



Australian Government

BUILDING OUR FUTURE



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Nambucca Heads to Urunga Pacific Highway upgrade

Operational Noise - Frequently asked questions

What has been the operational noise process up to this point?

The effect of road traffic noise on residents as a result of the upgraded highway was first examined in the Environmental Assessment, which was released in 2010. This assessment identified residents affected by road traffic noise and those eligible for noise treatment based on the concept design of the new highway.

In 2014 the Operational Noise Management Report (ONMR) was released. This report reviewed the noise mitigation measures for the detailed design of the upgrade (rather than the concept design) to determine if further noise mitigation measures were required.

As part of the Minister's Conditions of Approval for the project, a post-construction operational noise report must be completed within 12 months of the project opening. This report has recently been published.

What is the purpose of the Post-construction Operational Noise Report?

The Post-construction Operational Noise Report compares actual road traffic noise levels against the predicted road traffic noise levels used in project design. The report determines if the road traffic noise modelling carried out during the detailed design phase of the project was accurate and acceptable to predict road traffic noise. This modelling considers traffic volumes, highway route, surrounding landscape (topography), traffic speed, percentage of heavy vehicles, road surface, the distance and height of surrounding buildings and weather.

The report has been prepared by specialist noise consultants in accordance with industry guidelines and has been reviewed and approved by both the EPA and the Department of Planning and the Environment (DP&E) prior to publication.

The noise model used on this project is based on the Calculation of Road Traffic Noise (CORTN) model. It is a mathematical model that has been specifically validated under Australian conditions and is accepted as the industry standard by the NSW Government.

What are the results of the report?

The assessment found that the noise levels on the project are generally lower than what was predicted in the ONMR. The report shows that the project has met its noise goals as required by the Minister's Conditions of Approval for the upgrade. Consequently, no further noise mitigation measures are required.

Will my property receive road traffic noise treatment?

The results from the assessment show that all properties that require road traffic noise treatment have received that treatment, or are in the process of receiving treatment. Therefore, no other properties will receive noise mitigation measures.

Properties that had previously received treatment were shown to be within the two decibel limit as set by the EPA, and therefore not requiring further treatment. Most people can't detect a change of one or two decibels in the noise level.

Will other noise mitigation measures be introduced?

No. The report shows that the project has met its noise goals as required by the Minister's Conditions of Approval for the upgrade. Consequently, no further noise mitigation measures are required.

What are the 'road traffic noise goals' for this project?

The project road traffic noise goals (Environment Criteria for Road Traffic Noise (ECRTN)) are set and developed by the NSW Environment Protection Agency (EPA). According to the EPA guidelines, the project is considered to be:

- A 'redevelopment of an existing arterial road' where the route follows the alignment of the (old) Pacific Highway; and
- Where the route differs substantially from the (old) Pacific Highway (such as the Urunga bypass), it is considered to be a 'new arterial road corridor'.

This means the relevant road traffic noise criteria for the project area according to the ECRTN is:

Type of development	Road traffic noise criteria, dB(A)		Where criteria are already exceeded
	Day	Night	
New freeway or arterial road corridor	$L_{Aeq(15hr)}$ 55	$L_{Aeq(9hr)}$ 50	The new road should be designed so as not to increase existing road traffic noise levels by more than 0.5dB
Redevelopment of existing freeway/arterial road	$L_{Aeq(15hr)}$ 60	$L_{Aeq(9hr)}$ 55	The new road should be designed so as not to increase existing road traffic noise levels by more than 2dB. ¹

The solutions to reduce road traffic noise are identified and developed during the design phase of the project in accordance with the *Environmental Noise Management Manual (ENMM)* (RTA 2001), the ECRTN, and the project conditions of approval. These solutions can include:

- Low noise pavement
- Noise walls and mounds
- At house noise treatments.

¹ If receivers experience road traffic noise levels prior to road opening, and if the increase in noise levels at 10 years after project opening, is less than two dB(A), then treatment is not required. If noise levels are predicted to be acute, i.e. $L_{Aeq(9hr)}$ 60 dB(A) and $L_{Aeq(15hr)}$ 65 dB(A), then the property is eligible for treatment regardless of pre-existing noise levels.

These mitigations used on this project are summarised in the Operational Noise Management Report (ONMR), which was published in October 2014, and is available on the project website.

How does a property qualify for at house noise treatment?

