plan to align with the 2008 New Zealand Standards.

A section on reverse sensitivity has been added to 6.2.2 which explains the issues around reverse sensitivity and how significant infrastructure needs to be protected from encroachment by noise sensitive activities. This also has the benefit of protecting future residents from establishing in areas where high noise levels either exist now or are likely to increase into the future. The Environment Court accepts that people should not be left to judge their own location needs and that they should be protected from their own folly. People who come to a nuisance have recourse against the existing use<sup>2</sup>.

The reverse sensitivity provisions seek to protect important infrastructure from the encroachment of noise sensitive activities.

## **5. Review of Section 6.2.4 – Noise Survey**

The commentary on the original noise survey is now mostly out of date because it relied upon an environmental noise survey undertaken in 1994 prior to the formulation of the first District Plan under the RMA. As such this information is no longer relevant and we recommend that it be deleted. The intention of the noise limits in the District Plan has been to cap the generation of the environmental sound levels from activities that can be controlled by District Plan measures.

The noise rules in the District Plan have been established as each Sectional Plan review has taken place. The general noise limits in each section have been determined in accordance with the recommendations of NZS 6802:2008 taking into consideration the predicted community expectations for each zone and each zone interface. Particular care has been taken where allowable noise exceeds the maximum guideline limits as recommended by NZ 6802:2008. This occurs in the Business Zones (Inner, Outer, Local and Fringe) and is intended to recognise the reality that commercial activities cannot practicably comply with strict residential noise limits, nor is there a general expectation that they should.

Where the District Plan limits are less strict than the maximum guideline limits in NZS 6802:2008 then this can result in adverse noise impacts on internal residential amenity and further noise mitigation is required. This situation occurs within the Business Zones. Where noise sensitive activities are to be located within these zones then addition noise insulation and ventilation of dwelling houses and apartments is required to protect residents. It must be accepted that only limited protection can be provided to outdoor residential amenity in the business zones.

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<sup>2</sup> Davidson, A., 2003 “*Reverse Sensitivity – Are No-Complaints Instruments a Solution?*” New Zealand Journal of Environmental Law, 7, p203.

The noise limits are generally the same as the maximum recommended guideline limits in NZS 6802:2008 where these apply to the interface between Business/ Industrial Zones with neighbouring residential and rural areas. This is for two reasons:

- i. The areas close to commercial zones generally experience higher residual sound levels because of those commercial activities and because of the proximity of busy roads, and
- ii. Residents in areas close to commercial areas should not expect the same aural amenity levels as those residing in quiet residential areas away from commercial activities.

While there are controls on the maximum density of residential development in the rural area, the Palmerston North City Rural Zone is generally more rural-residential in character. The recommended noise limits are 5dB stricter than the maximum guideline limits found in NZS6802:2008 and this is appropriate given the general ambient sound levels in rural areas<sup>3</sup> and our experience of the expectation of the community particularly in respect of the Te Rere Hau compliance process and Turitea Wind Farm consent process<sup>4</sup>.

The noise rules are considered to be appropriate for Palmerston North rural area. Experience of the reaction of the community to wind farm noise indicates that it is not receptive to “introduced noise” that is perceived to be incompatible with the rural environment. The noise rules are not intended to control farming activities which are generally permitted in the Rural Zone and which are exempted from the noise rule by reference to Section 6 of the Plan. It is other activities that need to comply with the noise rule.

There are logical planning reasons for applying the rural noise limits at any point within the site boundary, rather than the notional boundary. This provides certainty with respect to future development, both for the “noise maker”, and also by ensuring the noise contamination is contained within the “noise maker’s” site, at least until the impacts on potential development of noise sensitive activities on neighbouring sites can be gauged. In our experience this is even more important in Palmerston North given the propensity for (comparatively) higher density development and for rural dwellers to have high expectations for their amenity values.

The rules for the Residential Zone are intended to control the noise from non-residential activities and items of mechanical plant situated in a Residential Zone. The mechanical plant items include residential and non-residential heat-pumps, fans and generators. Care needs to be taken with the installation of these plant items that they are sensibly selected, located and operated such as not to cause a nuisance to neighbours.

The limit of 45 dB  $L_{Aeq(15mins)}$  during the day is purposefully stringent and sets out to discourage even moderate noise generators from establishing in the quiet

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<sup>3</sup> <http://www.pncc.govt.nz/content/7538/StateoftheEnvironmentReportSection3Amenity.pdf>

<sup>4</sup> <http://www.mfe.govt.nz/rma/call-in-turitea/final-report/>

residential centres. The night-time limits of 40 dB  $L_{Aeq(15mins)}$  and an  $L_{max}$  limit of 65 dBA are used together to protect against sleep disturbance.

## **6. Review of R 6.2.7**

Our recommendation is that Rule R6.2.7.1 be amended to update the noise measurement and assessment protocol to the latest (2008) New Zealand Standards.

Some changes are recommended to R6.2.7.2 which bring these exclusions from the noise control rules into line with best practice. Changes recommended to the aircraft noise assessments bring these in line with the requirements of NZS 6805:1992. Other changes generally tie the exclusions to current New Zealand Standards or recognise the limitations of those Standards in their scope.

