



Narrabri to North Star Phase 2

Operational noise mitigation

When this section of railway is upgraded it will generate additional noise for people living along the rail line.

The additional noise is predicted to peak when Inland Rail is fully operational by 2040. By then we forecast there will be on average 20 trains per 24hr period using the rail line. Trains will run during the day and the night at a maximum speed of 60km/h through Moree. We anticipate a 1.8km train will take about 2 minutes to pass by.

Our railway design aims to minimise operational noise through project planning, track formation, and design refinements (e.g. reducing the need for track curves which can cause wheel squeal).

In NSW, operational rail noise is assessed in accordance with the NSW Environment Protection Authority's (EPA) Rail Infrastructure Noise Guideline which provides trigger levels at which noise mitigation measures should be considered.

At properties where predicted noises level exceed these trigger levels, reasonable and feasible mitigation needs to be considered.

Mitigation considerations

To determine the type of mitigation required, we assess what is reasonable and feasible for each property. The assessment considers:

- acoustic effectiveness;
- mitigation benefits (e.g. number of people benefitting, expected noise reduction);
- the cost effectiveness of mitigation;
- site constraints (e.g. flooding, soil type and slope); and
- the preferences of impacted property owners and/or broader community views.

The two most common types of operational noise mitigation are noise barriers, and at-property treatments.

Noise barriers are usually selected where impacted properties are grouped together on the same side of the track (e.g. in urban areas). At-property treatments are commonly used for isolated properties.

Noise level comparisons

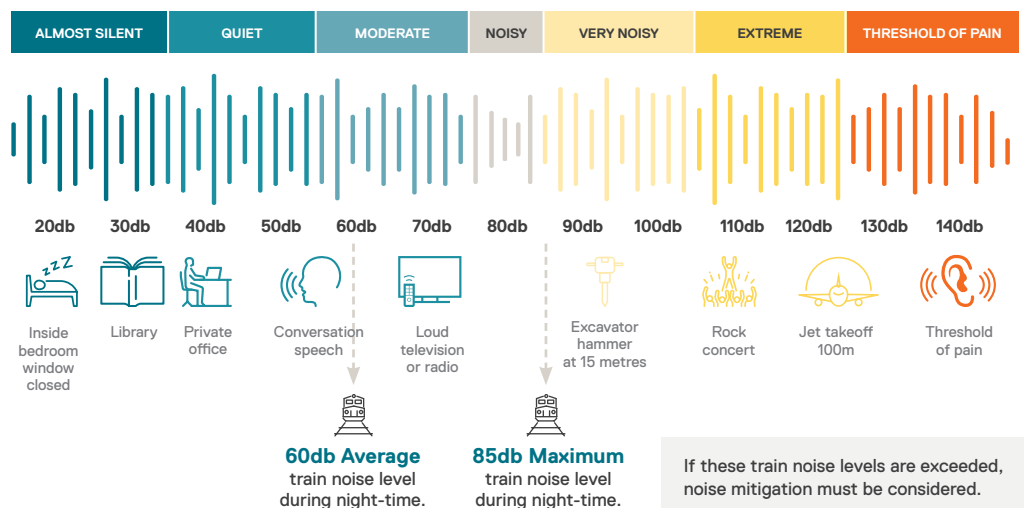
People's perception of noise is strongly influenced by their environment. A noise level that is perceived as loud in one situation may appear quiet in another.

How is noise measured?

The decibel (dB) is a unit used to measure the intensity of a sound. The decibel scale measures sound similar to how human ears perceive sound.

For example; a sound 10 times more powerful than 0 dB is 10 dB, a sound 100 times more powerful than 0 dB is 20 dB, a sound 1,000 times more powerful than 0 dB is 30 dB.

So something that is 10 dBs higher, sounds twice as loud.

