



# Site Noise Risk Assessment

**Site Address:** Waterlow Building, Whittington Hospital, Magdala Avenue, N19 5NF

**Contractor:** Erith Contractors Ltd

**Date:** 03/06/2019

**Completed by:** Scott Lardner

**Signature:** \_\_\_\_\_

One of the key measures in ensuring that adequate noise and vibration mitigation is provided is careful planning before the start of the works to ensure that appropriate mitigation is factored into the programme and cost model.

The London Good Practice Guide on Noise & Vibration Control for Demolition and Construction clearly sets out a method for risk assessment. Islington's risk assessment method has been based upon this and provides an initial identification of the overall noise and vibration risk associated with the site and the proposed works. This enables early identification for developers and contractors of generic and specific noise or vibration mitigation measures likely to be required, procedures which may need to be developed and any external consents which may be required.

This risk assessment tool requires the developer and/or contractor to assess the site location in part A and the works information in part B as below in Tables 1 and 2 and the total in Table 3.

Locality / Site information		Low	Medium	High
	<b>Programme Duration</b>			
	<6 months	X		
	6 months to 12 months			
	> 12 months			
	<b>Proximity of nearest sensitive receptors</b>			
	>50m from the site boundary			
	Between 25m and 50m			
	<25m			X
	<b>Day-time Ambient Noise Level</b>			
	High ambient noise level			
	Medium ambient noise level		X	
	Low ambient noise level			
	<b>Working hours</b>			
	Normal working hours only^	X		
	Some extended evening or weekend working			
	Some night-time working			
	<b>SUBTOTAL     A</b>	<u>2</u>	<u>1</u>	<u>1</u>
	Add up the number of ticks in each column			

Table 1: Site location

Works information		Low	Medium	High
	<b>Location of works</b>			
	Majority within existing complete building envelope			
	Majority of works external			X
	<b>External demolition</b>			
	Limited to 2 weeks <sup>1</sup>			
	External demolition between 2 weeks and 3 months <sup>1</sup>		X	
	External demolition greater than 3 months <sup>1</sup>			
	<b>Ground works</b>			
	Limited to non-percussive methods (i.e. hand tools / small excavator / small backhoe)			
	Percussive methods <sup>2</sup> less than 3 months <sup>1</sup>		X	
	Percussive methods greater than 3 months <sup>1</sup>			
	<b>Piling</b>			
	Limited to 1 week <sup>1,3</sup>			
	Bored piling only. No impact or vibratory piling			
	Impact or vibratory piling			
	<b>Vibration generating activities</b>			
	Limited to less than 1 week			
	Between 1 week and 1 month		X	
	Greater than 1 month			
	<b>Street management</b>			
	Required for less than 1 week / or not at all	X		
	Required for less than 1 month			
	Required for greater than 1 month			

<sup>1</sup> Total across entire programme.

<sup>2</sup> For example, breaking out using hydraulic or pneumatic breakers

<sup>3</sup> Hydraulic jacking (or press-in piling) is considered to be acceptable for longer periods

	<b>SUBTOTAL B</b>	<u>1</u>	<u>2</u>	<u>0</u>
	Add up the number of ticks in each column			

Table 2: Works information

	Low	Medium	High
<b>Risk Assessment A – Locality / Site Information</b> Carry over SUBTOTAL A	2	1	1
<b>Risk Assessment B - Works information</b>  For the highest number of ticks in SUBTOTAL B add one tick to the equivalent risk column	1	2	0
<b>TOTAL</b>	2	3	1

Table 3: Risk assessment total

The identified total risk category for the site is then the higher of A and B.

Once the risk allocation is known, the Good Practice Measures tables in Section 6 of the Code of Practice for Construction Sites (and reproduced below) are used to identify specific measures expected for the site. There are minimum considerations that are presented at the top of the tables that are applicable for all risk sites.

Developers and/or contractors are advised to carry out this risk assessment prior to any works commencing on site.