The changes to the exclusions for trains reflect the wording of S326 of the RMA, which is the meaning of excessive noise, and provides for the noise limits to be applied to the testing of trains and maintenance, loading and unloading which are activities that can be controlled (as opposed to the noise of trains passing by on railway lines).

There is no reference to NZS 6808:2010 *Acoustics - Wind Farm Noise* included in Section 6. This is intentional because provision is made specifically to wind farms in the Rural Zone with the status of wind farms and assessment criteria clearly set out there.

The Showgrounds have been renamed to Arena Manawatu.

## **7. State Highways and Roads**

There are two elements of road noise in the District Plan. NZTA has sought that existing high speed State Highways be protected from the impact of noise sensitive activities being developed near to the road. Provisions for reverse sensitivity have been explored in the Rural Zone (which are subject to appeal at the time of writing this report). Reverse sensitivity protection has also been included in the Whakarongo Residential Area with setbacks and noise insulation requirements. Reverse sensitivity land use management controls have also been established for the Main Railway Line in greenfield residential growth areas. The set-backs and insulation controls are provided for in the individual zones as appropriate.

The District Plan rules do not limit noise on existing roads although the noise from new roads or alterations to existing State Highways is covered by NZS 6806:2010. That Standard is somewhat unusual in that it does not control the noise from roads but sets a series of criteria that progressively move towards achieving acceptable noise levels inside noise sensitive activities. NZS 6806:2010 is ostensibly a guide to comparing mitigation to determine which is the best practicable option. Preference is given to structural mitigation measures within the road reserve or near the new or altered road and only to

consider noise sensitive building modification where it is “*not reasonable or feasible for structural mitigation...*”.

NZS6806:2010 is specifically designed to manage noise from new or altered roads and, as such, we recommend that provision be made in the Transportation Section of the District plan as follows:

The noise from new or altered state highways shall be assessed, managed and controlled by reference to NZS6806:2010 Acoustics – Road-traffic noise – New and altered roads.

There are no specified limits for noise on existing roads and this noise has tended to increase yearly based on increases in traffic volumes. This situation may change in the future as vehicles become quieter both because older, noisier, vehicles are taken off the road or because of quieter technology, e.g. electric vehicles.

There are no noise limits for existing roads because there has been difficulty in obtaining agreement on what these should be or how they should be enforced. Roading is infrastructure that is used by the wider community and people are therefore accepting of a certain imposition from the resulting noise, within reason. Where this can become an issue though is where a new activity establishes in an area where the resulting road traffic noise becomes dominant or occurs at night, causing sleep disturbance. Road traffic tends to have a daily pattern of peaks in the morning and afternoon with traffic noise gradually falling throughout the evening until it gets quiet after midnight. Noise levels might start to pick up after about 4am but with a sudden increase at around 7am. The patterns vary according to traffic volumes and factors such as school runs.

Traffic volumes can increase substantially when the road is already busy without making a noticeable difference in overall noise levels. However smaller increases may have significant impacts at times when traffic volumes are light, particularly at night when sleep disturbance can occur. Trucks and motorbikes also tend to generate more noise.

Under the RMA, the definitions of ‘effect’ and ‘environment’ are very broad. Any effects – whether positive or negative, long or short-term, or when combined with each other – need to be identified<sup>5</sup>. As such the changes in road traffic noise resulting from an application need to be assessed, especially where these cause impacts that are different from the normal passing of traffic on a local road. It is important that off-site noise impact assessments are undertaken of additional traffic from any major new developments even though there are no District Plan noise rules to assess these against. We have provided an explanation (in 6.2.3 – see Appendix A) on how this would be achieved using a suitably qualified and experienced acoustical engineer. The scale of such an assessment would depend on the circumstances but should at least identify noise impacts resulting from the use of local roads, where this is likely to occur.

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<sup>5</sup> Ministry for the Environment, A Guide to Preparing a Basic Assessment of Environmental Effects.

The aim of this provision is to enable adverse effects of night-time traffic, in particular, to be controlled as it might arise from an activity seeking to establish in an inappropriate location. In this instance the need would be to assess and control off-site traffic noise to protect the health and amenity of residents who may reside in an otherwise quiet area.

## **8. Information Needing to be Provided with a Resource Consent**

A new section is recommended in Appendix A which sets out the requirements for the information that should accompany an assessment of environmental noise effects. This is recommended as a replacement for 6.2.4.

We have considered whether the new 6.2.4 should be included in Section 5 under Information Requirements but on balance we see Section 5 as an overarching commentary with the specific noise assessment requirements more appropriately located in Section 6.

The recommended required information would meet the provisions of Schedule 4 of the RMA but the key is the need for the noise assessment to satisfy the purpose for which it is required. If the proposed activity will clearly have a low impact, then the level of information would reflect that. For example, the residual sound assessment might not require actual monitoring to be undertaken or, perhaps, short term residual sound sampling would be appropriate. A major development is more likely to require long term residual sound monitoring over several days or months before the overall aural environment is understood.

