

# The New Grafton bridge project

## Operational noise - frequently asked questions

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

The project's road traffic noise goals are determined by the NSW Environment Protection Agency (EPA) and are outlined in the NSW Road Noise Policy 2011 (RNP). According to EPA guidelines, the project is considered to be:

- A 'redevelopment of an existing arterial road' for noise impacts on the existing bridge alignment along Bent and Craig streets
- A 'new arterial road corridor' where the new alignment impacts residences on Butters Lane, and in Grafton east of the existing bridge.

This means the relevant road traffic noise criteria for the project, according to the RNP, is:

Type of development	Road traffic 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 road traffic noise levels by more than 2 decibels (dB), which is considered imperceptible by most people
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 road traffic noise levels by more than 2 decibels (dB)

The detailed solutions to reduce road traffic noise for the new bridge were identified and developed during the design phase of the project in accordance with the Environmental Noise Management Manual (ENMM) (RTA 2001), the RNP and the project's conditions of approval. On this project, noise mitigation measures include a 340 metre long noise barrier on the new bridge and at house noise treatments. These were previously outlined in the Environmental Impact Statement (EIS) which was published in 2014.

## **How do we know if the noise targets are being met for the new Grafton bridge project?**

The new Grafton bridge project recently commissioned two reports to compare the predicted future road traffic noise levels to those reported in the EIS. Both reports, the Operational Noise Report (ONR) and the Detailed Noise Modelling and Assessment for At-Property Mitigation (DNMA), used the detailed design of the new bridge, which has been developed by Fulton Hogan, rather than the concept design, to predict future road traffic noise levels after the new bridge opens to traffic.

The first report reviewed the properties which were predicted by the EIS to have road traffic noise levels above the target criteria and which might be eligible for noise mitigation measures. It also checked to see if any additional properties might be impacted by the bridge when constructed to the detailed design completed by Fulton Hogan. The second report was generated specifically for the purpose of delivering the at house noise mitigation measures. This report predicts road traffic noise levels at each façade (or wall) of impacted properties, and any effects from changes in rail noise on properties due to the project.

The reports consider road traffic noise generated by vehicles using the new bridge, i.e. 'operational noise', which is the responsibility of Roads and Maritime. Noise generated by building the new bridge, i.e. 'construction noise', is managed separately by Fulton Hogan.

The reports used a digital noise model to predict future road traffic noise levels along the length of the project based on the detailed design of the new bridge.

## **How does the model work?**

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

This modelling considers traffic volumes, route alignment, surrounding landscape (topography), traffic speed, percentage of heavy vehicles, road surface and the distance and height of surrounding buildings.

Once all data has been inputted, the noise model predicts the future road traffic noise levels at all properties within a certain distance of the project. These predicted noise levels are then compared to actual noise levels which have been recorded at various locations in the project area. If the predicted levels are within two decibels of measured levels, the predicted noise levels are considered accurate.

Road traffic noise modelling only models noise from road traffic and considers an 'average' day. This means wind and weather conditions are not incorporated into the modelling process, neither are variations in traffic flow rates due to such things as school holidays or special events.

## **What are the results of the reports?**

After comparing all three reports (EIS, ONR and DNMA), 54 properties across the project area were identified as potentially being eligible for at house noise treatment.

## **How does a property qualify for at house noise treatment?**

Criteria for treatment is based on predicted noise levels 10 years after opening, meaning that if road traffic noise in 2029 at a property is expected to exceed the criteria set by the EPA, and it meets other specific conditions, that property is eligible for at house noise treatment.

## **What happens if targeted noise levels are exceeded?**

Properties where predicted noise levels are above the criteria, and the other specific conditions are met, will be offered noise mitigation measures. The type of mitigation offered depends on the level of exceedance and can include air conditioning, window seals, thicker windows and new doors.

## **How do I know if my property qualifies for treatment?**

Properties identified for treatment are listed in the EIS, ONR and DNMA. Property owners whose properties qualify have already been contacted by Roads and Maritime.

## **My property exceeds the criteria but I'm not receiving treatment. Why?**

There are a few instances when one or more façades might exceed the target criteria but not receive treatment. One reason is the use of the room behind that wall. Treatment is only offered for 'habitable' rooms, such as bedrooms, lounge rooms and living rooms. If the room behind the façade is, for example, a bathroom, treatment is not offered.

Another reason relates to the noise levels that would have been at that façade if the bridge wasn't built. If the predicted road traffic noise levels decrease after the bridge is built, compared to road traffic noise levels if the bridge wasn't built, treatment is not offered, even if the property is still above the noise targets.

## **As an owner, do I have to have acoustic treatment done to my property?**

No owner is obliged to accept treatment.

## **Are these the last noise reports for the project?**

Once the new Grafton bridge has opened to traffic, Roads and Maritime will conduct another noise study to determine if the project's noise goals have been achieved. This report, the Post-construction Operational Noise Report, will compare the road traffic noise levels predicted in the EIS, ONR and DNMA against the actual road traffic noise levels from the new bridge for the opening year. If road traffic noise levels are found to be above the project's noise goals then further noise treatment options may be implemented.

## **How are road traffic noise mitigation measures determined?**

Roads and Maritime uses a test of 'feasible' and 'reasonable' 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 any given 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 the only reasonable solution.

Due to the bridge's location, a noise wall is considered a 'feasible' and 'reasonable' noise mitigation measure.

## **Will low noise pavement be used on the bridge?**

Under 80km/h the benefits of low noise pavement, or Stone Mastic Asphalt (SMA), diminish. Based on its increased cost, the increased maintenance it requires and the speed of traffic on the bridge, SMA was not considered to be reasonable for the project.