## Mitigation measures

General Considerations			
General considerations are measures which apply to all sites, to be considered when planning the site, prior to commencement of works or those which are not identified by the other categories.			
Mitigation for all Risk Sites			
Designated site-based staff shall have the authority to take the steps necessary on behalf of the contractor(s) to ensure noise and vibration is adequately controlled and managed, according to the circumstances associated with each worksite.			
At the commencement of their appointment on a project (or prior to start of works on site), all site staff are to be briefed on their responsibilities to the application of BPM to minimise construction noise and vibration and the content of any planning consents, codes of construction or other legal agreements. The performance of the training should then be regularly reviewed and repeated throughout the construction programme as appropriate.			
Site hoarding to be built and maintained to maximise the reduction in noise levels to sensitive buildings and land uses.			
Display contact details of contractor and responsible site manager as well as working hours and other site information on the hoarding.			
Locate the site access away from noise sensitive receptors.			
Keep internal haul routes well maintained and avoid steep gradients.			
Limit material and plant loading and unloading to normal working hours.			
Reduce loading / unloading heights for muck away and material movement to mitigate impact noise.			
Handle all material in a manner that minimises noise.			
Join the Considerate Constructors Scheme for the site (see Appendix 6 for further information).			
Consult the respective Borough's Code of Construction Practice / Technical Guidance.			
Mitigation Measures to be Considered	Low Risk	Medium Risk	High Risk
Submit a Section 61 consent application to the local authority (see Appendix 2) <sup>4</sup> .	◇	○	●
Adhere to 'quiet hours' as agreed and/or adopted by the local authority.	○	○	●

<sup>4</sup> For low risk sites (refer to 'risk assessment approach' on page 6 for a definition) a formal Section 61 consent application would not typically be necessary, but the contractor can submit details to the local authority (see Appendix 1 for details).

Maximise the screening effect of buildings and temporary stockpiles through programming / phasing of works.	◊	○	●
Use rubber linings in chutes, dumpers and hoppers to reduce impact noise.	○	●	●
Minimise opening and closing of site access gates through good coordination of deliveries and vehicle movements.	○	●	●
See Vehicle Activity for additional good practice with regards to the transportation of material.	○	●	●

● **Highly Recommended**
                    
 ○ **Desirable**
                    
 ◊ **Not applicable**

Table 4: General considerations

Plant			
<p>Construction plant and equipment, in one form or another, will be used on a construction site throughout the duration of a project. They are a source of noise and vibration and can disturb local residents and users of other receptors and form the basis of a large proportion of complaints received by a local authority.</p> <p>It is important that the appropriate plant and equipment for the task is selected and the correct procedures are followed to ensure the plant is used at its most effective and efficient.</p>			
Mitigation for All Risk Sites			
Ensure that each item of plant and equipment complies with the noise limits quoted in the relevant European Commission Directive 2000/14/EC, United Kingdom Statutory Instrument (SI) 2001/1701.			
Fit all plant and equipment with appropriate mufflers or silencers of the type recommended by the manufacturer.			
Follow manufacturer's guidance and measures to operate plant and equipment and use it in a manner which minimises noise.			
Use all plant and equipment only for tasks for which it has been designed for.			
Shut down all plant and equipment in intermittent use in the intervening periods between works or throttle it down to a minimum.			
Mitigation Measures to be Considered	Low Risk	Medium Risk	High Risk
If possible power all plant and equipment by mains electricity or other quieter technology rather than locally powered sources such as generators.	○	●	●
Maximise screening from existing features / structures, or employ the use of full or partial enclosures for fixed plant. The enclosures should be well maintained. Fixed plant can include generators, compressors, pumps, batching plant and ventilation plant.	○	●	●
Locate and orientate fixed or semi-static plant away from noise sensitive receptors.	○	●	●
Consider additional measures to control noise for any plant required to operate on a 24 hour basis; for example, dewatering pumps or generators used to power site security.	○	●	●
Vibratory compaction equipment shall be used in a mode which minimises the incident vibration at nearby residential and other sensitive properties. Consideration should be given to engaging concentric weights only when running at speed to avoid run up, run down resonances, the use of smaller equipment, or turning off the mechanical vibration on vibratory rollers and undertaking more	○	●	●

passes for areas where there is a particular risk that disruption may occur at neighbouring properties.			
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● **Highly Recommended**
                    