## **9. Other Considerations**

### **New Zealand Defence Force**

The New Zealand Defence Force (**NZDF**) has submitted to various Section Plan Change reviews regarding the noise of Temporary Military Training Activity (**TMTA**). NZDF has sought that a standard approach be taken to the status of TMTA (making it a permitted activity in all zones) and that a standard approach to controlling noise of TMTA be applied in each of the zones. NZDF has sought this approach across New Zealand. The various hearing committees have decided that TMTA shall not be a permitted activity in each of the zones and that different approaches are required in the different environments.

PC15 (Rural Zone) is subject to appeal at the time of writing this review and PC 21 (Recreation Zones) remains to be heard but once the provisions for TMTA have been heard then provision may need to be made in Section 6 whereby the noise of TMTA is either controlled by the general District Plan Rules or by specific rules in each zone where these are provided for.

We consider that it is appropriate to deal with TMTA differently in different zones.

## 10. Technical Review of District Plan Noise Provisions

The Sectional Plan Reviews have progressively captured each set of noise provisions in the District Plan to bring these into line with the latest New Zealand Standards.

The noise rules in both the Fringe Business Zone and the Flood Protection Zone both require revision in terms of NZS 6802:2008.

### Fringe Business Zone

The Fringe Business Zone covers three distinct areas within Palmerston North City, which are located on or within the vicinity of the Primary Roding Network. The Fringe Business Zone areas are along Rangitikei Street, Tremaine Avenue and Featherstone Street. The Zone is intended to provide for large format retailing as well as other activities that contribute towards the community's business needs.

The Operative District Plan noise limits in the Fringe Business Zone (R11.11.9.1) apply less stringent noise limits on the boundary of any other site and also applies noise limits that are commensurate with residential amenity protection to land zoned residential.

It is proposed to adopt the numerical limits in R11.11.9.1 (i), amend the  $L_{10}$  descriptor to  $L_{Aeq(15mins)}$  and to retain the  $L_{max}$  limit while updating these to be in-line with NZS 6802:2008.

The Operative Plan noise limits in R11.11.9.1 (ii) are relatively strict for a business zone/ residential interface and this will restrict activity within the Fringe Business Zone. The zone has a significant interface with the Residential Zone and the ambient sound levels will be high due to the proximity of high traffic routes.

Residents should not expect a high level of amenity near to this interface compared with those in a residential area further removed from major roads for example. Given the desire to provide a high level of functional amenity for activities in the Fringe Business Zone it is proposed that the least strict noise limits provided for by NZS6802:2008 are provided for activities in the zone as received in the Residential Zone. Because the least strict noise limit is to be used it is proposed that the evening noise limit that is recommended by NZS6802:2008 also be adopted as an interim between the daytime and night-time limits. Consequently, the daytime and night-time noise limits will be relaxed numerically by 5dB and the descriptor will change from  $L_{10}$  to  $L_{Aeq}$ .  $L_{max}$  will continue to be used in conjunction with the (new)  $L_{Aeq}$  limit to control high energy night-time noises that might cause sleep disturbance.

The noise limits are numerically the same as those adopted by Plan Change 1 for the Outer Business District. These limits do not protect residential amenity within the Fringe Business Zone, particularly at night, and as such any new noise sensitive activities that are introduced to the zone should be designed and constructed to provide appropriate noise insulation. Because the allowable noise is similar in the Fringe Business to the Outer Business Zone then the

noise insulation standard should also be the same. This standard reduces the allowable outside noise level of 65dB  $L_{Aeq(15\text{ mins})}$  by 30 dB to 35 dB  $L_{Aeq(15\text{ mins})}$  indoors. Based on the recommendations of AS/NZS 2107:2000<sup>6</sup>, this provides an appropriate indoor level for residential activities. In order to achieve these acceptable internal sound levels the windows need to be closed. This requires that bedrooms be mechanically ventilated to a minimum standard.

We have adopted the Outer Business Zone noise rule (R11.9.7.1) for use in the Fringe Business Zone as follows:

### **11.11.9 Rules: NOISE**

#### **R11.11.9.1 Noise**

##### **(a) Noise**

- i. Noise from any activity within the Fringe Business Zone must not exceed the following limits at any point within any other site within the Fringe and Outer Business Zones:

At any time 65 dB  $L_{Aeq(15\text{mins})}$

Daily 11:00pm to 7:00am the following day 90dBA  $L_{max}$

- ii. Noise from any activity must not exceed the following limits at any point within any site zoned for residential purposes:

7:00am to 7:00pm 55 dB  $L_{Aeq(15\text{mins})}$

7:00pm to 10:00pm 50 dB  $L_{Aeq(15\text{mins})}$

10:00pm to 7:00am 45 dB  $L_{Aeq(15\text{mins})}$

10:00pm to 7:00am (Nighttime  $L_{max}$ ) 75 dBA  $L_{max}$

- iii. Where it is impracticable to measure outside a building, the noise from any activity within the Fringe Business Zone must not exceed the following limits, inside any residential units in any building on any other site within the Fringe or Outer Business Zones:

Bedrooms 10:00pm to 7:00am the following day 35 dB  $L_{Aeq(15\text{mins})}$

Bedrooms 10:00pm to 7:00am the following day 55 dBA  $L_{max}$

Other habitable rooms 40 dB  $L_{Aeq(15\text{mins})}$

This must not allow any relaxation in the noise limits in (i), and (ii) of Rule 11.11.9.1.

