

Vibration fact sheet

Project overview

The Hills M2 Upgrade will widen the existing motorway between Windsor Road, Baulkham Hills and Lane Cove Road, North Ryde and will deliver four new ramps to improve access to the motorway. The project aims to provide efficient and integrated transport for the community of Sydney's North-West.

Major work started in January 2011 and is expected to take around two years to complete.

Vibration during construction of the Hills M2 upgrade

Some construction activities have the potential to generate ground-borne noise and vibration, such as heavy excavation, rock breaking and piling. The effect of vibration on nearby residences can be influenced by many factors, including:

- How close your home is to the source of the vibration.
- The energy output of the equipment used.
- Local geological conditions.

Most people can detect levels of vibration within their homes that are well below those that can cause damage to their home or contents. This may be apparent to residents in the form of ground-borne noise and rattling of windows and crockery.

The project team understands that vibration may cause residents concern or affect the amenity of their surroundings. We have written this fact sheet to help residents understand:

1. The documents that guide the assessment and management of vibration during construction.
2. The types of activities and equipment likely to cause vibration.
3. What measures will be used to reduce the impact of vibration on residents.
4. How we will manage and report complaints about vibration.



A noise curtain that has been installed on the western end of the eastbound Norfolk Tunnel



Hills M2 Upgrade breakdown safety

In the case of breakdown:

- Stay in your vehicle
- Switch on your hazard lights
- Call 1800 196 266
- Wait for assistance

1. Assessing and managing vibration during construction

The assessment and management of vibration is undertaken in accordance with:

- Assessing vibration: a technical guideline – Feb 2006 - Department of Environment and Conservation (now known as the Office of Environment and Heritage).
- M2 Upgrade Statement of Commitments – Aug 2010
- Minister for Planning's Conditions of Approval – Oct 2010
- M2 Upgrade Construction Noise and Vibration management Plan – Dec 2010

These documents are available on the project website at www.hillsm2upgrade.com.au (click on the 'Document links' in the left hand menu).

2. Activities and equipment that may cause vibration

The following activities have the potential to generate ground-borne vibration on nearby residents during construction of the upgrade:

- Jack hammering.
- Heavy excavation.
- Rock hammering, breaking and grinding.
- Piling and rock bolting.
- Vibratory rolling.

Norfolk Tunnel

The Norfolk Tunnel consists of two separate tubes - eastbound and westbound. Each tube currently carries two lanes and a breakdown lane in each direction. The tunnel will be widened to provide three traffic lanes and a breakdown lane in each direction.

Nearby residents may experience noise and vibration during the construction period. Most of the work in the tunnel will be undertaken at night and over the weekends due to the high volumes of traffic that use the tunnel during peak periods.

Residents identified as being potentially affected by the tunnel widening work will be contacted by the project team to discuss impacts, measures to reduce the impacts and how they prefer to be kept up-to-date with construction activities.

For more information about construction in the tunnel, refer to *Norfolk Tunnel Fact Sheet – Mar 2011*. This document is on the website at www.hillsm2upgrade.com.au (click on 'Document links' in the left hand menu and then click on 'Construction').

M2Upgrade project

A team consisting of The Roads and Traffic Authority of NSW, The Hills Motorway Limited and Hills Motorway Management Limited (as trustee of the Hills Motorway Trust)

Go to: www.hillsm2upgrade.com.au
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Email: enquiries@hillsm2upgrade.com.au
Call: 1800 196 266 (select option 2)
Post: PO Box 379, North Ryde BC NSW 1670

3. Measures to reduce the impact of vibration on residents

The project team will ensure every effort is made to minimise the impact of construction vibration on nearby residents. Some of the measures we will use include:

Keeping in contact with residents

Keeping residents informed of the nature of the work and progress will help alleviate concerns. We will meet with potentially affected residents, deliver information to their letterboxes, provide updated information on the website and provide residents with a 24 hour community phone line.

We have undertaken 'home surveys' with potentially affected residents near the Norfolk Tunnel to better understand their home environment and how their families may be affected by vibration.

Control measures

- Providing an adequate distance (buffer) between the source of vibration and the property.
- Restricting activities such as concrete sawing, rock breaking and jack hammering to less sensitive times eg. daytime and evening periods where possible.
- Giving residents relief by providing respite periods (breaks) during the activity.
- Selecting low impact machinery where possible.
- Undertaking vibration monitoring when using heavy machinery.

Access to an independent community noise and vibration facilitator

The Hills M2 Upgrade team has appointed an experienced facilitator for the duration of the project.

Any noise and vibration complaints that cannot be resolved in the first instance between the resident and the project team will be forwarded to the facilitator to follow up and negotiate satisfactory outcomes. The facilitator will meet with the resident and discuss their concerns. A report will be prepared and provided to the project team and to the resident. For more information refer to the flow chart below.

An independent environmental management representative has been appointed and is responsible for ensuring that the project meets the NSW Minister for Planning's conditions of approval. Some of their responsibilities include:

- Monitoring specific work activities, particularly those that involve noise and vibration.
- Reviewing environmental reports.
- Assessing environmental monitoring data.

