

Construction Site Noise Code

Advice to developers and contractors on Pollution Control requirements for noise and vibration control at large construction sites.



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Noise and Vibration Control on Large Construction Sites

Purpose of Code

- 1.1 The purpose of this code of practice is to ensure that disturbance due to noise and vibration arising from major construction and civil engineering works is kept to an acceptable level without the imposition of unnecessary or unduly onerous restrictions on contractors. Its primary objective is to minimise nuisance and it should be noted that health and safety issues and structural damage which may be caused by vibration are beyond the scope of this document. Whilst the basic principles apply to all such works particular reference is made to works during unsocial hours where there is greatest need for special consideration to be given to the potential problem of noise and vibration.
- 1.2 It is also intended to provide guidance to contractors without reference to the formal consent procedure detailed in Section 61 of the Control of Pollution Act 1974. It is not intended to supersede any other published guidance, and neither is it applicable to small-scale demolition or construction works. Further advice may be obtained from Pollution Control Section (see contact details in Appendix 1).

2 Background

- 2.1 Noise and vibration from demolition and construction sites can be controlled by a local authority under section 60 of the Control of Pollution Act 1974. This legislation enables the local authority to restrict days and hours of work as well as the manner in which works are carried out and the type of plant used. Alternatively, the contractor can use Section 61 and ask the local authority to agree to pre-set noise levels, working methods, etc.
- 2.2 Due to the nature and extent of the works likely to be involved in large civil engineering projects, these powers may not be wholly appropriate or practicable for the control of noise and vibration on a day to day basis.
- 2.3 The numbers of residential and other noise sensitive properties likely to be affected will need to be assessed well in advance of the start of the works and in most instances noise monitoring will be required during the course of works.
- 2.4 Much of the heavy plant and machinery and methods of work used in large civil engineering projects are intrinsically very noisy and inevitably give rise to vibration. It is therefore recognised that there are practical constraints to reducing such noise and vibration. Consequently the restriction of working hours is often the most practicable option for reducing the impact on local residents and local businesses. In most circumstances, however, this must be balanced against other considerations such as public safety, the disruption of services and transport, and the need to complete the works with minimum delay.

- 2.5 In a minority of cases, in particular where the premises likely to be affected by the works are predominantly commercial, there may be a presumption in favour of works being carried out during hours outside the normal working day in order to minimise the impact of noise and vibration. However, in most instances work at those times will only be permitted where it can be fully justified on other grounds.

3 General Requirements for Noise and Vibration Control

- 3.1 Compliance with BS 5228 'Code of practice for noise and vibration control on construction and open sites' is expected as a minimum standard. In all instances where alternative working methods exist the minimisation of noise and vibration shall be a prime consideration in the choice of technique and equipment used.
- 3.2 The contractor will be held responsible for ensuring that all plant and equipment, including any which may be on hire, is well maintained, properly silenced and used in accordance with the manufacturer's instructions, as required by the above British Standard.
- 3.3 In all cases both contractors and clients are advised to familiarise themselves with the terms and conditions of this Code of Practice and to liaise closely with the Council's Pollution Control Section at the earliest opportunity.

4 Measures to Minimise Noise Disturbance

- 4.1 The need for the following measures should be considered prior to commencement of works:
- Scheduling certain works to more acceptable times of day.
 - Use of the most environmentally acceptable plant and equipment which is properly maintained and silenced.
 - Use of the least intrusive method of work.
 - Proper instruction and supervision of staff.
 - 'Rest periods' during which operations are temporarily ceased.
 - Acoustic screening.
 - The provision of day shelters, particularly during periods of inclement weather, for persons likely to be affected by the works for prolonged periods.
 - In more extreme circumstances, the offer of temporary rehousing to residents likely to be exposed to unacceptable disturbance for prolonged periods. Note that this may necessitate the provision of security for premises which are left empty.

5 Normal Working Hours

- 5.1 As a general rule, where residential occupiers are likely to be affected by noise or vibration, it is expected that works of demolition and construction shall be carried out during normal working hours:-
- 08.00 to 18.00 hours Monday to Friday; and
 - 08.00 to 13.00 hours on Saturdays; and
 - no working on Sundays or Bank Holidays.
- 5.2 In areas which are predominantly commercial or industrial and it is likely that the works will adversely affect business operations, these hours may not be appropriate and there may be advantages for works to be carried out outside normal working hours. Often in mixed use areas there will be a need to compromise between the needs of business and residential occupiers.

