Transport for NSW

Beaches Link and Gore Hill Freeway Connection

Noise and vibration

We have assessed the possible noise and vibration impacts when we are building and when we are open to traffic. Once the project is open to traffic some areas will benefit from less noise due to reduced traffic on the surface and the new noise walls and at-property noise treatments we will install.

Assessing noise and vibration

We know our work can be noisy which is why we will use a range of measures to reduce the impact of our work when we are close to communities.

We have carried out a thorough noise and vibration assessment examining the potential impact to you when we build and operate the project.

These assessments involved identifying areas which may experience changed levels of noise or vibration as a result of our work, and assessing the type, level and duration of potential impacts and how we will manage them.

Our assessments are conservative and always assess the worst-case scenario such as all equipment being used at the same time. We often find when we are working the noise generated is less than we predicted.

Reducing our impact

While we are building, we will monitor noise and vibration to check levels are less than predicted and identify if any additional mitigation measures are required. All our work will be carried out in line with the project's Conditions of Approval, Environment Protection Licence (EPL) and Construction Environmental Management Plan which are overseen by the Department of Planning, Industry and Environment (DPIE) and the NSW Environment Protection Authority (EPA).

We will be using a range of measures to keep the community informed of our work and to reduce the impact of our work, including:

- providing notification about upcoming noisy and night work
- laying out our sites so the noisy equipment is shielded by other buildings and/or stockpiles, where possible
- using acoustic sheds to support 24 hour tunnelling activities, but only moving spoil by trucks during standard construction hours
- ensuring our equipment is serviced and maintained up to standard
- turning off machinery and equipment when not in use
- working within standard construction hours, where possible
- managing construction activities to minimise major noise-generating work being done at the same time at the same location, where possible
- staging our work to avoid extended periods of consecutive night work in one area to manage our impact on our neighbours, where possible
- installing hoardings and temporary noise barriers, where required
- offering at-property acoustic treatment, where required
- providing temporary alternative accommodation for high noise-generating activities, where required.

We will also use noise and vibration monitoring to ensure our measures are effective in complying with our licence conditions, and help us identify if we need to make changes to our construction methodology, to minimise impacts.

When we are building

Noise

If you live near where we are working you are likely to hear us. This may be when we are working on the road, delivering materials, setting up temporary construction support sites or removing spoil from tunnelling sites.

How noise is perceived is personal and can depend on the environment, because of this sound may also seem louder to you in some situations than others. For example a loud car horn in the middle of the night will seem louder than during the day.

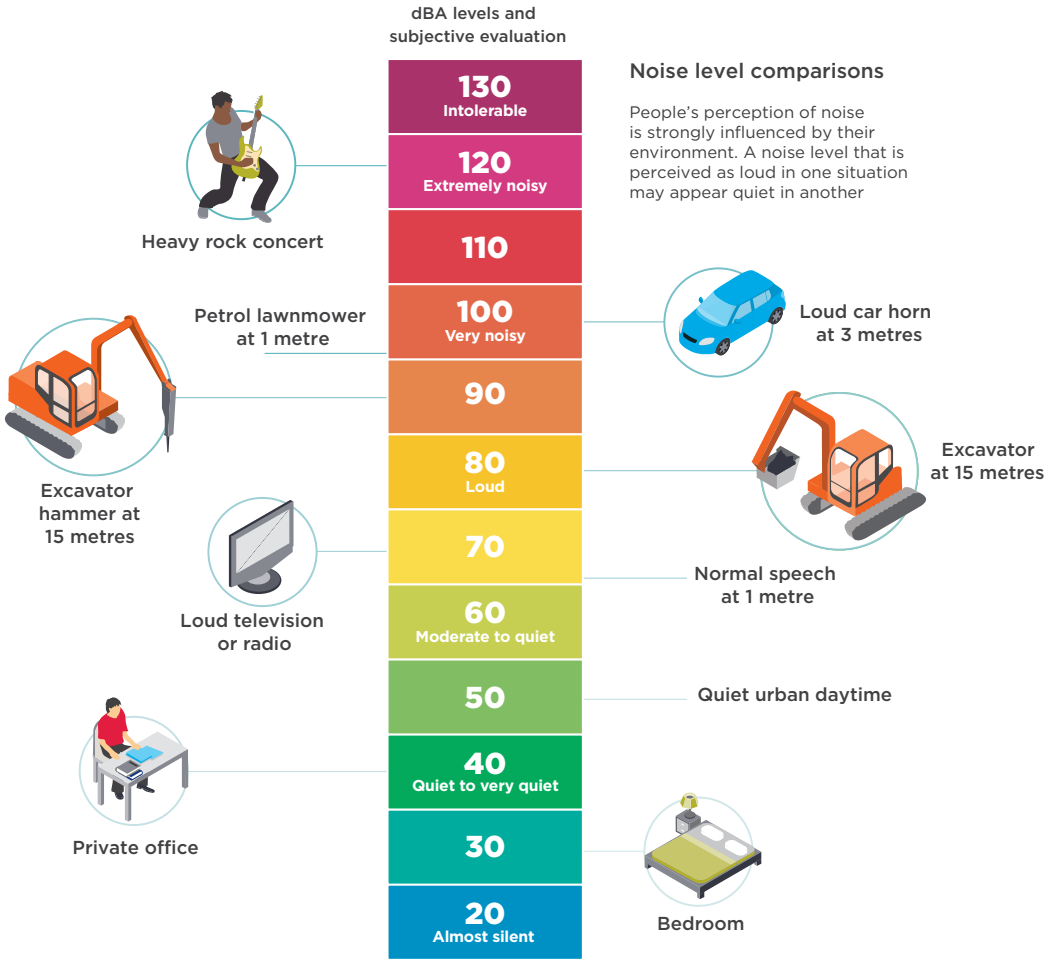
The information on this page explains how we measure noise and what this will mean for you depending on which parts of our work you are near to.