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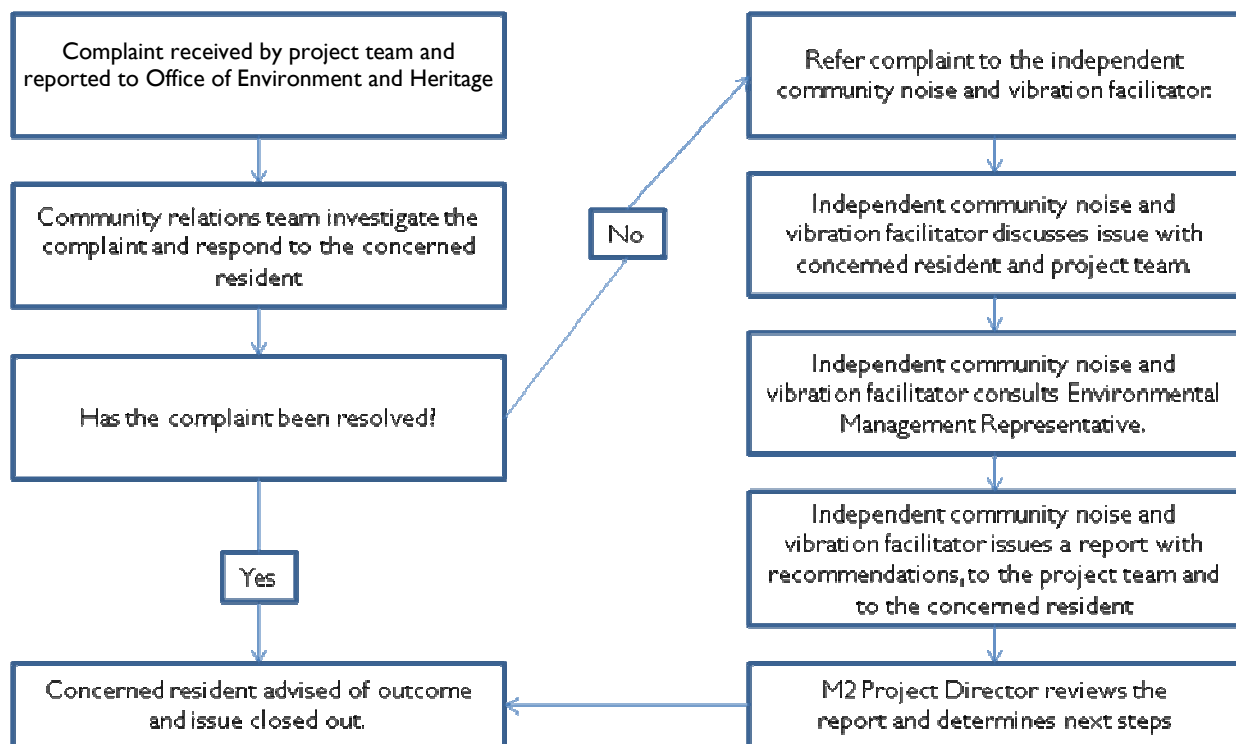
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4. Managing and reporting vibration complaints

Any complaints that are not resolved between the resident and the community relations team will be referred to the independent noise and vibration facilitator for further action.

Noise and vibration related complaints and the actions taken to resolve them are reported on a regular basis to the RTA, the Department of Planning and Infrastructure and the Office of Environment and Heritage (formerly the Department of Environment, Climate Change and Water).

The project team are committed to ensuring that complaints are addressed within the earliest possible timeframes.



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Questions and answers

Q: If I can feel the vibration will it damage my property?

A: You will generally hear ground-borne noise and feel the effects of vibration at levels much lower than those that would cause structural damage.

Q: What is ground-borne noise?

A: Ground-borne noise is produced when vibration from an activity, such as heavy construction or excavation, travels through the ground and is transformed into noise.

Q: How far away should heavy vibration causing equipment be from my home?

A: The majority of vibration causing plant and equipment used will be far enough away from your property so that structural damage would be unlikely. For equipment likely to cause significant vibration, such as heavy rock breakers and vibratory rollers, the team will implement a buffer zone (a safe recommended distance between the source and the property) to reduce the chance of structural damage.

This type of equipment would generally need to be within five metres of a building before structural damage would be possible.

Q: Will there be a need to undertake work that generates vibration out of standard construction hours?

A: Yes. At times, works may be undertaken at night, when traffic volumes are lower, and to ensure the safety of workers and motorists. Some of these night time activities, eg excavation carried out in the Norfolk Tunnel, may have the potential to cause vibration and ground-borne noise at nearby residences. Residents would be advised in advance of such works.

Q: What can I do if I am concerned about vibration at my property?

A: Please contact the community relations team if you are concerned or have any questions via the community hotline 1800 196 266 (select option 2) or email enquiries@hillsm2upgrade.com.au.

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