Noise levels and noise complaints in the residential area

Number and types of noise complaints in the urban area

Purpose of indicator
Quality of living is affected by noise levels which can vary at different times of the day. Residential areas have a greater density of people living in proximity to each other than other areas. More people often means more noise. Some pockets of residential areas have local shops such as dairies, takeaways and hairdressers which create people and traffic noise. Likewise some residential areas are adjacent to recreational or industrial areas. Social events such as concerts, parties and associated music and people noise play a big part in noise complaints. Monitoring noise levels and noise complaints in the urban area highlights trends and issues that may need addressing.

Current information and trend
The Rotorua District Plan sets noise level thresholds for day, evening and night times to ensure amenity of residential areas is comfortable for living. For example allowances are made for day and evening activities to be noisier than night time activities when most people are sleeping. Excessive noise levels at any time of the day or night affect amenity of residential areas.

Table 1 describes the difference between the average noise level measured in all residential and rural zones in 2011 and the average of the noise levels measured in the same zones and sites in previous surveys (2002-2007). A 0-2 dB difference can be considered ‘imperceptible’ and a 3 dB difference is often considered to be ‘just perceptible’. Where the difference is negative, it indicates the noise level measured in 2011 was lower than the average of previous surveys. Likewise, when the difference is a positive value the 2011 measured noise level was higher than previous averages. Table 2 shows there is little change in the average noise level of residential zones, especially when compared to rural zones. Tracking of noise level trends of $L_{10}$ and $L_{95}$ are shown in figures 1 and 2.

The most common noise complaints are music related, with stereo noise complaints having the highest number, followed by bass, drum band and party noise (figure 4). Alarm, machinery and vehicle noise complaints are considerably less common than stereo complaints, with machinery alarms and vehicles (in respective order) being the most common noise complaint of that nature (figure 5). In general there was a decreasing trend in noise complaints from 2008/09 to 2010/11. There are no corresponding trends between noise level monitoring and noise complaints. The total number of noise complaints shown in figure 3 in the urban area in 2010/11 was 3370, which is relatively high in comparison to the rural area that had 98 in the same period (see Noise levels and complaints in the rural environment).
Rotorua State of the Environment Reporting 2012

<table>
<thead>
<tr>
<th>Term</th>
<th>Meaning</th>
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<tbody>
<tr>
<td>dBA</td>
<td>A measurement of sound pressure level which closely matches the frequency of the human ear.</td>
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<tr>
<td>L10</td>
<td>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.</td>
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<tr>
<td>L95</td>
<td>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.</td>
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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>
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<tbody>
<tr>
<td></td>
<td>L95</td>
<td>L10</td>
<td>L95</td>
</tr>
<tr>
<td>Residential</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Rural</td>
<td>-6</td>
<td>-4</td>
<td>-15</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'.

![L10 noise trends in residential zones](image)

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

Figure 3.
Source: Rotorua District Council, 2011
Music related complaints in the urban area

- **Band**: 2751, 3375, 3201, 3126
- **Bass**: 0, 500, 1000, 1500
- **Drums**: 0, 500, 1000, 1500
- **Party**: 0, 500, 1000, 1500
- **Stereo**: 0, 500, 1000, 1500
- **Total**: 2102, 3875, 3501, 3326

**Figure 4.**
Source: Rotorua District Council, 2011

Vehicle, alarm and machinery noise in the urban area

- **Alarm**: 148, 135, 118, 125
- **Chainsaw**: 0, 20, 40, 60
- **Machinery**: 0, 20, 40, 60
- **Motorbikes**: 0, 20, 40, 60
- **Vehicles**: 0, 20, 40, 60
- **Total**: 2102, 3875, 3501, 3326

**Figure 5.**
Source: Rotorua District Council, 2011
In Summary
• Average noise levels of residential zones have changed little since 2002.
• The most common noise complaints are music related, with stereo noise complaints having the highest number
• There are no corresponding trends between noise level monitoring and noise complaints.
• Most noise complaints are from within the residential urban area, which is expected as it is where the majority of Rotorua’s population live.

Further information sources
www.rdc.govt.nz