How we measure noise

We measure noise in decibels. Our ears generally do not notice changes of one to two decibels. On the decibel scale, a change of 10 decibels sounds like about half or double the previous noise. For example a lawnmower is about 90 decibels and a motorcycle is about 100 decibels but a motorcycle seems almost twice as loud to the ear as a lawnmower.

Noise is measured, predicted and assessed in accordance with the relevant legislative guidelines.

When we predict you may experience noise levels over the guidelines, we will implement additional mitigation measures and monitor noise levels to assess that these measures are effective.



Note:

- A change of 1 dBA or 2 dBA in the level of a sound is difficult for most people to detect.
- A 3–5 dBA change corresponds to a small but noticeable change in loudness.
- A 10 dBA change corresponds to an approximate doubling or halving in loudness.

Day and night Noise Management Levels (NMLs)

The assessment process for noise uses reference noise levels for areas, known as NMLs, to assess the noise impact of our work.

The residential NML for an area is equal to the background noise level at the quietest time of the day or night, plus 10 decibels during the day or five decibels at night. You are considered to be affected by the noise generated by our work if it results in noise at your house being above the relevant NML.

There are different NMLs for non-residential properties which may be more sensitive to changes in noise levels. This includes hospitals, schools, places of worship, childcare centres and recreation areas.

We will work closely with any sensitive receivers to identify possible solutions to manage the potential impact of our work on your personal circumstances.

Highly noise affected

You are considered to be highly noise affected when noise levels are predicted to be over 75 decibels at your house – which is comparable to the noise made by a vacuum cleaner running inside your house. We will look at ways to further mitigate noise if you have been assessed as highly noise affected such as carrying out additional consultation and notification, providing respite periods, and offering alternative accommodation, where required. We are committed to working with you to understand your personal circumstances.

Sleep disturbance and awakening criteria

We know some of our work can be frustrating if you live nearby, particularly when we need to work at night. As a result, we are required to assess "a sleep-disturbance criteria", which looks at whether the noise from the work might disturb your sleep. The criteria used to identify where there is the potential for sleep disturbance is 15 decibels above the background night time noise level, which is the background noise level without our construction work.

If we go above this criteria, we also look at an additional "awakening reaction level", which is the level above which your sleep may be disturbed to the point you actually wake up. These assessments help us to identify if we need to implement additional mitigation measures such as providing respite or alternative accommodation, where applicable.

We are committed to working with you to understand your personal circumstances.

Temporary noise hoarding during construction of NorthConnex

Noise from construction traffic

Our work will temporarily generate more trucks and light vehicles on the road. We expect the increase in road traffic noise will generally be less than two decibels in most areas, which is within our guidelines and you are not likely to notice any change. Some changes in traffic noise may be more noticeable if you live near the construction sites.

