

# How is **noise** addressed?



**Transport**  
Roads & Traffic  
Authority

**QUESTIONS AND ANSWERS**

**SEPTEMBER 2011**

As part of road development, the NSW Roads and Traffic Authority (RTA) is committed to minimising the impact of traffic noise on the community through noise reduction measures. This fact sheet explains how the RTA assesses and reduces traffic noise.

## What is road noise?

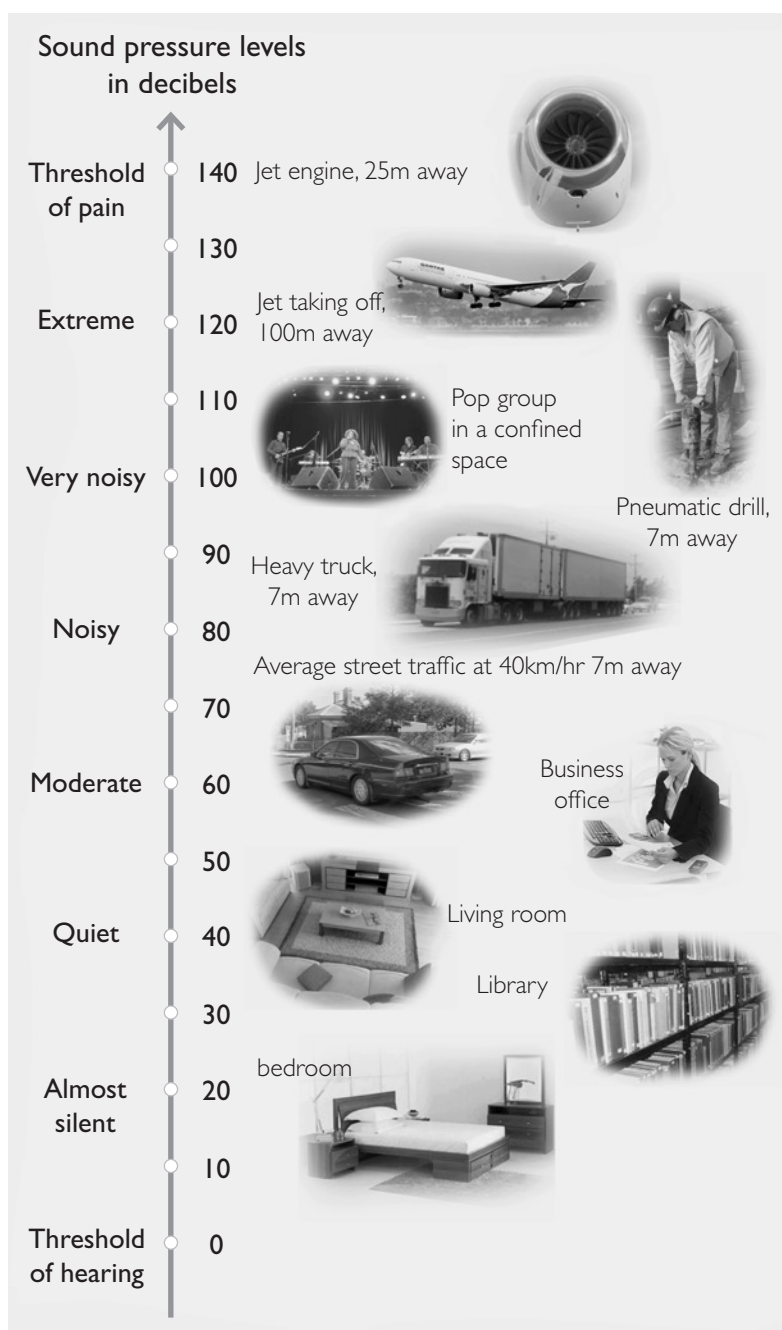
Truck and car engines, and wheels on the road surface create noise. Traffic noise, depending on its loudness, can have a range of impacts including:

- Annoyance.
- Impact on listening activities such as conversation – either in person or on the telephone, or watching TV.
- Disturbing relaxation such as listening to music or reading.
- Fatigue caused by sleep disturbance.

The 'loudness' of the noise is measured in decibels (see Figure 1, to the right).

To the human ear each 10 decibel (dB) increase doubles the loudness of a noise. A doubling of traffic will increase noise levels by 3 decibels, which is not likely to be a readily noticeable change in loudness.

