



# Sapphire to Woolgoolga Pacific Highway upgrade

August 2015

## Frequently asked questions

### What are the 'noise goals' for this project?

The project noise goals (Environment Criteria for Road Traffic Noise (ECRTN)) are set and developed by the NSW 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 Woolgoolga bypass route differs substantially from the (old) Pacific Highway, it is considered to be a 'new arterial road corridor'.

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

Type of development	Noise criteria, dB(A)		Where criteria are already exceeded
	Day	Night	
New freeway or arterial road corridor	L <sub>Aeq(15hr)</sub> 55	L <sub>Aeq(9hr)</sub> 50	The new road should be designed so as not to increase existing noise levels by more than 0.5dB
Redevelopment of existing freeway/arterial road	L <sub>Aeq(15hr)</sub> 60	L <sub>Aeq(9hr)</sub> 55	The new road should be designed so as not to increase existing noise levels by more than 2dB

The requirement for noise mitigation measures, including noise walls and residence treatments are identified during the design phase in accordance with the Environmental Noise Management Manual (ENMM), RTA 2001 and the ECTRN and summarised in the Operational Noise Management Report (ONMR).

The post-operational noise analysis carried out during development of the Post-Construction Operational Noise Report compares actual noise levels against the predicted noise levels used in project design. 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.

### **What does 'reasonable and feasible' mean?**

Noise mitigation is feasible if it is practical and capable of being put in place. For example, a 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 noise mitigation measures involves considering the overall 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 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.

### **Why is some noise excluded from the monitoring data?**

Noise modelling considers an average day. This means wind and weather conditions are not incorporated into the modelling process, neither are variations in traffic flow rates.

Measurements affected by noise not directly associated with the project are excluded from the overall noise monitoring results. This includes unusually high peaks (which are later investigated), non-road traffic noise, strong wind or rain. This is in line with the relevant Australian Standards and Environmental Protection Authority guidelines and policies.

While we recognise that weather can have an effect on traffic noise levels under some conditions, our modelling criteria must comply with the relevant Australian Standards for measuring noise, which exclude weather.

### **Why are school holiday periods not monitored?**

Noise modelling considers an average day. School holiday periods are not considered 'average' as they may result in unusual traffic movements. For example, while there may be an increase in domestic

vehicle travel during the Christmas holiday period, there may also be a reduction in freight movements. This is the reason why school holiday periods are excluded from the monitoring.

### **Reflected noise (amphitheatre effect)**

Like any wave, a sound wave doesn't stop when it encounters an obstacle in its path. Instead it may reflect off, move or spread around the obstacle.

Residents who live next to a highway sometimes feel their noise levels have increased because of a new noise barrier on the opposite side of the road. However, field studies have shown that even if all the noise striking a barrier was reflected back to the other side of a highway, the increase would be theoretically limited to 3dB.

Not all of the noise is reflected back to the other side. Some of the noise goes over the barrier, some is reflected to points other than directly on the opposite side, some is scattered by ground coverings such as grass and shrubs, and some is blocked by the vehicles on the highway.

Also, some of the noise is lost due to the longer distance it must travel. Measurements have never shown an increase of greater than 1-2 dB – which is not perceptible to the average human ear.

The effect and associated impacts of noise barriers has been included in the noise modelling. No noise barriers have been shown to increase levels above project limits, which means no more noise mitigation measures are required at these locations.

### **Noise barrier design**

Noise barriers have been built in line with the requirements of the ECRTN. The barriers range between 2.5m to 4m in height. Noise barriers are most effective where residences are tightly grouped close to the noise source and continuous barriers are not broken to allow access to properties.

Headlight screens were also installed at various locations to help reduce glare from headlights of vehicles travelling along the upgrade highway and/or the service road.

### **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 noise levels?**

The purpose of the \$850 million Sapphire to Woolgoolga Pacific Highway upgrade was to improve safety and increase traffic efficiency by delivering 25km 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 could negate part of the original purpose and objectives of the recently upgraded highway.

### **For more information**

For more information about the project/work please contact the project team by:

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More information is also available at [rms.nsw.gov.au](http://rms.nsw.gov.au)