 ○ **Desirable**
                    
 ◇ **Not applicable**

Table 5: Plant



Vehicle Activity			
<p>Material deliveries and removals are major noise sources that can have an impact on receptors both close to and at a distance away from a construction site.</p> <p>Measures to minimise this impact should be considered as early as possible in the planning stage of a project, so site layout and logistical plans can be developed accordingly. Measures are especially necessary for sites close to schools or where a number of construction sites are operating within close proximity to each other.</p>			
Mitigation for all Risk Sites			
Ensure all vehicle movements occur within normal hours or at agreed times, taking into account the primary function of sensitive receptors in the vicinity (i.e. avoiding school drop-off/pick-up periods).			
Maximise the reuse of any waste arising on site to minimise vehicle movements.			
Plan deliveries and vehicle movements so that vehicles are not waiting or queuing on the public highway. If waiting or queuing is unavoidable then engines should be turned off.			
Minimise opening and closing of site access through good coordination of deliveries and vehicle movements.			
Mitigation Measures to be Considered	Low Risk	Medium Risk	High Risk
Plan site layout to ensure that reversing is kept to a practicable minimum, and where practicable eliminated altogether.	○	○	●
Where reversing is required, use broadband reverse sirens / alarms or, where it is safe to do so, disengage all sirens and alarms and use banks-men.	○	○	●
Produce a robust Construction Traffic Management Plan which may also be required by the Local Planning Authority to plan, manage and minimise vehicle movements. Avoid unnecessary impact on sensitive receptors, traffic diversions via other sensitive areas or bottlenecks (see TfL guidance <sup>5</sup> ).	○	●	●
Consider potential accumulation of traffic from other local construction sites and plan delivery routes and times to avoid congestion.	○	●	●
Rubber/ Neoprene (or similar non- metal lining material) matting to line the inside of material transportation vehicles so as to avoid the 'first drop' high noise levels.	◇	○	●
Where site space is limited and volume of vehicles attending site is high, seek vehicle holding bay(s) to use with 'Just in time' delivery management systems <sup>6</sup> .	◇	○	●

<sup>5</sup> Construction Logistics Plan Guidance for Developer

<http://www.tfl.gov.uk/cdn/static/cms/documents/construction-logistics-plan-guidance-for-developers.pdf>

<sup>6</sup> Consult with EPPP team for possible locations.

Space planning for stockpiling of material (over weekends and, evening and nights) within the site to allow removal during normal working hours only.	◊	○	●
Consider alternative means of transport, e.g. river and rail.	◊	○	●

Table 6: Vehicle activity

Demolition <sup>7</sup> Phase			
<p>Demolition has the potential to cause the most disruption to a neighbouring receptor. Modern non-percussive demolition techniques need to be considered wherever practicable to limit its noise and vibration impact. Where these methods are not possible, due to site or other constraints<sup>8</sup>, then measures to minimise the amount and intensity of percussive breaking on site should be given priority.</p> <p>Percussive demolition methods have been used for years to dismantle buildings and break up the resulting concrete and brickwork. These methods can be particularly intrusive and can have a major impact on the local environment with only limited noise mitigation measures available.</p>			
Mitigation for all Risk Sites			
Employ the use of acoustic screening; this can include planning the demolition sequence to utilise screening afforded by buildings to be demolished.			
Mitigation Measures to be Considered	Low Risk	Medium Risk	High Risk
If working out of hours on safety grounds, limit high noise/vibration demolition activities to normal hours wherever practicable.	○	○	●
Avoid demolition activities outside of normal working hours through the use of temporary measures, such as safety / protection fences, to enable works to be conducted during normal working hours.	○	○	●
Utilise low impact demolition methods such as non – percussive plant wherever practicable <sup>9</sup> .	◇	●	●
Use rotary drills and “busters” activated by hydraulic or electrical power, or chemically based expansion compounds, to facilitate fragmentation and excavation of hard material.	◇	○	●
Avoid the transfer of noise and vibration from demolition activities to adjoining occupied buildings through cutting any vibration transmission path or by structural separation of buildings.	◇	○	●
Rather than breaking in-situ, consider the removal of larger sections by lifting them out and breaking them down either in an area away from sensitive receptors or off-site.	◇	○	●
<p>● Highly Recommended      ○ Desirable      ◇ Not applicable</p>			

Table 7: Demolition phase

<sup>7</sup> Including removal of temporary structures

<sup>8</sup> Including cost

<sup>9</sup> Lower noise impact demolition or mitigation measures may include pulverisers (munchers), saws and rotary drills and “busters” activated by hydraulic or electrical power and hydraulic cracking or splitting.