While we will be tunnelling 24 hours per day at some sites, we will not be hauling spoil from these sites outside of standard construction hours. This means that heavy vehicles movements during the night will generally be limited to a deliveries (such as concrete trucks) entering and exiting the acoustic shed.

What does this mean for you?

The potential noise impact varies depending on the location and type of work we are doing in your area.

The below provides you with a general overview of what work will be happening and when you may be able to hear us when you are near to one of our sites.

If you live near a temporary tunnelling site

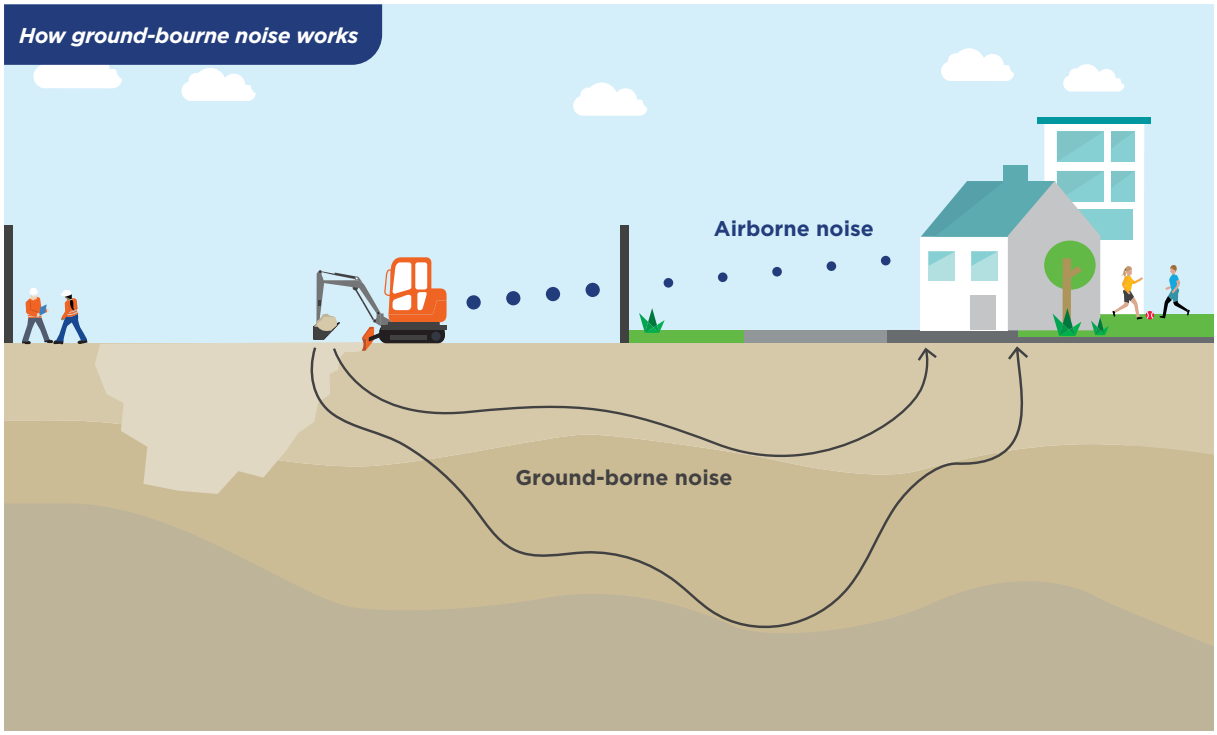
We will be tunnelling underground 24 hours a day, seven days a week.

The majority of noisy activity at these sites will be when we are setting the site up, building the acoustic shed and getting ready for tunnelling. This can take about six months to complete, weather permitting.

Once we are tunnelling, the majority of the work is underground. While the depth of our tunnels varies along the alignment, the tunnels are generally very deep, and most people will not notice tunnelling passing beneath them. The spoil generated by the tunnelling will be loaded into trucks inside the acoustic shed. The acoustic shed helps us manage noise, dust and light spill from our work.

Outside of standard construction hours, the acoustic shed door is closed expect when deliveries are being made. This allows us to continue working through the night while minimising noise and light impacts.