#### ***Explanation***

*The noise rules within the Fringe Business Zone are designed to allow activities to make moderate noise while still providing a reasonable level of control to residential activities in the area. Where noise sensitive uses (including residential activities) are proposed for the Fringe Business Zone*

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<sup>6</sup> AS/NZS 2107:2000 Acoustics – Recommended design sound levels and reverberation times for building interiors.

*it is the responsibility of the designer, developer, owner and user to ensure that buildings are appropriately insulated against higher levels of noise that are allowed. Residents in the Fringe Business Zone must accept that some adverse noise impacts will be experienced from time to time. In this regard, it is important that residential development in the Fringe Business Zone does not compromise the effective development and operation of business activities.*

**(b) Noise Insulation**

Any habitable room in a building used by a noise sensitive activity within the Fringe Business Zone must be protected from noise arising from outside the building by ensuring the external sound insulation level\* achieves the following minimum performance standard:

$$D_{nT,w} + C_{tr} > 30 \text{ dB}$$

Compliance with this performance standard must be achieved by ensuring habitable rooms are designed and constructed in a manner that accords with an acoustic design certificate signed by a suitably qualified acoustic engineer stating the design as proposed will achieve compliance with the above performance standard.

***Explanation***

*Acoustic insulation is required for noise sensitive activities in buildings within the Fringe Business Zone to mitigate the potential adverse effects on such uses and to lessen the potential for constraint that such uses can place on typical business or commercial activities commonly associated with the zone.*

**(c) Ventilation**

Compliance with Rule 11.6.6.1(c).

**(d) Fixed Plant**

Compliance with Rule 11.6.6.1(e).

## **Flood Protection Zone**

The Rules for the Flood Protection Zone in the Natural Hazards Section have not thus far been updated and we recommend that these be amended to be compatible with the rest of the District Plan. We note that the Natural Hazards noise provision R22.8.6.1 has been renumbered by PC15D as R22.7.6. The following recommended amendments make the Flood Protection Zone Noise Rules compatible with the Rural Zone:

~~R 22.8.6.1~~ **R 22.7.6 Noise**

Sound emissions from any activity in the Flood Protection Zone when measured at ~~or within the boundary of~~ any point within any land zoned for residential purposes or at ~~or within the boundary of~~ any point within any land in the Rural Zone (other than the site from which the noise is emitted or a road) shall not exceed the following:

<del>7:00 am to 10:00 pm</del>	<del>50 dBA <math>L_{10}</math></del>
<del>10:00 pm to 7:00 am</del>	<del>40 dBA <math>L_{10}</math> and 70 dBA <math>L_{max}</math></del>
<u>7:00am - 7:00pm</u>	<u>50dB <math>L_{Aeq(15mins)}</math></u>
<u>7.00pm to 10.00pm</u>	<u>45dB <math>L_{Aeq(15mins)}</math></u>
<u>10:00pm - 7:00am</u>	<u>40dB <math>L_{Aeq(15mins)}</math></u>
<u>Night-time <math>L_{max}</math> 10:00pm - 7:00am</u>	<u>70dBA <math>L_{max}</math></u>

### **Explanation**

*These rules are intended to provide for permitted agricultural activities while controlling noise from a range of other activities which may also occur in the Flood Protection Zone, e.g. Recreation and Quarrying. This Rule does not control certain rural activities carried on in the Flood Protection Areas, nor does it control some soil conservation and river control works. Reference should be made to Section 6 for those activities that are excluded from the above controls and for further general information on noise.*

The older Operative District Plan noise descriptors are currently expressed as  $L_{10}$  and  $L_{max}$  (except for aircraft noise at the airport).  $L_{10}$  is a statistical method of measuring noise being the level that is equalled or exceeded for 10% of the time. This review proposes that  $L_{Aeq}$  be used to protect neighbours to the Flood Protection Zone.  $L_{Aeq}$  is an energy average of the sound levels. For road traffic and noise of a similar characteristic  $L_{10}$  is generally 2-4dBA greater than  $L_{Aeq}$  for the same period.  $L_{max}$  is to be retained and this is the maximum sound level in any measurement period.

The recommended noise rule contains a shoulder noise limit for the evening period. This is a time when residential amenity is particularly important and a transition between the daytime limit and night-time is considered appropriate. The shoulder limit is introduced by NZS 6802:2008.

In addition to the Fringe Business and Natural Hazards Sections we have noted changes to the following parts of the District Plan:

### **Definitions**

The separate definitions for Schedules P, Q and R were recommended for deletion by Plan Change 20.

