

Fact sheet

April 2022



Purpose

Transport for NSW (Transport) recognises that road traffic noise can be a major annoyance, especially in residential areas. Transport is committed to mitigating and managing road traffic noise impacts when planning and building new roads or undertaking major upgrades to existing roads.

What is noise?

Noise may be defined as 'unwanted sound'. Noise may be perceived differently from one person to the next and is measured on a logarithmic scale of units called decibels. Noise is assessed using the L_{Aeq} metric for day and night periods as defined by the EPA's Road Noise Policy. This represents the energy-averaged noise level within the subject period.

Did you know?

- The further away you are from the source of noise, the less noticeable it is.
- Doubling your distance from the road decreases the noise by three decibels.
- Doubling traffic volumes increases the noise by three decibels while halving the traffic decreases noise by three decibels.
- Most people cannot detect a change of one or two decibels in the noise level.
- Most people can notice a small change in the noise when levels change by three to five decibels.
- Most people will perceive a 10 decibel increase as doubling the noise and a 10 decibel decrease as a halving of noise.

Operational noise guidelines

Transport's assessment and management of road traffic noise is guided by three key documents:

- The Environment Protection Authority (EPA) [NSW Road Noise Policy](#) which represents the NSW Government's policy for road traffic noise.
- Transport's EMF-NV-GD-0025_Road Noise Criteria Guideline (June 2022)
- Transport's EMF-NV-GD-0024_Road Noise Mitigation Guideline (June 2022)

The latter two guidelines act to support the Road Noise Policy. They are available at [Reducing noise - Roads and Waterways – Transport for NSW](#).

During design and planning Transport seeks to achieve the following noise level objectives at residences:

- 55 decibels during the day and 50 decibels at night for new freeways or main roads.
- 60 decibels during the day and 55 decibels at night for upgrades of existing freeways and main roads.
- Other noise sensitive receivers such as schools, hospitals, nursing homes and places of worship are also considered during design and planning.

How does Transport assess and manage road traffic noise?

In assessing traffic noise, Transport considers, prevailing traffic noise, traffic projections, road design and proximity to sensitive receivers and the nature of the upgrade. Where the need for noise mitigation is identified, the cost and likely benefit provided by noise mitigation measures such as barriers, walls and mounds or architectural treatments to sensitive buildings are also considered as mitigation needs to be feasible and reasonable.

Road traffic noise mitigation measures are considered at three key project stages:

- During route selection – considering social, economic, engineering and environmental factors.
- During environmental impact assessment and preparation of concept designs – looking at road alignment, gradient of road, geography, current and predicted traffic volumes, noise walls/mounds, low noise surface and at-house noise treatments.
- During detailed design – where any further opportunities are investigated, and details of noise walls/mounds and at-house noise treatments are considered.

During the earliest conceptual planning phases, mitigation considerations can include location, buffer distances, tunnels, road cuttings, road gradients etc. The route selection and concept design phases provide the best opportunity to identify potential measures to reduce noise, for further consideration.

What is taken into consideration when assessing noise?

Transport considers noise sensitive receivers such as homes, schools, hospitals, nursing homes, places of worship and parks. During planning and when assessing the predicted noise impact, factors considered includes:

- volume and speed of traffic
- horizontal and vertical road alignment
- gradient of the road
- bridge or road surface joints – to ensure they are designed to minimise noise of tyre impact
- road surface
- shielding structures such as barriers, walls and mounds
- natural features such as hills and cuttings to shield noise
- distance to sensitive receivers
- construction type and age of sensitive buildings.

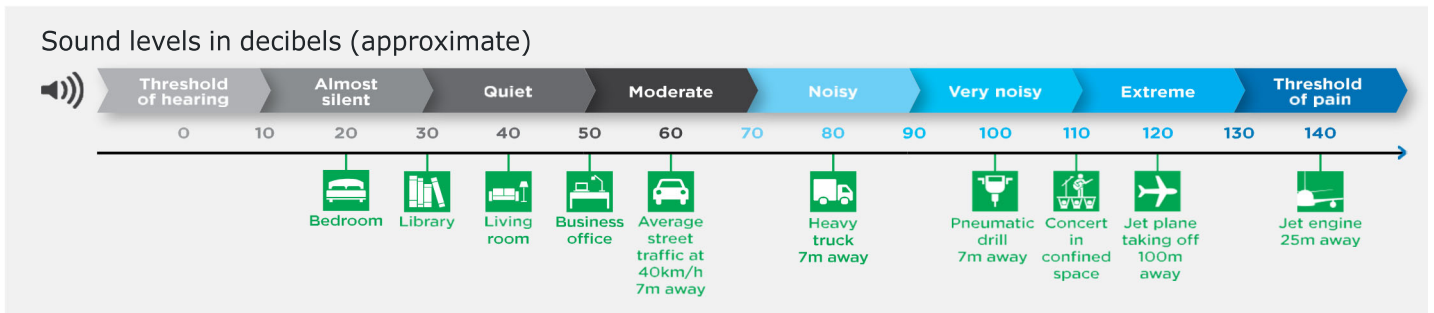
Transport does not provide noise mitigation for:

- commercial or industrial buildings
- buildings that are non-conforming land uses (such as residential buildings in an industrial zone)
- buildings constructed after introduction of the State Environmental Planning Policy (Infrastructure) 2007 which required new buildings next to busy roads to include noise mitigation measures.

How the guidelines are applied

In accordance with the EPA's Road Noise Policy, operational road traffic noise predictions are based on projected traffic volumes in the year the project is due to open and the design year 10 years after opening. Noise modeling is based on:

- a three-dimensional road design that reflects the final height of the road, line of sight, including surrounding terrain (such as ridge lines), buildings and noise-sensitive locations
- traffic speeds and projected volumes
- proportion of light and heavy vehicles
- road surface acoustic performance
- height and location of vehicles and their noise sources (truck tyre, engine and exhaust noise)
- model calibration adjustments from noise monitoring data, where considered appropriate.



Selecting noise mitigation measures

Noise mitigation is considered based on a preferred hierarchy of mitigation treatment. This starts at the noise source, then the propagation path and finally at the receiver. Potential mitigation treatments, subject to feasible and reasonable considerations include:

- judicious selection of quieter road pavements, optimized road gradients, traffic speed, etc.
- noise walls
- opportunities to use excess material from the project to create soil mounds
- architectural treatments to sensitive buildings such as window glazing and provision of mechanical ventilation

What does ‘reasonable and feasible’ mean?

Noise mitigation is feasible if it is practical and capable of being implemented. For example, a noise mitigation measure is feasible if it can be engineered and is constructable. Considerations include road corridor constraints and space limitations, floodway and stormwater flow obstruction, safety, access and maintenance.

Selecting reasonable noise mitigation measures involves considering the overall noise reduction benefit delivered by different mitigation measures to the community, overall economic cost of achieving that benefit and consideration of other issues such as community preferences, shadowing impacts and visual impacts in the case of noise walls, etc. Costs of different mitigation measures vary greatly and not every measure that is possible to build, is cost effective in every situation.

For example, in densely-populated areas located close to a road, a noise wall or mound may prove to be a reasonable solution as many sensitive receivers will be benefited. However, in low-density rural or residential areas where sensitive receivers may be located several hundred metres from a new road, a noise wall or mound may not be reasonable or feasible due to the prohibitive cost of building a wall or mound long enough, or high enough, to deliver any significant noise reduction benefit. In this situation, architectural building treatment may be a reasonable solution.

What happens after the new road or upgrade opens to traffic?

After a new road project is finished and opened to traffic, additional noise and traffic modelling may be undertaken to verify that the road complies with relevant noise the requirements identified in the assessment. In this process, the post-construction noise levels can be compared with the predicted noise levels used in project design.

If noise levels are found to exceed criteria used for project approval, further consultation may be carried out with affected noise-sensitive receivers and additional noise mitigation measures may be applied, where feasible and reasonable.

What about sleep disturbance?

Transport recognises that sleep disturbance from noise can be an issue for the community.

When planning new roads or substantial road upgrades, predicted maximum traffic noise levels for the night-time period (10pm-7am) are compared to prevailing maximum noise levels and to the ambient noise levels to review the potential for sleep disturbance.

This usually only occurs at houses located close to the new or upgraded road.

What about noise from existing roads?

In relation to noise from an existing road that is not part of a proposed upgrade project, please see [Noise Abatement Program](#) for a separate fact sheet.

More information

This information is general in nature. For more information about specific projects or noise management strategies, please visit [Home - Roads and Waterways – Transport for NSW](#)

Contact and further information

Internal: [Environment & Sustainability Management Framework](#)

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