

Worcestershire Regulatory Services(WRS)

Code of Best Practice for Demolition and Construction Sites

2nd Edition

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Introduction

The guidance given in this document is intended to provide contractors with a set of tools that allow them to plan assess and manage the disruption associated with demolition and construction work. The guide also provides for a method of working responsibly outside of what would be considered standard working hours to facilitate complex and challenging projects with minimal impact. Some additional information on vibration and noise control have been introduced since the 1st edition published in 2011.

Concepts

With good planning, communication and dynamic working practices most impacts associated with civil engineering projects can be controlled to a level that are acceptable to the regulator and comply with what is considered to be Best Practicable Means (BPM) which is the standard of diligence expected when considering compliance with the legal principals of controlling noise, vibration, light and dust on sites as defined by *The Control of Pollution Act 1974 and Environmental Protection Act 1990*.¹

Best Practicable Means(BPM)

The practicable elements of BPM requires consideration of the following factors :

- Location
- Neighbouring property proximity and sensitivity
- Engineering requirements
- Duration
- Safety
- Limitations (Cost, Technology)

Early Planning During the Design Phase

During the design phase it is recommended that the constructability of any proposals considers, among other things, the practicality of employing measures that can be incorporated to minimise noise and vibration levels. In many cases, simple measures can be highly effective if properly planned. For example, the provision of electrical power on site can be used to avoid the later use of generators. Demolishing structures in a manner

¹ This code of practice does not provide exemption to any persons or organisation from the requirement of statute if enacted by WRS on behalf of its Local Authority partners.

which means that any structure providing screening to neighbouring properties remains in place as long as practicable, thus minimising the noise level at that neighbouring property.

Liaison

Pre Construction

Prior to work commencing, site management and principle contractor's should liaise with WRS, in order to discuss their methods of working and measures planned to minimise disruption throughout the construction works.

In addition to this further meetings may be held to discuss environmentally sensitive works which may occur due to the demand for night time working or use of certain type of construction techniques.

The Contractor should appoint a responsible person to liaise with WRS, local residents, businesses and other authorities in order to keep them informed of matters likely to affect them.

Good relations can be developed by keeping neighbours informed of progress and by responding to complaints quickly and fairly.

Prior to site work commencing, neighbours must be informed of:

- The start date;
- the duration and nature of the project;
- the principal stages of the project;
- Details of contact names and numbers of appropriate site personnel.

The names and contact details of appropriate site personnel should be forwarded to WRS using the Site Information Sheet (Doc1) at the earliest opportunity.

A list of useful contact names and telephone numbers is included at the rear of this document.

During Construction/Demolition Work

There shall be at least fortnightly communication with site neighbours, for example by newsletter, in order to keep them informed about current progress and forthcoming works. The newsletter should also contain the information suggested in section 5.4 above, together with details of the Pollution Team contact. Feedback

should be requested from affected neighbours throughout the project and at the end, in order to allow modification of activities to reduce future project impacts.

A display board should be erected outside the site, which as a minimum shall identify key personnel, contact addresses and telephone numbers. Additional information could include details of the scheme and its progress.

WRS must also be informed in advance when any unusual activities including out-of-hours working are planned. The Site Hours Variation Request Sheet (Doc 2) must be completed and faxed to WRS at least 5 days before the activity is to take place.

WRS must be supplied with a current 24-hour call out number that will be answered in the case of a complaint or an emergency.

Document Management

The Contractor should keep all appropriate documentation relevant to the requirements of this Code in a designated file held on site. They must be available at all times for inspection and review by WRS or other authorities and should include as a minimum a site information sheet, noise, vibration and dust monitoring log, waste management documentation, a complaints/incidents log with actions taken, liaison minutes, letters, photos and newsletters.

Working Hours

As a general rule of thumb if no-one is disturbed by works then there is no absolute bar to 24-hour working. However, such circumstances are rare and usually apply to second fix work. Activities that are likely to affect residents will be subjected to working hour's restrictions.

Permitted hours for site work will normally be the following:

- 08:00 - 18:00 hours (Monday to Friday);
- 08:00 - 13:00 hours (Saturday) (certain noise sensitive residential areas identified)
- no working is permitted on Sundays or Bank Holidays.

These 'standardised' working hours may be varied according to local circumstances, for example where a site is in close proximity to sensitive commercial outlets, places of worship or residential properties.