Ground Works and Piling Phase			
<p>There are many non-percussive methods available on the market for breaking-out and piling that make percussive methods obsolete in many cases and these should take priority when works are in the planning stage.</p> <p>Percussive piling methods can create both intrusive noise and vibration at local receptors and can continue for a long period of time, depending on the size of the new development. Where percussive methods are used measures within the Good Practice Table will help mitigate noise and vibration impacts.</p>			
Mitigation for all risk sites			
Avoid percussive piling wherever possible.			
Mitigation Measures to be considered	Low Risk	Medium Risk	High Risk
If working outside of normal hours on safety grounds, limit major excavation works to normal working hours.	○	○	●
<p>Adopt the following hierarchy of groundwork / piling methods, in order of preference to minimise the impact of piling, if ground conditions, design and safety allows:</p> <ul style="list-style-type: none"> <li>• Pressed-in methods, e.g. Hydraulic jacking</li> <li>• Auger / bored piling</li> <li>• Diaphragm Walling</li> <li>• Vibratory piling or vibro-replacement</li> <li>• Driven piling or dynamic consolidation</li> </ul>	○	●	●
Consider the location and layout of the piling plant for efficient operation and potential noise control of generators and any electric or hydraulic motors used by plant.	○	●	●
Where impact piling is the only option, utilise a non-metallic dolly between the hammer and driving helmet, or enclose the hammer and helmet within an acoustic shroud.	○	●	●
Consider concrete pour sizes and pump locations. Plan the start of concrete pours as early as possible within normal working hours to avoid overruns.	○	●	●
Where obstructions are encountered stop works and review approach; adopt work methods that minimise noise and vibration.	○	●	●
When using an auger (for bored piling), rather than dislodging material from the auger by rotating the drill back and forth quickly, use alternate methods where safe to do so. For example, some piling rigs are equipped with metal brush to remove spoil as the auger is taken out of ground.	○	○	○

Prepare pile caps using methods / procedures which minimise the use of breakers, e.g. using hydraulic splitters to crack the top of the pile.	○	●	●
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● **Highly Recommended**
                         
 ○ **Desirable**
                         
 ◇ **Not applicable**

Table 8: Ground works and piling phase

Construction Phase			
<p>During the construction phase many of the problems can be minimised or even removed by careful planning and organisation of the site.</p> <p>As the height of the building structure increases receptors further away from the site can potentially become more exposed to noise due to removal of shielding effects of neighbouring buildings.</p> <p>Each site and building method will offer its own opportunities to reduce its impact on local receptors.</p>			
Mitigation for all Risk Sites			
When working within a building ensure all openings (e.g. windows and doors) are closed or sealed up.			
Plan the site layout to maximise screening from existing features / structures.			
Mitigation Measures to be Considered	Low Risk	Medium Risk	High Risk
Use prefabricated building structures or elements to minimise noise on site.	◊	○	●
Where on-site fabrication is unavoidable, all high noise level works should be carried out within normal hours.	◊	○	●
Consider concrete pour sizes and plan the start of concrete pours as early as possible within normal working hours to avoid overruns. Confirm site cut off time for latest possible pour start.	○	●	●
Where practicable consider using an on- site, noise attenuated, concrete batching plant to minimise overruns and disturbance from queuing delivery wagons from off-site and remote facilities.	◊	○	●
Obtain and agree a protocol with concrete suppliers and sub-contractor with measures to ensure that as far as practicable overruns on concrete pours do not occur.	○	●	●
Use plasma cutting for steel cutting operations.	○	●	●