6 Noise Monitoring

- 6.1 Regular, daily noise monitoring is required on all sites subject to this Code of Practice. This shall be carried out according to the protocol in Section 7 below and results notified to the Council in accordance with Section 10 below.
- 6.2 The monitoring required by this Department is necessary in order to highlight any potential noise nuisance arising from buildings works. In order to minimise and effectively respond to situations that may cause nuisance, real time measurements are necessary to permit immediate remedial actions to be taken.
- 6.3 Permitted noise levels are:-
- On-Site Trigger Level of 70 dB L_{Aeq} , 5 minutes or other such level as may be agreed with the local authority
 - Off-Site Trigger Level of 75 dB L_{Aeq} , 1-hour or other such level that may be agreed in writing by the local authority
 - In addition, Maximum Noise Levels may be imposed. These will be site- and activity-specific and may impose further restrictions on working hours. They will be set after consultation with contractors and consideration of all relevant factors. For example, Maximum Levels will be relevant where there is impulsive noise from pile driving.
- 6.4 In some circumstances, vibration monitoring may be required, although a subjective assessment of vibration will suffice in most instances.

7 Noise Monitoring Protocol

- 7.1 Noise monitoring shall be undertaken with a hand held or tripod mounted integrating sound level meter to determine noise levels at specified locations at known times during the working day. The monitoring equipment shall comply with at least BS 7580-2: 1997 Type 2 specification, as required by BS 5228-1:2009 “Code of practice for noise and vibration control on construction and open sites” Part 1:Noise. Annex G
- 7.2 All noise monitoring equipment shall be calibrated before and after use to check for calibration drift. It shall be in good working order at all times. All equipment shall be subject to annual calibration by the manufacturer and a certificate of calibration shall be available with the equipment for the purpose of inspection.
- 7.3 A suitable number of noise monitoring locations shall be established at the site boundary and agreed with the local authority. The microphone shall be situated in a free-field location, approximately 1.2 to 1.5 metres above local site level. Measurements shall be made in accordance with good acoustical practice, care being taken to avoid the effects of local acoustic screening and acoustic reflections. The calibration level and battery level of the sound level meter shall be recorded at the beginning and end of each monitoring session.
- 7.4 Adequate background noise levels shall be obtained at all monitoring locations prior to the commencement of construction works.
- 7.5 Noise monitoring shall be undertaken not less than twice per day, once in the morning and once in the afternoon, at each specified monitoring location. Data shall be gathered for five minute periods during normal site operation. Monitoring shall be carried out to assess the activity with the highest potential noise impact.
- 7.6 Data shall be recorded in terms of 5-minute ‘A’ weighted L_{eq} . Where a result is obtained which exceeds either the On-Site Trigger Level, a note shall be made and additional monitoring shall be carried out in accordance with the procedure in Section 8.
- 7.7 All operators of noise monitoring equipment shall be trained and competent to undertake the measurements.
- 7.8 Prevailing weather conditions (including wind direction and speed, air temperature, incidence of precipitation and degree of cloud cover) shall be recorded with each set of monitoring results. Wind speed and direction shall be recorded daily using a portable anemometer and compass.

8 Exceedence of On Site Trigger Level - Additional Noise Monitoring

- 8.1 Where the 5-minute On-Site Trigger level is exceeded by the results obtained at one or more monitoring stations, additional noise monitoring shall be undertaken to establish whether or not noise levels at nearby sensitive receptors are likely to exceed the Off-Site Trigger Level of 75 dB L_{Aeq} , 1-hour or other such level that may be agreed in writing by the local authority.
- 8.2 This additional monitoring may entail the gathering of data at off site locations which are nearer to the potentially affected sensitive receptors. Alternatively, distance corrections in accordance with standard acoustic practice may be applied if the distribution of noise sources is such that representative predictions may be made.
- 8.3 Where the results of additional monitoring indicate that the Off-Site Trigger is being exceeded at one or more noise sensitive properties, the site operator shall be notified and advice shall be provided to reduce noise levels so far as is practicable. The remedial actions taken in these circumstances must be noted and reported.

9 Reporting Requirements for Noise Monitoring

- 9.1 All results need to be recorded on daily log sheets. Logged information must include times of day, duration of measurement and details of site activities at the time of monitoring. Log sheets must be signed by the operative and supervisor. Full details of any remedial actions must also be recorded. Where measurements are not taken, this must be recorded and reasons must be given.
- 9.2 All results must be faxed to the Pollution Control section at the end of each day. (See Appendix 1 for necessary contact details). The proforma Daily Log Sheet attached as Appendix 2 would be suitable for use by contractors.