Any works outside the permitted hours can only be undertaken with the approval of

WRS using the Site Hours Variation Request Sheet (see page 13 to 15), and will only be granted in exceptional circumstances. Approval will be conditional on the contractor informing local residents in advance of the proposed work.

Air Quality & Dust

Dust and air quality management plans must be produced (potentially as part of the Environmental Management Plans) and submitted to WRS. This plan must contain a detailed methodology laying out details of, and controls over all relevant dust creating activities. The plan must consider the entire lifetime of the project and sequence of works, and consider many details such as the water supply for the site, plans to deal with debris, specific areas to be encapsulated, scaffolding, and waste management. Burning of materials on site is not permitted under any circumstances. As previously mentioned in the guide it is advisable that a water supply is secured to the site prior to any work taking place so that there is a means of controlling dust that avoids resorting to bowsers being sourced off site resulting in compromised dust control plans.

Noise & Vibration

This Code of Practice is a notice of the WRS general requirements under Section 60 of the Control of Pollution Act 1974. The Contractor may also be informed of additional requirements during consultations with WRS.

In addition to working hours and community liaison, all works must be carried out in accordance with BS 5228-1:2009 and BS 5228-2:2009 and where applicable CIRIA Environmental good practice on site and Network Rail Best Practicable Means: Control of Noise and Vibration from Construction Operations.

All works must employ Best Practicable Means as defined by Section 72 of the Control of Pollution Act 1972 to minimise the effects of noise and vibration. WRS must be satisfied that all means of managing and reducing noise and vibration, which can be practicably applied at reasonable cost, have been implemented.

A written evaluation of methodologies used must be made available to WRS and include justifications with regards to the minimisation of noise and vibration.

WRS considers the off-site preparation of as many materials as possible an essential requirement for Best Practicable Means, in particular for the cutting of decking and steelwork.

Where appropriate, the following measures to minimise noise and vibration levels should be adopted:

Employing only modern, quiet and well-maintained equipment. (all equipment must comply with the EC Directives and UK Regulations set out in BS 5228- 1:2009)

- Using low impact techniques, such as demolition munchers and bored or hydraulically-jacked piling rigs;
- careful planning of the sequence of work in order to minimise the transfer of noise/vibration to neighbours;
- using fully silenced modern piling rigs with engines to Euro Standard IV and
- careful operation of the rig so there is no reversing of the Kelly/auger bars;
- using electrically powered equipment run from the mains supply, or when this is not available, generators compliant with Euro Standard IV;
- use of screws and drills rather than nails for fixing hoardings etc;
- careful handling of materials & waste such as lowering rather than dropping items;
- taking steps to isolate the deconstruction works from sensitive neighbours, in order to minimise the transfer of vibration and structure borne noise;
- erection of acoustic screens where necessary;
- avoidance of unnecessary noise (such as engines idling between operations, shouting, loud radios or excessive revving of engines) by effective site management.

The distance between noise/vibration sources and sensitive neighbours should be maximised and the transmission path obstructed, with options considered in the order of source-pathway-receptor. Where practical this can be achieved by:

- Siting of stationary plant and loading/unloading areas;
- erecting impervious hoardings, of at least 5 kg/m² surface density, where possible higher than the line of sight to neighbours;
- leaving building façades and boundary walls intact as long as possible during demolition and boarding/bricking up windows;
- the use of existing non-sensitive structures as shields; and, the use of temporary structures;
- cutting of transmission pathways for vibration.
- In addition to the above, a neighbour liaison scheme must be implemented as an essential element of the Best Practicable Means to minimise the effects of noise and vibration, as outlined in Section 1 (Pre construction).

Monitoring Regimes

General

WRS encourages contractors to undertake regular intelligence led monitoring of noise and vibration levels by looking at the work programme and identifying the elements of the project that are likely to cause significant noise/vibration. Receptor points are to be agreed with WRS prior to initiation of monitoring. Results should be compared against suitable baseline data as a useful means of:

- Controlling noise and vibration, and identifying problems at an early stage (it is particularly valuable to carry out monitoring during the early stages of a project);
- providing an objective basis for evaluating complaints;
- safeguarding Contractors against claims of damage.

Prior to commencing work, it is essential to undertake monitoring of ambient noise levels around the site at sensitive receptors. This will provide baseline data for comparison with levels present during the works. A baseline vibration exercise will be unnecessary unless neighbours are clearly affected by any existing source of substantial vibration e.g. piling work, rail track maintenance etc.

