

## **Appendix J: Examples of Draft District Plan Standards**

### **Performance Criteria and Standards**

The following proposed performance standards shall be met within the Environmental Effects Area (EEA) of the Rotorua District Plan in order to safeguard the community from any adverse effects arising from future changes in the adjacent road's listing within the proposed roading hierarchy.

To advance the development of further objectives, policies and performance standards it is essential and appropriate that the concept be fully considered by the Rotorua community.

Discussion now focuses on the key environmental standards relating to road activities.

### **Road Noise**

In the proposed EEA concept, it is principally the management of road traffic noise that determines the width of the buffer. There is no New Zealand Standard on noise from roads.

The TNZ guideline contemplates noise buffer zones, and suggests such zones should extend a minimum of 20 metres from the outer limit of designations in the case of residential land and 50 metres in the case of rural land. Therefore it seems reasonable and pragmatic to adopt a 20-metre buffer given that residential activities generally are the most noise sensitive land use activities in an area.

Transit New Zealand's Guidelines for the Management of Road Traffic Noise should be met for all new roads, or improvements to existing roads, in the minor and major arterials and national route categories of the proposed roading hierarchy.

With respect to local and collector roads, the appropriate zone rules for noise as defined in Appendix K of the Proposed Rotorua District Plan shall apply.

Determining appropriate design criteria for these roads would depend on the nature of the activity adjacent to them. In determining design criteria, a balance must be found between what can realistically be achieved, and what is impractical or too expensive.

The Environmental Effects Area concept would place obligations on the Road Controlling Authority to manage the road asset to ensure noise in the buffer area does not exceed a specified standard; but conversely, land activities in the buffer area must acknowledge that the area is a noisy environment. Development in the Environmental Effects Area would need to be designed to mitigate the potential effects of noise.

In effect, noise sensitive facilities would not be able to seek redress through the planning process to secure noise mitigation measures against a road controlling authority. The EEA concept does not seek to prevent development but rather to ensure a reasonable distance, and noise reduction, between a road and neighbouring land uses.

An appropriate objective to consider with regard to road traffic noise is:

*To recognise the importance of the operational performance of strategic routes in the district road hierarchy when assessing mitigation measures for road traffic noise*

A relevant policy is:

*Determine design criteria for road traffic noise based on the status of roads in the district road hierarchy and the amenity values of the local environments.*

The following proposed Standards aim to minimise the potential adverse effects of noise emissions onto properties from traffic and from land use activities onto roads.

### Noise adjacent to local and collector roads

Management Area	Permitted Activities	Other Activities
Land adjacent to local roads and collector roads in residential zones	Rule: Same as the noise standards set out in Appendix K of the Proposed District Plan.	Rule: Any activity in a residential zone that does not comply with the conditions for permitted activity shall be consistent with the designated purpose and with the underlying zone provisions.

#### Explanation and Principal Reasons

An important component of the residential environment is the existing low levels of noise. Council desires to retain low noise levels in residential streets (local and collector) and minimise the amount of noise onto land outside individual sites.

### Noise adjacent to local and collector roads

Management Area	Permitted Activities	Other Activities
Land adjacent to minor and major arterials and national routes in all zones	Rule: Noise from new roads or road improvements will aim to meet "Transit New Zealand's Guidelines for the Management of Road Traffic Noise – State Highway Improvements"  Method: The following design standards or methods may be adopted to reduce the level of noise likely to be experienced within the Environmental Effects Area: <ul style="list-style-type: none"> <li>• Provision of quiet road surface (i.e. friction course, asphaltic concrete, small sealing chips, etc)</li> <li>• Provision of noise barriers (fences, earth bunds), buffer zones, upgrading windows (double glazing), walls (addition of mass to internal walls and ceilings), ventilation (i.e. air</li> </ul>	

conditioning)

These guidelines do not apply to existing roads other than proposed new roads or road improvements.

