

BUILDING DESIGN

During design, opportunities should be reviewed to locate noise sensitive spaces, such as bedrooms, as far as possible from the road and orient them so they are facing away from the road.

For situations where design noise levels cannot be achieved through setbacks or other means, the acoustic treatment of buildings may be required. Acoustic treatment may take the form of specialty insulation, window seals and glazing. In cases where windows must be closed to achieve appropriate acoustical standards, mechanical ventilation/cooling may be required in warmer climates so that windows can remain shut while maintaining comfortable interior temperatures.

A common misconception is that 'double-glazing' is the primary means of reducing noise. However, if a significant noise reduction across a window is required, achieving effective seals is usually more important than the glazing configuration. Thin thermal double-glazing has relatively poor acoustic performance and often better noise reduction can be achieved by using thicker glazing, secondary glazing or laminated glass.



MORE INFORMATION

Further information can be found in the Transport Agency's *Guide to the management of effects on noise sensitive land use near to the state highway network* at www.nzta.govt.nz/assets/resources/effects-on-noise-sensitive-land/effects-on-noise-sensitive-land-use.pdf. Also at our acoustics website: <https://acoustics.nzta.govt.nz/reverse-sensitivity-provisions>.

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Management of road traffic noise effects on new developments and altered buildings



Who is affected

Developments and activities close to a state highway may be exposed to traffic noise. For example, new houses built near to an existing state highway may be affected by traffic noise. Other noise sensitive activities such as schools, hospitals, hotels, places of worship, motels and offices can also be similarly affected.

Why manage noise effects?

Noise exposure can be both annoying and cause sleep disturbance, and over the long term may result in health and wellbeing effects. Noise exposure can also create tension between the Transport Agency's requirement to operate and maintain the state highway network and the desire of neighbouring landowners to develop their land as they wish, or to enjoy their property free from unreasonable interference or nuisance.

It is important to manage land use through careful and considered planning to balance the wellbeing of landowners with New Zealander's desire to have access to a safe and efficient land transport network.

Managing the effects is a shared responsibility

There is a shared responsibility for managing noise and sensitive land use. The Transport Agency, councils and landowners/developers must all assume responsibilities. For new and altered state highways it is the Transport Agency's responsibility to address noise effects. However, for new and altered developments and activities near state highways, the responsibility lies with councils to include appropriate land use controls in district plans to manage noise sensitive activities and with landowners/developers to implement them.

HOW DOES THE TRANSPORT AGENCY MANAGE EFFECTS ON NOISE SENSITIVE LAND USE?

The best way to reduce noise exposure from roads is to separate (or setback) the sensitive activity or development as far as possible from the road. Separation also provides broader benefits, such as reduced vibration, light spill and air pollution effects that are often unavoidable components of the use and maintenance of a state highway.

The Transport Agency has mapped recommended setbacks for the entire state highway network. It is recommended that noise and vibration sensitive development is limited or controlled within these setback areas. This map is available at our acoustics website: acoustics.nzta.govt.nz/reverse-sensitivity-provisions.

The map shows two levels of setback areas, called the buffer area and the effects area. The Transport Agency recommends that noise and vibration sensitive activities and developments, such as houses, are located outside of the buffer area. Within the larger effects area (beyond the buffer area) noise sensitive activities are generally suitable with appropriate site-specific assessment, design and development controls applied to manage noise effects.

Within urban areas where the recommended setback cannot be achieved, greater controls may be required to minimise noise and vibration effects. For rural areas more land is typically available so the recommended setbacks can usually be achieved.

Figure 1 below provides an illustration of how the buffer and effects areas work. For more information please refer to the NZ Transport Agency's *Guide to the management of effects on noise sensitive land use near to the state highway network*. Copies of this guide can be found at this weblink: www.nzta.govt.nz/assets/resources/effects-on-noise-sensitive-land/effects-on-noise-sensitive-land-use.pdf.

Your council may have additional or different rules or requirements for the management of noise. Relevant district plans should also be consulted.

MANAGING NOISE

Assessing the potential for noise effects, and developing appropriate controls to manage noise can be technically challenging. For new and altered developments and activities within the buffer area and the effects area the professional input of acoustics specialists may be required.

Your council may also have additional or different rules or requirements for the management of noise. Relevant district plans should therefore be consulted.

DESIGN LEVELS

The Transport Agency's *Guide to the management of effects on noise sensitive land use near to the state highway network* provides a summary of design noise levels for a number of development and activity types. These levels are based on relevant New Zealand standards.

For certain activities and developments located within the buffer area, the above guide also summarises design levels to protect outdoor amenity and manage vibration effects.

NOISE BARRIERS

Effective barriers to noise can be formed with walls or bunds. The natural terrain and other buildings can also act as noise barriers. Noise barriers erected close to the road often provide the best acoustic performance. Noise barriers provided by developers should be located outside of the road reserve, either where they will be maintained by the landowner or preferably on land that will be transferred to the local council for ongoing maintenance.

Figure 1: How the buffer and effects area works

A typical land use cross section (to illustrate application of noise standards for development near state highways)