The definition of External "A" Weighted Aircraft Noise Levels is no longer relevant in the District Plan and can be deleted

The table at the end of the Definitions (Table G1 – Australian Standard AS2011 1994) is no longer referenced in the District Plan and this Table can now be deleted.

## **11. Conclusions**

Plan Change 22 provides for streamlining of Section 6 with regards to the way in which noise is measured and assessed throughout the District Plan. A number of the Section Plan Change reviews are still in process and it would be best to finalise Section 6 for aspects such as Temporary Military Training Activities once the decisions have been made and finalised.

The recommendations in this review bring noise controls in the District Plan in line with the 2008 versions of NZS 6801 and NZS 6802 removing reference to earlier versions of these Standards.

District Plan Change 22  
General Noise Rules  
Status – Final V1

## **APPENDIX A**

### **RECOMMENDED DRAFT SECTION 6.2 - NOISE**

## 6.2 Noise

### 6.2.1 INTRODUCTION

This part of the Plan is intended to provide a background to the treatment of noise and its effects throughout the balance of this Plan. As such, this Section provides background information on noise issues and specific rules related to noise measurements, etc. This Section should be read with the specific noise rules provided for in each zone.

### 6.2.2 RESOURCE MANAGEMENT ISSUES

The Second Schedule of the Resource Management Act 1991 outlines matters that may be provided for in district plans. These include the control of any emission of noise from land and structures in the district, and the mitigation of the effects of noise.

The general noise performance conditions within this District Plan have been developed using the guidelines provided by NZS6802: 1991 Assessment of Environmental Sound. They are based on actual noise monitoring undertaken extensively in Palmerston North City, Ashhurst and the rural areas. Environmental quality objectives are established for each area and the noise performance conditions have been developed to achieve these standards. Because noise performance conditions are set limits (rather than "floating" limits that would be achieved with a "background plus" approach) the noise emissions in an area will be capped. This prevents background creep and, because the assessment is on a cumulative basis, provides certainty to neighbours of proposed new activities.

In certain circumstances there may be activities which are lawfully established prior to the time that this District Plan became notified, that emit noise that exceeds the noise emission standards in the Plan. The Resource Management Act 1991 provides for these activities to continue as long as the effects of the use are the same or similar in character, intensity, and scale to those which existed before the rule became operative or the Proposed District Plan was notified. Any change to the activity which causes a worsening of the effects will require a resource consent.

Activities that generate noise that exceeds the limits in the noise Performance Rules may also be appropriately located in the Zone, provided that the effects of the activity are minor. Such an activity would not comply with the District Plan and would require a resource consent. An Assessment of Environmental Effects would need to be undertaken for the resource consent application and any assessment would rely on the New Zealand Standard appropriate to the activity. Any assessment would normally report background sound measurements taken at times representative of the periods of operation of the activity and would assess any impact against those background levels. Applications will be considered with regard to the present and likely future development, particularly that of residential development in rural or residential zones, and demonstrate the degree to which management and engineering controls can mitigate any adverse effects. The effects of traffic noise generated by the activity shall also be assessed.

Section 16 of the Resource Management Act 1991 places a duty on occupiers of land and every person carrying out an activity in, on, or under a water to adopt the best practicable option to ensure that the emission of noise from that land or water does not exceed a reasonable level. This does not limit the right of the Council to prescribe noise emission standards in this District Plan.

In addition to placing a duty on persons to avoid unreasonable noise, the Resource Management Act 1991 also provides for the issue of excessive noise directions.

Reverse sensitivity issues arise when noise from significantly important infrastructure (for example) cannot be contained within the boundary of the site where the activity occurs and new incompatible land use is proposed to be sited nearby. Examples of this in Palmerston North City are the Palmerston North Airport, established

Quarries, State Highways, the Main Trunk North Island Railway Line and wind farms. Reverse sensitivity is controlled by managing new land use by generally employing a combination of land buffer (setbacks) and, in some instances, noise insulation of sensitive activities as appropriate. The District Plan establishes appropriate internal noise levels both in living rooms and bedrooms of noise sensitive activities to allow the level of noise insulation to be established. The method of providing the noise insulation is to require the construction and maintenance of the noise sensitive activity to be in accordance with a design report prepared by a suitably qualified and experienced acoustical engineer.

Land use management is appropriate where further development of noise sensitive activities can cause a restriction on the significant noise generating activity or where a deleterious impact could be generated for people moving into the area.

Reverse sensitivity is avoided within the Industrial Zones by restricting what new noise sensitive activities can be established there.

### **6.2.3 NOISE AND THE ENVIRONMENT**

Noise is an environmental effect that has the potential to cause adverse effects, annoyance and impact on health. It is identified as a nuisance in the local communities and complaints often relate to conflicts between incompatible activities.