#### **Explanation and Principal Reasons**

Road Controlling Authorities will aim for road improvements that require a new designation to meet the road traffic noise criteria specified in the Transit New Zealand Guidelines and or subsequent publications. The implementation of these criteria is dependent on the practicality and cost effectiveness of any noise reduction measures. Mitigation may be provided in the form of quiet road surfaces (friction course, asphaltic concrete, small sealing chips, etc) and fences (if visually acceptable). Other noise control measures may need to be implemented by the RCA to reduce noise levels inside habitable spaces.

## Vibration

Vibration effects can be considered in terms of their effects on building occupants and structures in the vicinity of a proposed road or existing road.

The most critical factors to be considered are the road surface roughness and longitudinal profile, with complaints generally related to vibration generated by tyre – road impacts arising from surface or shape defects (potholes, patches, trench repairs, manholes etc). The type of sub-soil, separation distance between the road and (residential) buildings and vehicle speed are also important. The separation distance factor is compatible with the purpose of the EEA devised for noise mitigation.

An appropriate objective with regard to vibration is:

*To ensure vibration effects resulting from road traffic do not have adverse effects on:*

- *People's well-being, health and general activities*
- *The structural integrity of buildings and other structures*

Relevant policies for vibration are:

*Seek to avoid, minimise or mitigate the disturbance of adjacent communities from vibration during construction, maintenance or improvement activities on roads*

*Determine appropriate performance standards for control of construction and traffic-induced vibration that safeguard the amenity values of people and the structural integrity of buildings and other structures*

*Plan and design roads to ensure that vibration performance standards are met*

*Apply measures to avoid, mitigate or minimise vibration effects where vibration is likely to exceed the design standards*

Relevant methods for achieving these policies include:

- Maintain regular road surfaces to minimise wheel bounce and body pitch of vehicles.
- Plan route options for new sections of roads to (wherever possible) avoid sub-soil conditions that are conducive to vibration, and where these sub-soil conditions cannot be avoided then, where practicable, implement construction methods to mitigate effects of ground transmitted vibration.
- Optimise vehicle speed and road surface type to minimise vibration in areas where vibration levels exceed the specified thresholds and cause annoyance.
- Where appropriate re-route heavy vehicles to less sensitive roads.
- Develop and implement appropriate vibration management plans for road construction, including measures to ensure vibration impact from earthmoving, pavement construction, blasting and pile driving do not exceed the specified thresholds without appropriate consideration of mitigation measures.

## Spill Light or Stray Light Emissions

The following proposed Standards aim to minimise the potential adverse effects of spill light or stray light emissions onto properties from traffic and from land use activities onto roads.

### Spill Light or Stray Light Emissions: Residential

Management Area	Permitted Activities	Other Activities
Land adjacent to National Routes, Major Arterials and Minor Arterials in Residential Zones	<p>Rule: Any activity that results in spill light or stray light emissions complying with the following condition;</p> <p>Any direct artificial illumination shall not exceed ten (10) lux when measured at the nearest site boundary between the hours of 10:30 pm and 6:30 am.</p> <p>Illuminance levels shall be measured vertically and horizontally in accordance with professional illumination engineering practice.</p> <p>Rule Any activity that results in glare complying with the following condition:</p> <p>Lighting shall be aimed no higher than 30° below the horizontal and shall be aimed, hooded or screened, to minimise glare.</p>	<p>Rule: Any activity in a residential zone that does not comply with the conditions for permitted activity shall be a discretionary activity.</p>

#### Explanation and Principal Reasons

An important component of the residential environment is the existing low levels of artificial light. Council desires to retain low light levels in residential streets (local and collector) and minimise the amount of light spilling onto land outside individual sites.