We will only remove spoil from the site within the acoustic shed, during standard construction hours. All tunnelling support sites will require limited night deliveries and some light vehicle access to enable tunnelling to continue 24 hours, seven days a week.



If you live above the tunnel

We will be tunnelling underground 24 hours a day, seven days a week. During this work, ground-borne noise might be heard at times within buildings near the tunnelling location. Ground-borne noise is a bit different to air borne noise in that you can sometimes feel it. Ground-borne noise is sometimes mistaken for vibration. A good example of what ground-borne noise sounds and feels like is an old refrigerator humming. This noise might be heard for one to two weeks as the tunnelling excavation approaches and then moves away. This is based on our tunnelling equipment moving an average of 25-30 metres per week and equipment needing to make several passes through the same area to complete the initial excavation and tunnel support and lining works.

Apart from tunnelling excavation, other work to complete the tunnels including localised rock excavation for drainage works and the installation of mechanical equipment, might be carried out for short periods directly under your property. Ground-borne noise might also be heard during these intermittent works.

When the tunnelling is deep underground (which is the majority of the time), it is unlikely you will be able to hear the tunnelling equipment. However when we are tunnelling at shallower depths, close by or directly under your property, you may experience ground borne noise generated by our work.

The depths of the tunnel will vary depending on where you live. Please see pages 28-31 of the Community Guide to the EIS for more detail on the indicative depth of the tunnel in your area. We will work with individual properties to keep them informed of the progress and how we can address any concerns they may have.

If you live near a smaller support site

We will have to establish a number of smaller temporary sites to support our work during construction. These sites are generally used for storage of machinery, materials and equipment, worker amenities, site offices and worker parking. One smaller site, at Frenchs Forest, will also have a concrete batching plant to reduce the need for concrete trucks travelling large distances to several sites.

Acoustic shed at Rozelle for M4-M5 Link, Rozelle Interchange

The hours we work will vary depending on the type of work these sites are supporting, however, they are smaller and have less activity and impact than our main sites.

Noise on site will generally be quite low, however, you may notice our teams coming and going, and storing materials. We will be consulting with the immediate community during the development of these specific sites. Several construction support sites will have the purpose of supporting multiple works. For example, the Kitchener Street temporary site will support construction work along Burnt Bridge Creek Deviation and provide site office, staff amenities, car parking for staff, laydown facilities and space for storage of plant, materials and equipment.

If you live near our surface work

Surface work will be required to connect the tunnel into the existing road network. This will include road upgrades, building new bridges, upgrading existing bridges and building the tunnel entry and exits. You will likely be able to hear some noise from these activities.

Work at these sites will be carried out in stages and some activities will be louder than others. For example site set up and earthworks tend to be louder than finishing work like line marking and installing street lights.

If you live near temporary sites that operate out of hours

We will need to carry out some work out of hours, including during the night, as this is when traffic numbers are generally at the lowest and the work can be safely carried out with less disruption to traffic on key routes such as the Gore Hill Freeway.

An out-of-hours work protocol will be developed in consultation with DPIE and the EPA, and will be implemented throughout construction. This will outline appropriate noise management and mitigation measures and include measures such as providing respite, installing temporary noise barriers and staging our work where possible so we are not working near the same residents for large durations of time. Further details on measures that can be used to reduce noise are provided on page 85.

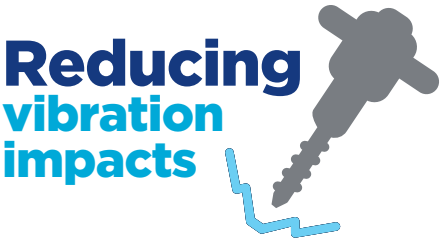
Vibration

We are sensitive to vibration and can feel vibration even at very low levels. This is why the vibration criteria we need to meet during our work to avoid annoyance to you is more stringent than the criteria to prevent damage to your property.

Our assessment considers the type of work we will be doing and whether there are any properties which may be at risk. It is more difficult to 'predict' vibration impacts than noise impacts. This is because there are many variables including soil type and conditions, the type of rock below the surface, building types and foundations, and the plant and equipment being used on site. Because of this, we take a conservative approach in estimating our impact.

We assessed the following types of vibration impact:

- disturbance to you in your property causing temporary discomfort
- potential damage to buildings (both cosmetic damage, like small cracks, and structural damage, like damage to foundations)
- potential damage to sensitive equipment in some buildings, such as sensitive electrical equipment or large internet servers.