~~It is almost inevitable that any activity undertaken in the environment will produce some noise effects. Often these noise effects are of minimal effect, e.g. normal household noises, or are of limited duration, e.g. lawn mowing. Nevertheless, in some cases the noise effects can become more significant and fall into the adverse effects category. Generally over the last decade there has been a growth in noise pollution and a corresponding desire to control those noise effects.~~

~~The New Zealand Noise Standards, particularly NZS6802: 1991 Assessment of Environmental Sound, are nationally based standards which give guidance to the measurement of noise and the appropriate levels at which to control noise effects. They have been used as basic guidance documents on the approach to noise in this Plan.~~

Different activities generate diverse noise characteristics and there are various New Zealand Standards that are designed for specific purposes. The New Zealand Standards for noise referred to in this District Plan are:

NZS 6801:2008 NZS6801:2008 Acoustics – Measurement of Environmental Sound

NZS 6802:2008 Acoustics – Environmental Noise

NZS 6803:1999 Acoustics – Construction Noise

NZS 6805:1992 Airport Noise Management and Land Use Planning

NZS 6806:2010 Acoustics – Road Traffic Noise – New and Altered Roads

NZS 6807:1994 Noise Management and Land Use Planning for Helicopter Landing Areas

NZS 6808:2010 Acoustics – Wind Farm Noise

NZS 6801 provides for measurement of noise and is relied upon in various ways by each of the other Standards. Where a Standard refers to a previous version of NZS 6801 then NZS 6801:2008 shall be used whenever it is appropriate.

NZS 6802 sets out procedures for the assessment of general activity noise for compliance with noise limits and does not apply to the assessment of sound where the source is within the scope of the other New Zealand Standards, which are set out above.

In addition to those sources of noise, there are other specific sources which are outside the scope of NZS 6802 and for which no other New Zealand Standards have yet been written. NZS 6802 identifies particular examples of these sources such as road or rail transport and impulsive sound (such as gunfire and blasting). NZS 6806 covers the management of noise for new or altered roads but is not designed to cover individual (noisy) vehicles or noise from existing roads that are not being altered. Dog barking noise (either individual dogs or from kennels) and electrically generated music (particularly with a high bass component) are other specific types of common

noise nuisance which are not appropriately assessed using NZS 6802 (or any other existing New Zealand Standards).

Where a specific source is outside the scope of the Standards then it will be excluded from assessment and control using the District Plan rules. However, under the RMA, the definitions of 'effect' and 'environment' are very broad and this requires the assessment of a number of adverse effects for which there are no noise standards (and therefore no District Plan rules). Effects that are excluded from the District Plan rules are not exempt from the provisions of the RMA and need to be included in an assessment of environmental effects. Where a noise assessment is required then this should be undertaken by a suitably qualified and experienced acoustical engineer.

An example of this is off-site road noise. For example, where an activity generates significant truck volumes then the RMA requires that the truck noise on local roads is assessed and for this noise to be controlled if necessary. Such controls might include the restriction on hours of operations to prevent noisy trucks passing through a quiet residential area where night-time noise will otherwise cause unacceptable impacts on health and amenity.

Where a noise source is outside of the scope of the New Zealand Standards used in this District Plan for the assessment of a noise limit then that noise source should not be considered to meet the permitted baseline test of section 104 of the Resource Management Act 1991 even if technical compliance with the noise rule can be achieved.

#### **6.2.4 DISTRICT PLAN NOISE LIMITS**

The noise rules in the District Plan have been established as each Sectional Plan review has taken place. The general noise limits in each section have been determined in accordance with the recommendations of NZS 6802:2008 taking into consideration the predicted community expectations for each zone and each zone interface. Particular care has been taken where allowable noise exceeds the maximum guideline limits as recommended by the NZS 6802:2008. Where the District Plan limits are less strict than the maximum guideline limits in NZS 6802:2008, then this can result in adverse noise impacts on residential amenity and further noise mitigation is required. This situation occurs within the Business Zones (Inner, Outer, Local and Fringe). Where noise sensitive activities are to be located within these zones then additional noise insulation and ventilation of dwelling houses and apartments is required to protect residents, and this is provided for in the Rules for the relevant zones.

The noise limits are generally the same as the maximum recommended guideline limits where these apply to the interface between Business/ Industrial Zones with neighbouring residential and rural areas. This is for two reasons:

- i. The areas close to commercial zones generally experience higher residual sound levels because of those commercial activities and because of the proximity of busy roads, and
- ii. Residents in areas close to commercial areas should not expect the same aural amenity levels as those residing in quiet residential areas away from commercial activities.

The recommended noise limits in the Rural Zone are 5dB stricter than the maximum guideline limits found in NZS6802:2008 and this is appropriate given the general ambient sound levels in rural areas and the expectations of the community.

The noise rules are considered to be appropriate for Palmerston North rural area. Experience of the reaction of the community to wind farm noise, in particular, indicates that it is not receptive to "introduced noise" that is perceived to be incompatible with the rural environment. The noise rules are not intended to control farming activities which are generally permitted in the Rural Zone and which are excluded from the noise rule by this Section of the Plan. It is other activities that need to comply with the noise rule.