### Spill Light or Stray Light Emissions: Commercial, Industrial, Tourism and Business Zones

Management Area	Permitted Activities	Other Activities
Land adjacent to National Routes, Major Arterials and Minor Arterials in all other zones (commercial, industrial, tourism and business zones)	<p>Rule: Any activity that results in spill light or stray light emissions complying with the following condition;</p> <p>Any direct artificial illumination shall not exceed</p>	<p>Rule: Any activity that does not comply with the conditions for permitted activity shall be a discretionary activity.</p>

Management Area	Permitted Activities	Other Activities
	<p>one hundred (100) lux when measured at the nearest site boundary.</p> <p>Illuminance levels shall be measured vertically and horizontally in accordance with professional illumination engineering practice.</p> <p>Rule: Any activity that results in glare complying with the following condition:</p> <p>Lighting shall be aimed no higher than 30° below the horizontal and shall be aimed, hooded or screened, to minimise glare.</p>	

#### Explanation and Principal Reasons

The existing level of light is generally higher in commercial, industrial, tourism and business zones and so the receiving environments are less sensitive than what would be tolerated in a residential area at night. The following spill light levels are proposed to apply in these less sensitive environments.

If lighting levels are required above the stated proposed rule levels (i.e. stadium) then that will become a discretionary activity requiring resource consent in accordance with the Resource Management Act 1991. Any applications for a discretionary activity would be subject to a lighting report on the proposed lighting and its potential effects/mitigation proposed.

#### Glare

In order to avoid glare from luminaires Council will assess activities in accordance with the following permitted activity standards and design details.

Management Area	Permitted Activities	Other Activities
Land adjacent to National Routes, Major Arterials and Minor Arterials in all zones (residential, commercial, industrial, tourism and business zones)	<p>Rule: Any activity that results in glare emissions that complying with the following condition;</p> <p>That the luminaires have sharp cut-off photometric specifications to reduce the upward spill light component, which could give rise to glare or skyglow effects. That luminaires are designed and positioned to below 30° beneath the horizontal so that they reduce glare effects. That the luminaires shall be screened, louvered, or</p>	<p>Rule: Any activity that does not comply with the conditions for permitted activity shall be a discretionary activity.</p>

Management Area	Permitted Activities	Other Activities
	hooded to reduce glare effects. That all luminaires are aimed so that the light is projected within the property boundaries rather than beyond the boundaries to avoid any adverse effects from glare.	

**Explanation and Principal Reasons**

Glare is defined as the amount of contrast against a dark or black background that governs how offensive it is. It is subjective and the above conditions, if complied with, would reduce or avoid the potential for adverse effects arising due to glare effects. Any applications for a discretionary activity would be subject to a lighting report on the proposed lighting and its potential for glare effects including opportunities for mitigation.

## Illuminated Signage

In order to avoid spill light and glare from illuminated signage Council will assess activities in accordance with the following proposed permitted activity standards and design details.

Management Area	Permitted Activities	Other Activities
Land adjacent to National Routes, Major Arterials and Minor Arterials in all zones (residential, commercial, industrial, tourism and business zones)	<p>Rule:</p> <p>In areas where road lighting is not present, internally or externally lit signs shall not have an average luminance greater than 600 candela per square metre (cd/m<sup>2</sup>) for an illuminated area less than 10m<sup>2</sup> or 400cd/m<sup>2</sup> for illuminated areas equal to or greater than 10m<sup>2</sup>.</p> <p>In areas where road lighting is present, internally and externally lit signs shall not have an average luminance greater than 1000cd/m<sup>2</sup> for an illuminated area less than 10m<sup>2</sup> or 800cd/m<sup>2</sup> for illuminated areas equal to or greater than 10m<sup>2</sup>.</p> <p>Where a sign is positioned less than 20 m from the normal locations of a driver on a road and is at 90° to the road axis or in the direct line-of-sight of a driver negotiating a roundabout or junction or within an angle of 20° to the normal or the drivers line-of-sight, then such signs shall conform to the lower figure to be considered as being within an area where road lighting is not present.</p>	<p>Rule:</p> <p>Any activity that does not comply with the conditions for permitted activity shall be a discretionary activity.</p>

### Explanation and Principal Reasons

Illuminated signs have the potential to emit light and glare that can be intrusive. The above conditions, if complied with, would reduce or avoid the potential for adverse effects arising due to signs. Any applications for a discretionary activity would be subject to a lighting report on the proposed lighting and its potential for glare effects including opportunities for mitigation.