



**Factsheet** | Construction noise and vibration

# Construction noise and vibration

Residents, business operators, educational and medical facilities and places of worship located close to Gold Coast Light Rail Stage 3 (GCLR3) may be affected by construction noise and vibration. This factsheet provides information about how noise and vibration is managed on GCLR3.

Noise and vibration impacts will vary depending on the location of your property and the type and duration of construction activity.

The construction team is mindful of the potential impacts of these works and does everything reasonably practicable to avoid, minimise, and mitigate impacts on stakeholders and the wider community during construction.

Noise and vibration on GCLR3 is managed through an approved Noise and Vibration Management Plan (NVMP) prepared by GoldlinQ's chosen contractor, John Holland.

The NVMP outlines how construction impacts will be managed and is prepared in accordance with the Transport Noise Management Code of Practice: Volume 2 – Construction Noise and Vibration (The Code).

The Code outlines the process to achieve compliance with the general environmental duty for an activity that causes, or is likely to cause environmental harm, in accordance with section 551 of the Environmental Protection Act 1994.



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## What is construction noise?

Construction noise refers to all noise generated by construction activities in a project zone. An increase in noise is normal and to be expected while using machinery and equipment to build GCLR3.

Noise can be experienced differently due to varying environmental factors and individual responses to noise. This means an acceptable level of noise for one person can be unacceptable to another.

The types and levels of noise will vary as construction activities change. At times, our construction may create highly disruptive levels of noise, particularly when carrying out activities such as saw cutting, non-destructive digging, excavating and concreting.

## What types of noise can I expect during construction?

There are five common types of noise generated during construction. They are:

- Continuous noise such as a generator operating
- Intermittent noise such as an excavator operating and vehicles manoeuvring
- Tonal noise such as a blade turning on a circular saw
- Impulsive noise which is typically a second in duration, such as piling or metal falling on metal
- Dominant low frequency noise such as a vibration roller.

## What is construction vibration?

Some construction activities can cause a shaking sensation, known as vibration. It can have varied impacts on people as everyone has different levels of sensitivity and tolerance.

Buildings are constructed to withstand a level of vibration. People at nearby properties may feel vibration during construction activities, however, the vibration levels generated are not expected to cause any damage to properties.

Some of these activities include piling, compacting ground and road base materials, and demolition activities.

## Managing construction noise and vibration impacts

Control of noise and vibration on GCLR3 relies on effective mitigation and management measures outlined in the NVMP. This plan commits to ensuring all reasonable and practical measures are taken to minimise noise and vibration impacts.

Where reasonable and practicable, measures will be implemented to prevent or minimise environmental harm (which includes environmental nuisance) from construction noise and vibration. These include:

- Completing noise and vibration assessments prior to construction to identify potential levels for specific construction activities and if they are likely to impact residents and businesses

- Providing property owners near the light rail alignment the opportunity to have the existing condition of their property assessed, via a Dilapidation Report (pre-condition survey). This documents the condition of a property either prior to construction commencing or at a subsequent point in time as a reference, should a property owner believe there are adverse effects from construction
- Carefully considering potential impacts during the construction planning process, selecting machinery and equipment most suited to the task, ensuring it is regularly maintained, and choosing the most appropriate construction methodology
- Providing advance notification to nearby residents and businesses prior to noisy or vibration-generating works. We have committed to undertaking early and ongoing engagement with the local community to understand concerns about potential noise and to discuss mitigation measures
- Providing periods of respite throughout construction
- Training and educating our workforce to be mindful of nearby residents and to behave and communicate appropriately as guests in the community
- Carrying out work during the day, unless night works are required (See the section below for more information about night works)
- Installing noise mitigation measures, where possible, such as:
  - Using high noise-generating equipment behind fencing with noise blankets
  - Placing machinery away from buildings
  - Using solar-powered lights and generators to reduce noise levels
  - Using non-tonal reversing alarms on machinery and equipment which produces a quieter sound compared to standard reversing alarms
  - Adopting construction practices which emit lower noise, such as using prefabricated materials to reduce noise-generating work on site.

## Noise and vibration monitoring

Monitoring is conducted during work activities to ensure noise and vibration levels are consistent with the modelling levels predicted. Additional mitigation measures are investigated and implemented, where possible, if levels are higher.

Monitoring is conducted using specialised and calibrated equipment operated by qualified professionals. Mobile phone applications that have a 'decibel reader' are not an accurate measuring device.