Doubling the distance between a residence (or other noise sensitive locations) and a road with constant traffic flow will reduce noise levels by 3 decibels. Soft ground, atmospheric absorption and screening features, such as walls, can also further reduce noise levels.



**Figure 1** Noise sound levels and typical sources

## What are noise sensitive locations?

A noise sensitive location includes areas in which people are more likely to be affected by noise, such as:

- Homes.
- Schools.
- Hospitals.
- Places of worship.
- Parks.

## What are the guidelines for noise management?

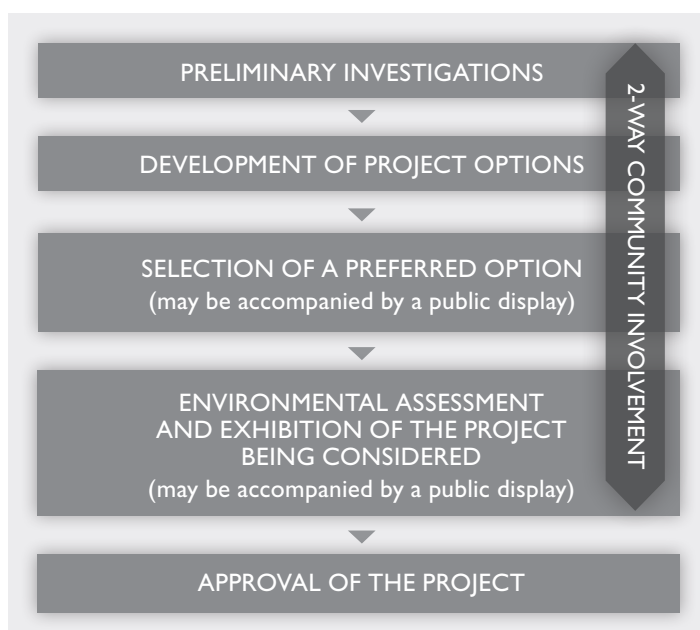
In NSW, the *Road Noise Policy* (NSW Office of Environment and Heritage, 2011) provides the framework for managing road traffic noise including levels of road traffic noise acceptable to the majority of people. This document is available online at [www.environment.nsw.gov.au/noise](http://www.environment.nsw.gov.au/noise).

The RTA's *Environmental Noise Management Manual* (December 2001) provides details on assessing and managing noise from road construction and operation, and possible noise reduction measures. The manual is available online at [www.rta.nsw.gov.au/environment/noise](http://www.rta.nsw.gov.au/environment/noise). The manual is progressively being amended to align with the new Road Noise Policy.

Construction noise from government authorities' activities is regulated by the NSW Office of Environment and Heritage. The criteria for construction noise impacts are in the *Interim Construction Noise Guideline* (OEH, 2009).

## How is road noise assessed?

Noise impacts and potential noise reduction strategies are assessed throughout the road development process, from the initial planning stages through to design, construction and following project opening. This ensures noise control measures are an integral part of road design and upgrade processes.



Steps in the project development process



## STEP 1

### Measure the existing noise levels

Road noise levels are measured at representative locations and then, using computer modelling, estimated elsewhere throughout the area being investigated.

Noise levels are measured and calculated using procedures set down in the Australian Standards (eg. *AS 2702 Acoustic Methods of Measurement of Road Traffic Noise*) and following the Office of Environment and Heritage requirements (see policies to the left). Professional acoustic practitioners undertake all noise assessments for the RTA.

## STEP 2

### Forecast the noise generated by the road project

When assessing future road traffic noise, the RTA considers:

- Volume and percentage of heavy and light vehicles during day and night.
- Vehicle speeds.
- Type of road surface.
- Location of homes and other noise sensitive sites relative to road traffic.
- Surrounding natural landscape.
- Noise reflection from buildings or other manmade roadside barriers.
- Noise from other traffic sources.

	Target noise levels	
	Average noise level over the day (7am to 10pm)	Average noise level over the night (10pm to 7am)
New road outside an existing road corridor	55dB(A)	50dB(A)
Redevelopment of existing road within or substantially within an existing road corridor	60dB(A)	55dB(A)

**Figure 2** Targets for noise the RTA incorporates into its road planning at residences (*Road Noise Policy*)

## STEP 3

### Consider the new road noise levels against the guidelines

The Office of Environment and Heritage sets the road traffic noise level goals for the RTA. The RTA must design a new or redeveloped road to take account of the level of noise from traffic 10 years into the future and strive to achieve the targets for noise shown in Figure 2.

