Noise levels and noise complaints in the rural area

Noise levels in the rural zones
Number and types of noise complaints in the rural area

Purpose of indicator
The rural environment is largely a primary production working environment with noisy activities including trucks, farm machinery, animals, and sometimes factories. Key activities include agricultural production and forestry. These activities can sometimes impact on each other, but more commonly they impact on rural residents. Monitoring noise levels and complaints in rural areas gives an indication of noise trends, types of activities causing complaints, and their location and frequency.

Current information and trend
Noise monitoring of rural zones shows there has been a marked decrease in noise levels, especially during the evening and night times as shown in table 2 and figures 1 and 2. This may be explained by seasonal variation as 2011 sampling was done in winter while all other sampling was done in summer months. Seasonal variation can be attributed to noisy rural activities being less prominent in the winter when 2011 monitoring was done. Wildlife such as birds and insects are less abundant in the winter, and people are less likely to be outdoors in the evening and at night. Farming activities such as hay making are also less likely in winter. Future monitoring results will determine if this is a likely long term trend or whether results were impacted by seasonal variation. Figures 1 and 2 show L_{10} and L_{95} noise trends.

In 2010/11 there were less than 100 noise complaints in the rural area (figure 3). This is a relatively low number compared to the urban area which had 3370 complaints in the same year (see Noise levels and complaints in the urban area). Figure 4 shows the most common types of noise complaints in the rural area are music related, with stereo noise being the most common complaint. Since 2008/09 however rural noise complaints in general show a downward trend (figure 3). This trend could correlate with noise level monitoring results which would indicate that rural zones have become less noisy, however it is more likely to be caused by seasonal variation. Vehicle, alarm and machinery noise complaints shown in figure 5 are a very small number. The most complaints shown in figure 5 were six for motorbike noise in 2008/09. In general the distance between residents in the rural area and general tolerance of neighbours’ ‘working noise’ is likely to result in fewer noise complaints.
Term | Meaning
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dBA | A measurement of sound pressure level which closely matches the frequency of the human ear.
L<sub>10</sub> | The loud noises that we hear from time to time such as a truck going past or an aeroplane or a slamming door. If you measured noise over a period of time these louder noises would be heard 10% of the time.
L<sub>95</sub> | Most commonly background noise that we hear all day, everyday. If you were to measure noise over a period of time it is the background noise you would hear 95% of the time, such as trees blowing in the breeze or the hum of traffic.

Table 1. Explanation of noise terminology
Source: Rotorua noise monitoring report, Rotorua District Council, 2011

<table>
<thead>
<tr>
<th>Zone</th>
<th>Day</th>
<th>Evening</th>
<th>Night</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>L&lt;sub&gt;95&lt;/sub&gt;</td>
<td>L&lt;sub&gt;10&lt;/sub&gt;</td>
<td>L&lt;sub&gt;95&lt;/sub&gt;</td>
</tr>
<tr>
<td>Rural</td>
<td>-6</td>
<td>-4</td>
<td>-15</td>
</tr>
<tr>
<td>Residential</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 2. Differences in average noise levels from 2006 to 2011 monitoring
Source: Rotorua noise monitoring report, Rotorua District Council, 2011

Note:
1. Monitoring in 2006 was done in summer, while in 2011 monitoring was done in winter. Results are likely to be affected by seasonal variation.
2. A 0-2 dB difference can be considered ‘imperceptible’ and a 3 dB difference is often considered to be ‘just perceptible’.

Figure 1.
Source: Rotorua District Council, 2011
Figure 2.
Source: Rotorua District Council, 2011

**Rural zones L\textsubscript{10} noise trends**

<table>
<thead>
<tr>
<th>Year</th>
<th>Day</th>
<th>Evening</th>
<th>Night</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994</td>
<td>60</td>
<td>50</td>
<td>40</td>
</tr>
<tr>
<td>1998</td>
<td>50</td>
<td>40</td>
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</tr>
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<td>2002</td>
<td>40</td>
<td>30</td>
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</tr>
<tr>
<td>2006</td>
<td>30</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>2011</td>
<td>20</td>
<td>10</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: Rotorua District Council, 2011

Figure 3.
Source: Rotorua District Council, 2011

**Total noise complaints in the rural area**

- **2007/08**: 99 complaints
- **2008/09**: 135 complaints
- **2009/10**: 118 complaints
- **2010/11**: 96 complaints

Source: Rotorua District Council, 2011
Music related complaints in the rural area

![Graph showing music related complaints in the rural area from 2007/08 to 2010/11. The y-axis represents the number of complaints ranging from 0 to 120. The x-axis represents the years 2007/08 to 2010/11. The graph includes categories for Band, Bass, Drums, Party, Stereo, and Total.]

Figure 4.
Source: Rotorua District Council, 2011

Vehicle, alarm and machinery noise in the rural area

![Graph showing vehicle, alarm, and machinery noise complaints in the rural area from 2007/08 to 2010/11. The y-axis represents the number of complaints ranging from 0 to 16. The x-axis represents the years 2007/08 to 2010/11. The graph includes categories for Alarm, Chainsaw, Machinery, Motorbikes, Vehicles, and Total.]

Figure 5.
Source: Rotorua District Council, 2011
In Summary

- There is a decrease in noise levels from 1994 to 2011 in the rural area, especially during evening and night times. This may be due to seasonal variation as 2011 sampling was done in winter. All other sampling was done in summer.
- There is a decrease in number of noise complaints since 2008/09.
- Most common noise complaints in the rural area are for stereo noise.
- There are low numbers of complaints for alarm, vehicle and machinery noise.

Further information sources
www.rdc.govt.nz