Table 9: Construction phase

Monitoring			
<p>Monitoring may include either physical measurement or observational on-site monitoring. Noise and vibration monitoring is the most obvious way of demonstrating to a local authority that you are complying with the noise and vibration levels presented within any agreements (see Appendix 2 for Section 61 example) and works are being carried out in accordance with the British Standard BS5228.</p> <p>Any monitoring regime should be agreed with the local authority prior to being implemented to avoid unnecessary costs. Any personnel undertaking noise and vibration monitoring shall be able to demonstrate their competency for the task. Any monitoring undertaken should be readily available for the local authority to review upon request.</p>			
Mitigation for all Risk Sites			
Establish pre-existing levels of ambient noise.			
Carry out attended noise monitoring at the start of any new phase of works, to check source sound emission data from plant on-site and following any complaints.			
<p>Carry out regular on site observation monitoring and checks/ audits to ensure that BPM is being employed at all times. Such checks should include:</p> <ul style="list-style-type: none"> <li>• Hours of working</li> <li>• Presence of mitigation measures, equipment (engine doors closed, airlines not leaking, etc.) and screening (location and condition of local screening, etc.)</li> <li>• Number and type of plant</li> <li>• Construction method, and</li> <li>• Where applicable, any specific Section 61 consent conditions.</li> </ul> <p>The site reviews should be logged and any remedial actions recorded.</p>			
Mitigation Measures to be Considered	Low Risk	Medium Risk	High Risk
Monitor noise continuously during demolition, piling, excavation and sub- and superstructure works at agreed locations and report to the local authority at agreed intervals.	◊	○	●
Monitor vibration continuously during demolition, piling, excavation and sub-structure works at agreed locations and report to the local authority at agreed intervals.	◊	○	●
Appraise and review working methods, procedures and logistics on a regular basis to ensure continuous development of BPM.	◊	○	●
Establish level trigger alerts in agreement with the local authority and guided by BS5228. Monitor noise and vibration to trigger text alerts; where levels exceed the triggers then inform the local authority, review work practices and agree additional mitigation measures with the local authority.	◊	○	●

Use monitoring equipment with web access capabilities to view and inspect real time measurement and/or audio data.	◊	○	●
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Table 10: Monitoring



Communication and Liaison			
<p>It is important that good relations are built with people living and working within the vicinity of the worksite.</p> <p>The developer or contractor should communicate with neighbours on all planned works, especially for periods outside of normal working hours, where agreed. Methods of communication, as a minimum would involve letter drops prior to and during works. Other forms of communication could include newsletters, meetings which residents or community groups can attend, notice boards, websites or social media, depending on the size of the project.</p> <p>All correspondence to be sent to residents or other neighbouring receptors should be forwarded to the local authority prior to its distribution, ideally for comment. The local authority can also provide guidance on the area to be included within the letter drops.</p>			
Mitigation for all Risk Sites			
Develop a Community Liaison Plan. Develop a Complaint Procedure (see Appendix 6) with timescales for responses and a nominated liaison person to engage with residents and to handle complaints. These should be agreed with the local authority.			
Display contact details for the site manager and liaison officer prominently on the site hoarding.			
Brief all site staff regarding the complaints procedure and mitigation requirements and their responsibilities to register and escalate complaints received.			
Mitigation Measures to be Considered	Low Risk	Medium Risk	High Risk
Send regular updates at appropriate intervals to all identified affected neighbours via newsletter and posting information on the site hoarding. Also make information available via email when requested.	◊	○	●
Develop and maintain a website to provide information about the project and to receive feedback.	◊	○	●
Arrange regular community liaison meetings at appropriate intervals including prior to commencement of project. Respond to issues raised and report back to attendees.	◊	○	●
Arrange meetings and communicate on a regular basis with neighbouring construction sites to ensure activities are coordinated to minimise any potential cumulative issues.	◊	○	●
Advise neighbours about reasons for and duration of any permitted works outside of normal working hours.	○	●	●
Arrange meetings and communicate on a regular basis with the local authority to monitor the progress of the works	◊	○	●

and to consider any concerns or complaints raised by the local community.			
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● **Highly Recommended**
     
 ○ **Desirable**
     
 ◇ **Not applicable**

Table 11: Communication and liaison