10 Publicity

- 10.1 The opportunity shall be given for public comment on the proposed works by way of invitation or public meeting.
- 10.2 The contractor shall ensure that occupiers of residential and business properties which are likely to be affected by the works are informed at least ten working days in advance of the nature and expected duration of the work and the proposed hours of work. Where appropriate, the reasons for working outside the hours given in 5.1 above shall be given. Any subsequent deviation from the proposed works as notified shall be agreed with the Environmental Protection Team in advance and brought to the attention of those affected by the noise.
- 10.3 Information on the nature and expected duration of the works shall also be given in the form of a noticeboard displayed in a prominent position near to the site. This information shall include named contacts within the organisation who are able to provide further information and deal with complaints as appropriate during all working hours. The contractor shall liaise with the Environmental Protection Team in all instances of complaints regarding noise.

11 Work outside of normal working hours

- 11.1 The presumption is that work will not be permitted outside of normal working hours. Where a contractor considers it is necessary for work to be carried out outside normal working hours, they will be required to demonstrate and justify the need to do so in advance. Full details of the proposed works shall be submitted to the Pollution Control Section in writing for approval at least ten working days prior to commencement. These details shall include:
- Location of proposed works, including a location plan.
 - Proportion of residential/business premises likely to be affected.
 - Proposed hours and date/s of work.
 - Reasons why the works must be carried out outside normal working hours, including documentary evidence (for example, instruction from police or highway authority).
 - Method of work to be used.
 - Machinery and plant to be used.
 - Noise levels and operational on-times for individual machinery and plant.
 - Calculated overall noise levels for site activity (if necessary, showing variation with time).
- 11.2 The above information (Section 6.1) must also be supplied if you are applying for Section 61 consent, or if your planning consent requires you to submit a method statement to the Council. It is a good idea to have this quality of information even if you just wish to discuss a project with Pollution Control officers.

11.3 Where residential occupiers are likely to suffer disturbance from works outside normal working hours the following additional information will need to be provided at least ten working days prior to commencement:

- Details of properties likely to be affected.
- Details of existing ambient noise levels in dBA using the indices L_{max} , L_{10} , L_{90} and L_{eq} (fast response). These indices should be measured over 15 minute measurement periods in most cases. Days and times of measurements should be agreed with the Environmental Protection Team beforehand.
- Details of publicity for works given in advance to occupiers likely to be affected.
- Proposed noise and vibration attenuation measures and/or other measures taken to reduce the impact on local residents.

11.4 Where work outside of normal working hours is approved, contractors should anticipate that:

- In most instances, it will be necessary for both maximum noise levels and trigger noise levels to be set. Monitoring will need to take place at the nearest residential properties as the works proceed in order to determine the need for additional mitigation measures to reduce noise impact on occupiers.
- Noise monitoring may be more intensive.
- Noise levels (both maximum and trigger levels) will be tightened when compared to normal working hours.
- Noise mitigation measures will need to be increased.
- Work patterns and scheduling will be carefully examined to ensure Pollution Control officers are satisfied that no noise reductions can be achieved by changes.
- Increased or special publicity may be required.

12 Failure to Comply with Code of Practice

12.1 In the event of a contractor failing to comply with this Code of Practice or any agreement reached thereunder, consideration will be given to the service of a formal Notice under Section 60 of the Control of Pollution Act 1974 in order to restrict days and hours of work, plant and machinery used, work methods etc., as appropriate.

Appendix I – NOTES

i) **Noise at Work Regulations 1989**

These Regulations control the exposure of persons to noise whilst at work and are enforced in the case of construction and demolition sites by the Health and Safety Executive (Tel. 020 7717 6000)

ii) **Other Publications**

There are a number of publications giving useful advice on the control of noise and vibration in the construction industry, notably:

- British Standard Code of Practice BS 5228: 2009 Noise and Vibration Control on Construction and Open Sites.
- Construction Industry Research and Information Association (CIRIA) Technical Note - Planning to Reduce Noise Exposure in Construction, 1990.
- Construction Industry Research and Information Association (CIRIA) Technical Note - Environmental Good Practice on Site, 1999 (C502)

iii) **Contacting us**

All communications and requests for further advice should be addressed to

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Appendix 2 – Suggested layout for Daily Log Sheet

GREENWICH COUNCIL ENVIRONMENTAL HEALTH POLLUTION CONTROL NOISE MONITORING RECORD						
DATE :						
WEATHER CONDITIONS :						
EQUIPMENT USED :						
CALIBRATION / BATTERY CHECKS :						
Location	Start Time	End Time	dB L _{Aeq}	Site activity and comments	Trigger Level Exceeded?	Remedial Action Taken
Monitoring checked by :						

Record checked by :

DATE :

WEATHER CONDITIONS :

EQUIPMENT USED :

CALIBRATION / BATTERY CHECKS :

Location	Start Time	End Time	dB L _{Aeq}	Site activity and comments	Trigger Level Exceeded?	Remedial Action Taken

Monitoring checked by :

Record checked by :