Property damage

We understand there has been a lot of concern about the potential for vibration and settlement when we are tunnelling to cause damage to properties.

Our objective is to ensure your safety and that your property is protected while we are building our tunnels and carrying out surface work.

We will offer a pre-construction property condition survey to properties eligible in accordance with the planning approval conditions for the project. This will provide a clear record of your property's condition before our work starts. We strongly encourage you to take up this offer. If you have a pre-construction property condition survey completed, you will automatically be contacted when work that has the potential to impact your property is complete to confirm if you would like a post-construction property condition survey carried out. These surveys are at no cost to you and you will be provided a copy of the report.

We will establish an Independent Property Impact Assessment Panel (IPIAP) to verify property condition survey reports, resolve any property damage disputes and establish ongoing settlement monitoring requirements. Panel members will be highly qualified in the fields of structural, geotechnical and/or civil engineering and be independent of the government and project.

If any damage is found to be directly related to our project, the damage will be fixed at no cost to you.

If your property is potentially eligible for noise assessment, you do not need to contact us as we will be in touch with you directly before construction starts.

Working with you

We know there will be some noise and vibration impact when we are working in your area. If you live above the tunnel or adjacent to surface works you may also be able to hear and feel our work happening as our machinery passes below or near your home in some areas. We will be in contact with you about your individual concerns and needs throughout construction.

When we are open to traffic

We have identified and assessed all properties which may be affected by noise from the project when it is opened to traffic. The project is predicted to reduce traffic noise for almost 60 per cent of properties near our surface roads. Even though the project will improve noise levels for many properties, they might still remain above our thresholds due to existing road noise.

We acknowledge there will be some parts of the community who live near our surface road upgrades who may notice some more noise as a result of changes to traffic movements.

We will be offering at-property noise treatment to anyone's property that is predicted to remain over the noise limit (by more than 2 dB(A) as detailed in our guidelines) even if the noise is overall reduced by the project.

We always try to mitigate traffic noise at the source first, including installing low-noise pavement, where appropriate. If this does not reduce the noise to in line with the guidelines, we then look at other options for you. This may include measures like building noise walls or providing at-property noise treatments.

For more information, please refer to Chapter 10: Construction noise and vibration, Chapter 11: Operational noise and vibration in the EIS.

Noise wall at Burnt Bridge Creek Deviation

Contact us

nswroads.work/blportal

1800 931 189

whtbl@transport.nsw.gov.au

Customer feedback
Transport for NSW, Locked Bag 928
North Sydney NSW 2059

Visit our interactive web portal
Read the EIS, find out more or ask our team a question.

nswroads.work/blportal

Our phone line is monitored 24 hours when work is taking place.

Translating and Interpreting Service

If you need an interpreter, please call the Translating and Interpreting Service (TIS National) on **131 450** and ask them to telephone Transport for NSW on **1800 931 189**.

Chinese (simplified)
若您需要口译员，请拨打 **131 450** 致电翻译与口译服务处(TIS National)，并要求他们转拨 **1800 931 189**致电 Transport for NSW。

Italian
Se avete bisogno di un interprete, chiamate il servizio traduttori e interpreti (TIS National) al numero **131 450** e chiedete di telefonare a Transport for NSW al numero **1800 931 189.**

Portuguese
Se necessitar de um(a) Intérprete, por favor, ligue para o Serviço de Tradução e Interpretação (TIS National), através de **131 450** e peça o telefone do Transport for NSW, através de **1800 931 189**.

Privacy Transport for NSW is collecting your personal information in connection with Beaches Link and Gore Hill Freeway Connection ("the Project"). In addition to collecting your name and contact details we may collect other information such as your submissions and other communications with us. We will retain and use this information for consultation purposes, including communications and analysis in connection with the Project. We will not disclose your personal information to third parties unless authorised by law and if we include your submissions in any public report we will not identify you. Providing your personal information is voluntary but if you do not provide it we may not include you on our stakeholder database and you might miss further consultation opportunities. Your personal information will be held by us and you can contact us to access or correct it. Please write to us at either whtbl@transport.nsw.gov.au or Transport for NSW, Locked Bag 928, North Sydney NSW 2059.