There are logical planning reasons for applying the rural noise limits at any point within the site boundary, rather than the notional boundary (which is close to residential dwellings). Applying the noise limits at the site boundary provides certainty with respect to future development, both for the "noise maker", and also by ensuring the noise contamination is contained within the "noise maker's" site, at least until the impacts on potential development of noise sensitive activities on neighbouring sites can be gauged. This is important in Palmerston North given the propensity for (comparatively) higher density development and for rural dwellers to have high expectations for their amenity values.

The rules for the Residential Zone are intended to control the noise from non-residential activities and items of mechanical plant situated in a Residential Zone. The mechanical plant items include residential and non-residential heat-pumps, fans and generators.

The residential daytime (7am – 10pm) limit of 45 dB  $L_{Aeq(15mins)}$  is purposefully stringent and sets out to discourage even moderate noise generators from establishing in the quiet residential centres. The night-time limits of 40 dB  $L_{Aeq(15mins)}$  and an  $L_{max}$  limit of 65 dBA are used together to protect against sleep disturbance.

## **6.2.4 THE ENVIRONMENTAL NOISE SURVEY**

~~In setting appropriate noise standards it is essential that these standards be related to the existing noise environment. For that reason, prior to the formulation of the District Plan a comprehensive environmental noise survey was undertaken in Palmerston North in the inner and outer suburbs, at residential interfaces within commercial and industrial areas, at Ashhurst and in the rural areas. The results that emerged suggested that generally roads and associated traffic movements, particularly on arterial and principal roads, were are the biggest source of environmental noise, but that this effect declined quite quickly as one moved away from the noise source.~~

~~Measurements of background sound levels in the residential areas of the City show a general trend for daytime levels of 30-39 dBA in quiet suburbs removed from arterial or principal roads with the quieter levels generally being further from the central area. Levels of 40-44 dBA were measured adjacent to busy roads and in the vicinity of the central area with levels being between 40-45 dBA adjacent to busy roads and near to some industrial areas. At night time measurements ranged from 25 dBA in the quietest suburbs to 40 dBA in the vicinity of main roads and near to some industrial areas. Generally the night time background sound levels were in the region of 30-35 dBA.~~

~~The background sound level is generally taken to be the  $L_{95}$  which is the sound level which is equalled or exceeded for 95% of the time. The  $L_{10\text{sound}}$  level is the level which is equalled or exceeded for 10% of the time and the  $L_{max}$  is the maximum sound level measured during the measurement period. For a full definition of these terms and other terms used in the District Plan, reference should be made to NZS6801:1999 Acoustics – Measurement of Sound.~~

## **6.2.5 NOISE ASSESSMENTS**

Any noise assessment should be in accordance with Schedule 4 of the RMA and needs to be in sufficient detail to satisfy the purpose for which it is required. The following sets out the matters that would normally be expected in an assessment of environmental effects for noise:

- A description of the proposed activity,
- A description of the site and surrounding area, with particular attention to the aural environment and residual sound levels,
- A description of any other activities that are part of the proposal and any other noise generators in the locality,
- A brief description of relevant District Plan Objectives, Policies and Rules,
- The location, proximity and sensitivity of noise sensitive neighbours,
- The nature and character of the locality and the background sound,
- Where sound measurements are undertaken then the  $L_{Aeq}$ ,  $L_{A90}$  and  $L_{max}$  of the residual sound shall be determined at relevant times and of sufficient duration to adequately describe the aural environment,
- The monitoring report shall include the additional information required by Section 9 of NZS 6802:2008.
- The topography of the area and presence of any structures which may help to reduce the noise emissions,
- A prediction of the likely noise levels at noise sensitive activities,
- The characteristics of the noise sources, for example whether the noise has tonality (hums or screeches) and/or impulsiveness (crashes and bangs),
- The normal operating times of noise sources at the facility and any possible variations or irregular emissions that may be overly intrusive,
- An assessment of the actual or potential effect on the environment of the noise including the likelihood of annoyance or disturbance being caused,
- Further practicable noise mitigation or noise management measures (including safeguards and contingencies) that are available,

- An identification of persons who have provided their written consent (including a recognition that they understand what the predicted noise impacts will be).

The residual sound level is defined in NZS 6801:2008 as the total sound remaining at a given position in a given situation when the specific sounds under consideration are suppressed or are an insignificant part of the total.

The level of detail provided to satisfy these requirements would vary to suit the context and complexity of the application. This includes the extent of any noise monitoring that would need to be undertaken.

## 6.2.6 SETTING-NOISE LIMITS

~~Throughout this Plan in setting noise limits, or more correctly, sound emission standards, the principles of the New Zealand Standards have been followed. Those Standards use  $L_{10}$  descriptions and descriptions to express noise limits. The  $L_{95}$  control which is the sound level equalled or exceeded for 95% of the time was considered for use, but was rejected as it is only appropriate for controlling sound emissions which are constant, and while it would better deal with a small number of situations, it would be difficult to measure and assess. The noise performance standards in each zone have been developed generally in accordance with the guidelines provided by NZS 6802:2008. The Standard describes the manner in which the rating level is to be determined during daytime and evening hours by applying a duration adjustment on the basis that a sound that is not present all of the time is likely to create lesser annoyance than the same sound if it were continuous. During the daytime and evening hours the individual 15 minute  $L_{Aeq}$  sound levels are averaged and adjusted in accordance with the provisions of NZS 6802:2008. Because of the importance of protecting sleep, NZS 6802:2008 provides for no adjustment to be made for duration during the time frame prescribed for night-time i.e. at night-time the rating level is based directly on each prescribed 15 minute period (with allowances made for pausing of the measurement to avoid contamination of the results). The rating levels will include any adjustments for special audible characteristics should they be required.~~

