

Freight Noise Attenuation Program

Monitoring noise

Transport for NSW monitors rail noise to identify properties that are eligible for the Freight Noise Attenuation Program (FNAP). We have measured at over 200 locations across the network and more locations are added each year.

Equipment used

We use “noise loggers” such as that shown in the figure below. These are industry standard devices consisting of a high-precision Class 1 microphone, a recording device and a battery. Each noise logger is calibrated regularly by certified NATA laboratories.

Where is monitoring undertaken?

Noise monitoring is usually performed within the rail corridor. If requested by a home owner, Transport for NSW may undertake noise monitoring at their residential property.

When monitoring noise at a property, we usually locate the noise monitor on the side of the property facing the rail line. The microphone is placed at a height of approximately 1.5 metres above local ground level in accordance with *AS 1055:1-1997: Acoustics – Description and measurement of environmental noise (Part 1)*.

The unattended equipment continuously records noise levels for a period of two weeks.

Calculating rail noise

From the measured noise levels we identify train passbys using their unique noise signature and confirm by cross referencing with train pass times from other sources. We use these identified passbys to calculate the L_{Aeq} energy-average rail noise level at the residential facade. These calculations are in accordance with NSW EPA’s *Rail Infrastructure Noise Guideline* (2013) and use the conservative formula below.

$$L_{Aeq (Facade)} = L_{Aeq (Monitor)} - 10 \log_{10} (D1/D2) + C_{Facade}$$

Where:

- $L_{Aeq (Monitor)}$ is the rail noise at the monitor
- D1 is the distance in metres from the facade to the nearest track
- D2 is the distance in metres from the monitor to the nearest track.
- C_{Facade} is a facade correction equal to 2.5 dB for free-field measurements and 0 dB for measurements at a facade

L_{Aeq} is the international standard metric for assessing rail noise, referenced throughout the world and in all Australian rail noise standards and regulations.

We then calculate the daytime and night-time L_{Aeq} rail noise levels over each week.

Assessing eligibility

We assess eligibility for the FNAP using the highest week of energy-average rail noise levels during the monitoring period. To find out more about the FNAP noise criteria, go to [Freight.transport.nsw.gov.au/FNAP](https://freight.transport.nsw.gov.au/FNAP)