As per the above table, noise levels for the new section of the highway should be below 55 dB(A) during the day and 50 dB(A) at night, while for the redeveloped section they should be below 60dB(A) during the day and 55d(B)A at night.

Criteria for treatment is based on predicted noise levels 10 years after opening, meaning that if noise at a property is expected to exceed the criteria set by the EPA in 2026, that property would be eligible for at house noise treatment.

When did noise monitoring take place?

Road traffic noise monitoring was done over a two week period in November and December 2016.

Where was the noise monitoring done?

The noise consultant conducted monitoring at 28 locations across the length of the project. These locations were the same monitoring locations that were used in the road traffic noise monitoring in the detailed design phase of the project, plus additional areas where excess noise was reported. While it wasn't practical to monitor at every house, it is important to note the assessment utilising the validated noise model considered all properties regardless as to whether the property had individual noise monitoring carried out. The results from the two week noise monitoring (Nov – Dec 16) were then compared against what was predicted by the post construction noise model, and this process is part of the noise model validation process.

Why has it taken so long for the report to be published?

Following completion of the noise monitoring, complex computer modelling and data validation was undertaken before the report was prepared. It then underwent independent review by the EPA and DP&E to ensure its accuracy.

Who was responsible for providing at house noise treatment?

Roads and Maritime was responsible for providing treatment to eligible properties. An eligible property was any property identified in the ONMR which exceeded the road traffic noise criteria and had Development Application approval prior to the project's approval, which was 19 July 2011.

Properties which received development approval after the project's approval are required to install their own road traffic noise treatment measures.

How many house were treated and how many still require treatment?

A total of 104 properties across the length of the project received at house noise treatment. One property is currently receiving treatment.

How are road traffic noise mitigation measures determined?

Roads and Maritime uses a test of 'reasonable' and 'feasible' to determine road traffic noise measures. Road traffic noise mitigation is 'feasible' if it is practical and capable of being put in place. For example, a road traffic noise mitigation measure is feasible if it can be engineered and is practical to build, considering issues such as safety, access and maintenance.

Selecting 'reasonable' road traffic noise mitigation measures involves considering the overall road traffic noise reduction benefit delivered by different mitigation measures and the overall economic cost of

achieving that benefit. 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 some distance from a new road or each other, 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.

Engine brake noise

Engine brakes are fitted to slow down heavy vehicles. Engine brakes improve vehicle safety by reducing the load on brakes during a steep descent. They can also extend the life of the vehicle brakes and reduce maintenance costs. However, it is this compression brake design that often creates the engine break 'bark' and causes annoyances to the community.

In response to community concerns there are a number of initiatives being carried out by the NSW Government to help with investigation and action on this issue. They include:

- Working on a range of education and enforcement measures to reduce noise from freight vehicles
- Developing and trialling noise cameras to detect vehicles with excessive engine compression brake noise
- Working closely with other states, territories and the National Transport Commission to implement a national standard for engine brakes. This standard was approved by the Australian Transport Council in 2007 and reviewed by the National Transport Commission in May 2013.

If the National Transport Commission prepares amendments to the National Heavy Vehicle Legislation to provide for regulation of engine brake noise, it may provide an opportunity to assist in enforcement. The NSW Government is following this process closely.

Can road speed limits be changed to reduce road traffic noise levels?

The purpose of the \$780 million Nambucca Heads to Urunga Pacific Highway upgrade was to improve safety and increase traffic efficiency by delivering 22km of four-lane, divided road with a speed of 110km/h.

Lowering speed limits to reduce traffic noise is generally not effective or preferred. Lowering traffic speed from 100km/h to 80km/h reduces traffic noise by roughly 1.5dB (A), if the traffic volume remains the same. Most people can't detect a change of one or two decibels in the noise level. Substantial speed reductions would be necessary to achieve substantial noise reductions.

On high-speed roads such as motorways, halving the average speed leads to a reduction of up to 5–6 dB (A) in the traffic Leq noise level. Such a drastic reduction would negate part of the original purpose and objectives of the project.

Can low noise pavement be added to some sections of the highway?

No. The unreinforced concrete pavement laid on the Nambucca Heads to Urunga project has joints cut in it and there is an ongoing small movement at each joint. If we placed Stone Mastic Asphalt (SMA) over this type of concrete pavement it would crack at each joint in the concrete pavement. The cracks in the SMA would then deteriorate under highway traffic conditions, rendering it very ineffective as a low noise pavement.

Sound pressure levels in decibels

