

Appendix 7.5 Demolition Noise and Vibration Mitigation Measures

1. Demolition Noise and Vibration Mitigation Measures

1.1. Demolition Noise

The MCC noise and vibration criteria should be implemented by the appointed Contractor in determining the method of demolition, type of equipment and plant to be used and noise mitigation measures. Before commencement or during works, the Contractor will be required to demonstrate compliance with agreed noise and vibration standards.

The use of any plant or equipment required for any emergency which causes a breach of the above conditions shall be notified to MCC as soon as practicable, and the Contractor should advise if previously agreed noise and vibration levels will be exceeded in terms of both levels and duration.

Community liaison is key to increasing community tolerance to noise and vibration. The local community should be kept informed of what is going to happen, when and for how long. The local residents' attitude to Demolition noise can be influenced by the knowledge that the contractor is taking all possible measures to avoid unnecessary noise.

Therefore, it is good practice to promote good communication, liaison and provision of a helpline to respond to queries and complaints.

Noise levels from individual items of plant can vary considerably depending on their power system, how they are configured in relation to receptors and the operational time and percentage of use. Therefore, careful selection of plant, orientation, distance and screening between source and receptor, in addition to the plant's daily percentage of operational time, is essential when noise control is necessary.

Therefore, if noisy plant items need to be used, they should be operated in isolation or for a shorter daily period of time to reduce the estimated adverse noise impact upon nearby NSRs.

Fixed demolition plant items may have to be electrically powered or if not suitable, should be installed within an acoustic enclosure.

Additional examples of mitigation measures that should be implemented to control demolition noise are found in Section 8 of BS 5228-1:2009+A1:2014 and include:

- Pneumatic percussive tools must be fitted with shrouding or silencers
- Machines in intermittent use should be shut down or throttled down to a minimum when not in use
- Equipment that breaks concrete by munching rather than by percussion should be favoured
- Care should be taken when loading or unloading vehicles or dismantling scaffolding or moving materials to reduce adverse impact
- Use rubber linings in chutes and dumpers to reduce impact noise
- Minimise drop height of materials
- Ensure that audible warning systems (including reversing alarms) are not tonal or to a minimum audible volume and set traffic routes that avoid reversing on site

- Avoid unnecessary revving of engines and switch off equipment when not required
- Keep internal haul routes well maintained and avoid steep gradients
- Startup plant and vehicles sequentially rather than all together
- Selecting quieter plant and equipment
- Turning equipment off when they are not in use
- Providing enclosures around fixed plant, like power generators or using mains power
- Ensuring that all plant and equipment is well maintained
- Keep internal haul routes well-maintained and avoid steep gradients
- Use rubber linings in chutes and dumpers to reduce impact noise
- Minimise drop heights of materials
- Start plant up sequentially rather than simultaneously
- Move fixed plant away from identified noise sensitive receptors
- Modify existing plant with noise attenuation packages such as acoustic enclosures and attenuators
- For impact driven piling, a non-metallic dolly between the hammer and the driving helmet should be used
- Introducing an acoustic shroud for impact driven piles
- Choose a quieter piling method such as auger piling rig
- Avoiding unnecessary revving of engines
- Avoid using diesel power generators and use local electricity grid wherever possible. However, in any case generators and other stationary noisy plant unit, should be encased in a proprietary acoustic rated enclosure as detailed in the BS5228 guidance.

1.2. Demolition Vibration

Before and the commencement of Demolition works, the existing conditions of the nearby buildings should be recorded, such as cracks and their widths, loose or broken tiles, pipes, gullies and plaster. An equivalent post-completion inspection should also be carried out to help establish alleged or actual damage caused by the Demolition works.

The Contractor shall select and utilise methods of working and items of plant to minimise ground borne vibration so that the maximum measure ground vibrations do not exceed the BS 7385 and BS 5228 guidelines.

Additional examples of mitigation measures that can be used to control Demolition vibration are found in Section 8 of BS 5228-2-2009+A1:2014 include:

- Substitute plant and/or methods with less obtrusive plant and/or methods
- Where reasonably practical, move vibrating equipment away from identified NSRs
- Vibration isolation of stationary plant
- Employ cut-off trenches which are analogous to noise barriers.