## STEP 4

### Installing measures to reduce noise levels from the operation of a road

Potential noise impacts are considered early in the process of selecting and designing new and upgraded road projects.

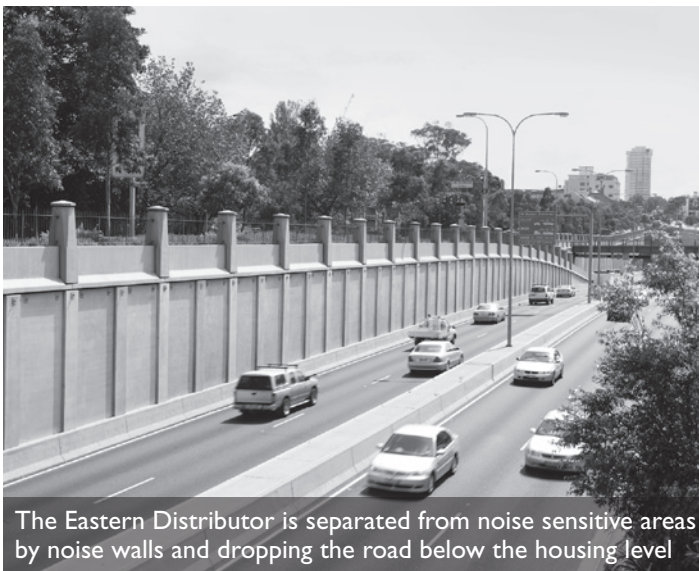
The most suitable types of, and locations for, noise reduction measures are examined at the detailed design stage. Community consultation is an important part of this process.

Measures used to reduce noise may include:

- Locating routes away from noise sensitive areas.
- Using existing hills and ridges to help reduce noise impacts.
- Straightening curves to minimise vehicles slowing down and speeding up.
- Minimising road slopes, reducing the energy used by vehicles.
- Providing a buffer zone on either side of the road.
- Using lower noise road surface - such as stone mastic or open grade asphalt.
- Providing barriers, fencing or mounds to block noise transmission eg. noise walls and vegetated noise mounds.
- Acoustic building treatments - such as sealing wall vents, mechanical ventilation, and upgrading windows and doors.

The following issues are taken into account when selecting noise reduction measures:

- Practicality.
- Technical feasibility.
- Visual impact.
- Community preferences.
- Cost.



The Eastern Distributor is separated from noise sensitive areas by noise walls and dropping the road below the housing level



This property, which faces the Pacific Highway, received glass panels on the front verandah, to reduce noise impacts

## Construction noise

The likely noise levels from road and bridge construction activities and strategies for reducing this noise are assessed throughout the road development process.

A noise management plan is prepared prior to construction commencing.

The RTA recognises there may be significant noise impacts at different times and in different locations during construction, especially as work often needs to be undertaken at night.

The RTA is committed to identifying noise impacts, investigating all possible mitigation measures, and communicating with the community about the works, and the likely impacts.

Where required, the RTA implements feasible and reasonable mitigation measures to reduce construction noise such as:

- Modifying work programs and using new, less noisy technology.
- Letting neighbours know when noisy work will occur.
- Installing temporary structures eg. noise barriers or temporary acoustic modifications to homes.

- Scheduling respite periods during extended durations of noisy activity.
- Temporary relocation of residents may be considered as an option for major road projects where substantial night-time noise impacts are present for extended periods of time.

Although noise reduction measures are implemented, intrusive noise is often unavoidable during construction work.

The RTA's *Environmental Noise Management Manual* (available at [www.rta.nsw.gov.au/environment/downloads/environmental\\_noise\\_management\\_manual\\_v2.pdf](http://www.rta.nsw.gov.au/environment/downloads/environmental_noise_management_manual_v2.pdf)) describes the steps used to manage construction noise.

## Noise from the new project once opened

When construction is complete, the RTA assesses road noise levels at representative locations to measure:

- How accurate the noise predictions were.
- How effective the noise reduction measures are.
- If there is a need to introduce additional measures.

This assessment is normally scheduled within 12 months following road opening to allow time for traffic patterns to settle.

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**For further information** visit the NSW Roads and Traffic Authority website at [www.rta.nsw.gov.au](http://www.rta.nsw.gov.au)

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