## 6.2.7 RULES: NOISE

### R6.2.7.1 Measurement of Noise

- ~~Where a noise rule is written with a limit expressed as an  $L_{10}$  then the sound emissions shall be assessed, predicted and measured in accordance with NZS6801:1991 Measurement of Sound and NZS6802:1991 Assessment of Environmental Sound. Otherwise, except. Except where specific reference is made to other standards, all sound emissions shall be assessed, predicted and measured in accordance with NZS 6801:2008 Acoustics – Measurement of Environmental Sound and NZS 6802:2008 Acoustics – Environmental Noise, except where this is modified by this rule.~~

#### **Explanation**

*The rule above gives specific guidance as to where and how noise measurements should be undertaken. Where any rule was written with the intention of being measured and assessed in accordance with the 1991 versions of the New Zealand Noise Standards then that rule will have been expressed, at least partly, using the  $L_{10}$  descriptor. Such rules will continue to be measured and assessed using the 1991 versions of the Standards. When the rules are revised as part of the District Plan Review process, the limits will then be expressed as  $L_{Aeq}$ . At this time, the noise emissions shall be assessed, predicted and measured in accordance with the 2008 versions of the Standard.*

### R6.2.7.2 Exclusions from Noise Control Rules

1. Noise from the following activities shall not be controlled using rules in this Plan but which shall be controlled separately by reference to the application of relevant New Zealand Noise Standards, where these are applicable, and to Sections 16 and 17 of the RMA:
  - a. ~~Aircraft being operated during or immediately before or after flight, except where specifically provided for.~~
  - b. Airport noise, including take-offs and landings, shall be managed by reference to NZS 6805:1992 Airport Noise Management and Land Use Planning.

- c. Noise from helicopters using separate helicopter landing areas that are not otherwise part of an airport, shall be assessed, predicted, measured and controlled by reference to New Zealand Standard NZS 6807:1994 Noise Management and Land Use Planning for Helicopter Landing Areas as that Standard applies.
- ~~b.d.~~ Vehicles being driven on a road (within the meaning of Section 2(1) of the Transport Act 1962), or within a site as part of ~~or~~ and compatible with a normal residential activity.
- ~~e.e.~~ Trains on rail lines (public or private), including at railway yards, railway sidings or stations. However, this exclusion does not apply to the testing (when stationary), maintenance, loading or unloading of trains.
- ~~d.f.~~ Rural activities listed in R 9.6.1 and R 9.6.2 in the Rural Zone, and grazing and cropping activities, including horticulture, in the Flood Protection Zone.
- e. ~~Sounds generated by wind farm activities in the Rural Zone shall be assessed, predicted, measured and controlled by reference to NZS 6808: 1998 Acoustics – The Assessment and Measurement of Sound From Wind Turbine Generators.~~
- ~~f.g.~~ Sounds generated by construction, maintenance and demolition activities, and, additionally, sounds generated by soil conservation and river control works carried out or supervised by the Manawatu-Wanganui Regional Council in the Flood Protection Zone, shall be assessed, predicted, measured, managed and controlled by reference to New Zealand Standard NZ 6803:1999 Acoustics – Construction Noise.
- ~~g.h.~~ Crowd noise at a park, reserve or any land zoned as Recreation, Racecourse, Conservation and Amenity or Arena Manawatu.

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### **Explanation**

*There are some types of activities, particularly that of transportation and of construction, maintenance and demolition, that are appropriate and which could not otherwise meet general noise rules in many circumstances. Crowd noise at a park or at the Arena Manawatu, for example, is another type of noise which is a reasonable by-product of an activity and which is impossible to control using noise performance conditions or rules.*

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### **R6.2.7.3 Other Powers**

Nothing in this Plan shall prevent the Palmerston North City Council from issuing an Excessive Noise Direction under Section 327 of the Resource Management Act 1991 or prevent a person from complying with the Direction, nor prevent the Council from serving an Abatement Notice relating to unreasonable noise under Section 322(1)(c) of the Resource Management Act 1991.

#### ***Explanation***

*As indicated above, some noise is difficult to control through the provisions of the Plan. These cases need to be assessed on a one by one basis to determine the appropriateness of seeking an Excessive Noise Order.*

## **6.2.8 ENFORCEMENT**

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The issue of excessive noise can be dealt with through an Excessive Noise Order in accordance with the Abatement and Enforcement procedures detailed in Part XII of the Act. These abatement and enforcement procedures can be used where an activity creates excessive noise or exceeds the noise standards set out in the noise rules of this Plan. Both carry fines and can ultimately be enforced by the Environment Court.