## Highly disruptive work activities during construction

Activity	Noise type	Description of activity and impact	Controls
<p><b>Non-destructive digging (NDD)</b></p> 	<p>Continuous noise with potential for tonal noise.</p>	<p>NDD is a construction technique used to safely excavate near live services. The construction technique uses a combination of high-pressure water and an industrial strength vacuum to loosen the ground and suck up material.</p> <p>NDD has the potential to be highly disruptive up to approximately 50 metres from the noise source. The primary noise source results from the vacuum exhaust which is typically located towards the top of a truck.</p>	<p>Engaging contractors with modern vehicles which emit less noise than older vehicles.</p>
<p><b>Saw cutting</b></p> 	<p>Continuous noise.</p>	<p>A saw cutter is a tool used to cut through hard materials such as concrete and asphalt.</p> <p>The source of noise is generated by vibration and friction between the blade and the hard surface.</p>	<p>Saw cutting activities are undertaken earlier in the evening when working at night, and noise blankets are placed around the work area.</p>
<p><b>Excavation</b></p> 	<p>Intermittent noise with potential for impulsive noise.</p>	<p>Excavation is a common construction activity. Most GCLR3 works require excavation works.</p> <p>Noise is generated from the excavation machine's engine, and impulsive noise tends to occur while the excavator bucket removes material and loads it into trucks.</p>	<p>Excavators operate with rubber wheels rather than steel tracks.</p> <p>Suitable sized excavators are selected to minimise overall impacts and deliver works efficiently.</p>
<p><b>Road reinstatement</b></p> 	<p>Intermittent noise with potential for dominant low frequency noise.</p> <p>Potential for vibration impacts.</p>	<p>Road reinstatement works involve placing crushed material on the ground and compacting to meet a certain strength.</p> <p>Handheld compactors are used to temporarily reinstate small work areas overnight prior to reopening the road to morning traffic.</p> <p>Drum rollers are used to compact larger road surfaces, so they meet the required design strengths for a major road.</p> <p>Compaction activities are expected to generate noticeable levels of vibration.</p>	<p>Vibration from compaction activities is limited by using an appropriately sized smooth drum roller.</p>
<p><b>Shoring box installation</b></p> 	<p>Intermittent noise with potential for dominant low frequency noise.</p> <p>Potential for vibration impacts.</p>	<p>Shoring boxes (trench boxes) are used on GCLR3 due to the sandy ground conditions. The likelihood of trenches collapsing without these is high.</p> <p>Noise and vibration are generated when shoring boxes are lifted and placed into the ground. These impacts are typically periodic and not a continuous noise source.</p>	<p>Rubber mats are placed between the excavator bucket and the shoring box to limit noise.</p>

## Construction hours

### Working at night

GCLR3 is being delivered in a highly constrained and built-up urban area and certain works need to be completed overnight.

When required, night works are carried out from Sunday night to Friday morning between 6.30pm and 6.30am.

Examples of when overnight works will be required are:

- To ensure the safety of construction workers
- To carry out activities which can only be completed safely at night to limit major traffic disruptions
- Working on critical infrastructure such as water and electricity, where works need to be undertaken while network usage is at its lowest, which and is a requirement of the utility provider
- Work which needs to occur continuously such as concrete pouring or continuation of specialised work and work crews
- Work that can only occur during certain weather conditions to ensure installation meets quality requirements
- Deliveries of oversized plant and equipment
- Time sensitive maintenance and repairs
- Emergency work required due to unforeseen circumstances.

### Standard construction hours

Standard construction hours (day works) are Monday to Friday 6.30am to 6.30pm.

Occasionally work will take place on Saturdays between 6.30am and 6.30pm.

No works will occur on public holidays unless impacted stakeholders are otherwise notified.

### More information

Contact the project team on 1800 312 600 or email [contact@gclr3.com.au](mailto:contact@gclr3.com.au) to arrange a meeting.

You can view the Code of Practice by visiting [tmr.qld.gov.au/business-industry/Technical-standards-publications](http://tmr.qld.gov.au/business-industry/Technical-standards-publications)

### About GCLR3

Gold Coast Light Rail Stage 3 (GCLR3) is a 6.7-kilometre extension of the light rail network from Broadbeach to Burleigh Heads and is funded by the Queensland and Australian governments in partnership with City of Gold Coast.



**For more  
information**



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