

20 Assessment of effects of daytime construction noise

- (a) The experts agreed that the following table provides an appropriate basis for assessing the effects of different construction noise levels, subject to the notes below the table. In reading the table, it needs to be recognised that the focus of this JWS has only been on levels approaching or exceeding 70 dB and there will be many situations where noise levels will be much less, with relatively limited effects on residences or businesses. The table should not be taken as an indication that all construction noise effects as a result of the NCI Project are at levels of concern or will be continuous.

External Noise Level	Potential Daytime Effects Outdoors	Corresponding Internal Noise Level	Potential Daytime Effects Indoors
Up to 65 dB L_{Aeq}	Conversation becomes strained, particularly over longer distances.	Up to 45 dB L_{Aeq}	Noise levels would be noticeable but unlikely to interfere with residential or office daily activities.
65 to 70 dB L_{Aeq}	People would not want to spend any length of time outside, except when unavoidable through workplace requirements.	45 to 50 dB L_{Aeq}	Concentration would start to be affected. TV and telephone conversations would begin to be affected.
70 to 75 dB L_{Aeq}	Businesses that involve substantial outdoor use (for example garden centres such as Bunnings) would experience considerable disruption.	50 to 55 dB L_{Aeq}	Phone conversations would become difficult. Personal conversations would need slightly raised voices. Office work can generally continue, but 55 dB is considered by the experts to be a tipping point for offices. For residential activity, TV and radio sound levels would need to be

Vibration level (mm/s PPV)	Potential effects indoors
0.14	The threshold of perception for stationary people.
0.3	<p>Can be perceptible during normal residential activities, particularly for more sensitive receivers. Levels above this would wake most people from their sleep.</p> <p>This is the AUP limit for construction vibration generated at night-time for sensitive receivers.</p>
1	Is generally tolerable, but complaint or adverse reaction is likely, particularly if there is no warning in office or residential environments. What people actually feel would be subject to the source, but could include a steady vibration from sources such as vibratory compaction, or a small jolt such as from the movement of a large digger, either of which could rattle crockery and glassware. Sleep disturbance would be almost certain for most people.
2	<p>Vibration would clearly be felt in all situations. Can be tolerated in indoor environments such as offices, houses and retail, where it occurs intermittently during the day and where there is effective prior engagement. Effects experienced would be somewhere between levels of 1 and 5 mm/s.</p> <p>This is the AUP limit for large construction projects generating vibration.</p>
5	Unlikely to be tolerable in a workplace. Highly unsettling for both the workplace and residential. If exposure was prolonged, some people could want to leave the building affected. Computer screens would shake and light items could fall off shelves. This is the threshold below which no cosmetic damage will occur in the DIN standard.
10	Likely to be intolerable for anything other than a very brief exposure.

22 Assessment, management and mitigation of daytime construction noise and vibration effects

- a) The experts agreed that mitigation could reduce noise levels by up to 10 dB. Mitigation options would need to be determined through the CNVMP required by Conditions CNV.1-4. There will be some locations where mitigation will not be practicable, and these are likely to include areas where there are retaining walls and piling, and other works that are elevated and unable to be screened (relative to the receiver).
- b) While reductions in levels of up to 10 dB in some locations may be possible, this is unlikely to be achievable in most locations, hence effective communication and engagement with affected parties will be critical.
- c) Vibration mitigation options are limited generally to the choice of equipment (e.g. smaller machinery) and construction methodology (e.g. drilling rather than driving piles). Often the trade-off is that works will take longer. Management options are set out in the Assessment of Construction Noise and Vibration Effects section 8.3.
- d) The experts agreed that there will be significant adverse effects from daytime construction noise and vibration, but these will affect individual receivers only for discrete parts of the overall construction period, as outlined above.
- e) Although there will be significant adverse effects at times, the experts agreed that there are methods that can be investigated to reduce effects on some receivers, and this will require careful management and consultation through the CNVMP process. The experts noted that at other times, the noise levels in many areas will be not significantly different from the existing ambient levels.

23 Durations and levels of construction night-time noise

- a) The noise experts have set out in **Annexure 5** their best assessments of the number of sensitive receivers that are likely to be exposed to night-time noise levels above NCI Project criteria (45 dB), based on currently available information for each bridge location. As in paragraph 9 (g) above, the duration of night-time noise at any individual bridge (except McClymonts Bridge demolition) could be up to 15 nights spread over three five night periods over the total periods of construction set out in **Annexure 5**. In the case of McClymonts Bridge, Mr Hale advised that this could take two to three months intermittently.