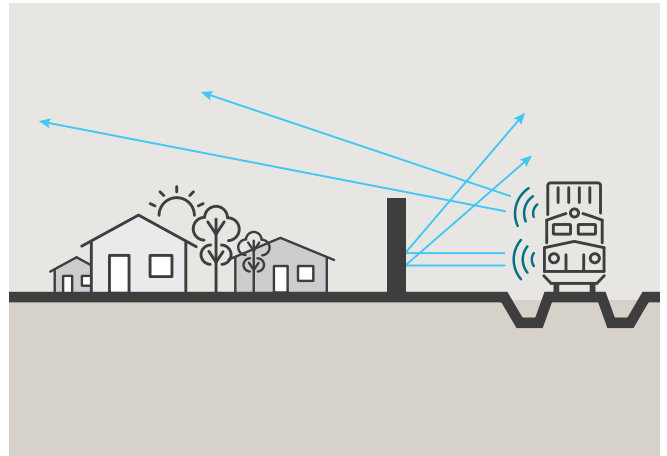


Noise barriers

Noise barriers are normally constructed within the rail corridor. They can be made from a variety of materials and finishes and can incorporate designs, colours, and patterns.

To be effective, a noise barrier must block line of sight from the source of the noise (the noisy parts of the train like the wheels and locomotive) to the impacted receiver (person or dwelling). Noise barriers are maintained by Australian Rail Track Corporation (ARTC) and benefit both the indoor and outdoor amenity of numerous properties – not just those that exceed the criteria. They are also most effective at blocking low frequency noise from trains.

Noise barriers can, however, block views, attract graffiti and cause shadowing on some properties.



A noise barrier can shield more of the neighbourhood.

At-property treatments

At-property treatments are provided to individual dwellings or buildings to protect indoor amenity.

They can include upgraded property facades (i.e. windows, doors, seals) or treating the sub floor. The types of treatments are dependent on the level of noise impact, the type of property (e.g. brick veneer, weatherboard) and the preference of property owners.

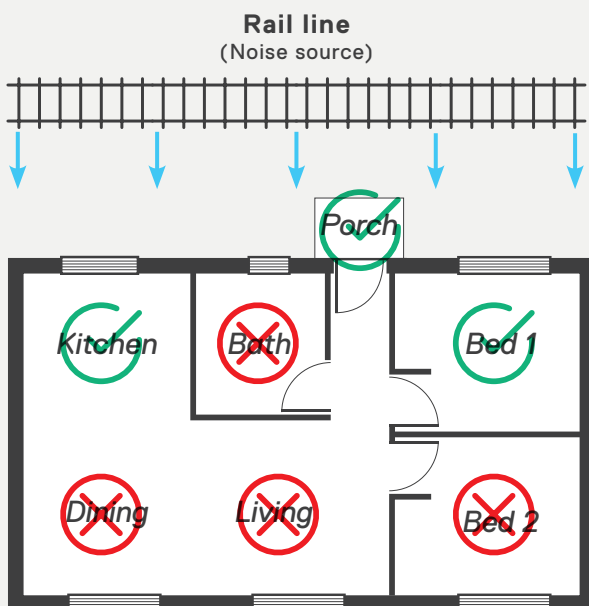
Limitations of at-property treatments include disruption during installation, only habitable rooms are eligible for treatment and maintenance and running costs (such as electricity) have to be paid for by the owner.

Want to know more?

Operational rail noise guidelines are set by individual state governments. To find out more, visit:

New South Wales
Environment Protection
Authority
epa.nsw.gov.au

Example of at-property treatment application



Rooms exempt from at-property treatments: garage, bathroom, toilet, laundry, pantry or storage area.

In cases where noise levels only marginally exceed guideline trigger levels, treatments to homes are typically applied to the sides of the building (and attached rooms) that face the source of the noise, like in this example. Where noise levels are higher other facades may also be treated.

Room	Potential treatments
Bedroom 1	<ul style="list-style-type: none"> Upgrading window glazing and acoustic-rated seals Fill minor gaps in eaves/external façade.
Kitchen	<ul style="list-style-type: none"> Upgrading window glazing and acoustic-rated seals Fill minor gaps in eaves/external façade.
Entry door	<ul style="list-style-type: none"> External solid core doors with surface mounted moulds minimum 40 mm and provide acoustic rated seals.

All treated rooms will also be assessed for ventilation requirements and options where existing ventilation systems are more than five years old.