Noise Limits

The suitability of specific noise limits is highly dependent upon the individual situation. The factors to be considered include:

- The characteristics of the noise and its potential effect on the neighbours;
- baseline ambient noise levels; and,
- the nature and duration of the works.

In addition, following complaints specific noise levels may be set to prevent speech interference in offices and loss of trade. Level limits of 75 dBA for a working day over a 10-hour period are recommended as a general rule in urban areas next to busy roads and in semi rural areas a level of 70dBA. WRS expects noise controls employed to meet or reduce the average noise from the site to this level. In built up environment this is not always attainable, in which case best practicable means must be applied to reduce noise and vibration as much as possible. As a guide, typical daytime levels for noisy temporary works at neighbouring premises usually lie in the range of 70 – 80 dBA.²

Noise levels within neighbouring offices or residences during noisy periods must enable workers to carry out conversations, both face-to-face and on the telephone, and allow normal business to be conducted. It is considered that a noise level of 65 dBA is likely to cause annoyance and interference (dependent on the type of noise). Such noise should be restricted to hours outside the normal working day of 09.00 – 17.00 hours.

² Please note dBA is an absolute level LAeq is a statistical average of the sound pressure in dB over a set time interval such as 5 minutes(usually denoted by T e.g. T_{5min}.)

In residential areas, timing of works with noise levels exceeding 65dBA should be discussed and agreed with WRS prior to commencing.

Noise measurements should ideally be taken with a Class I Integrating Logging Sound Level Meter calibrated (before and after) with a Class I Acoustic Calibrator. L_{Aeq} , L_{Cpeak} and L_{AFmax} , F noise levels should be recorded together with a record of all events potentially affecting the noise level at the time of monitoring.

Vibration Limits

When carrying out works which may produce vibration, all potential receptors should be considered, with particular attention to be paid to the following:

- Occupiers and users of buildings;
- Printworks
- Hospitals or laboratories;
- IT installations or IT equipment manufacture
- Cosmetic or structural damage to buildings or heritage sites.

People's response to perceptible vibration is accentuated by their fear of building damage. Suitable guidance upon the levels of vibration, which may cause building damage, can be found in BS 7385-2:1993.

Guidance relating to the potential effect upon the operation of computers and other relatively sensitive equipment can be found in Section 8.6 of BS 5228-2:2009. Complaints of vibration are usually concerned with fear of the unknown and the potential affects of relatively low levels of vibration in buildings. This problem is best addressed by:

- Liaison with all parties potentially affected, with explanations given of precisely when they are likely to be affected by specific activities;
- monitoring affected parties to re-assure occupants as to the relative levels of vibration compared with building effect (BS 7385-2:1993).

Vibration meters should preferably record 3 orthogonal Peak Particle Velocity values (15 minutes of 10 second or shorter samples). Where complaints are received, the Contractor/client should consider the need for monitoring at neighbouring premises.

Building occupants can be disturbed by vibration at levels appreciably less than that which would result in building damage. Therefore, in the absence of any other restrictions, to minimise disruption to building occupants, the following upper vibration guidance levels, as

measured at the worst-affected floor of the relevant property, are recommended to provide an initial indication of the risk of disturbance:

- 1 mm/s Peak Particle Velocity (PPV) for occupied residential and educational buildings
- 3 mm/s PPV for occupied commercial premises where the activities are not of an especially vibration sensitive nature or for potentially vulnerable unoccupied buildings
- 5 mm/s PPV for other unoccupied buildings

Where construction activities are identified which are predicted to result in levels in excess of these values, then the local authority shall be informed. There may be a requirement to: review and amend the proposed working methods; undertake vibration monitoring throughout the vibration generating works; complete a condition survey of the building affected before and after the works.; and if necessary review the likely impact of the works by considering alternative vibration indicators including the Vibration Dose Value (as advocated by BS 5228 Pt 2 2009 + A1:2014).

Complaints & Section 60 and 61 Notices under COPA 1974

The Control of Pollution Act 1974 Part III restricts and limits noise and vibration from a construction site. If complaints are received by WRS Community Protection, where it is considered necessary, will serve a Section 60 notice on the Contractor for the control of noise and vibration at the site. This notice can:

- Specify the plant or machinery that is or is not to be used;
- specify the hours during which work can be carried out; and/or,
- specify the levels of noise and vibration that can be emitted from the site.

The Contractor can apply in advance for a consent in the form of a Section 61 notice regarding the methods and conditions by which they are intending to undertake the works and control nuisance.

WRS actively discourages the use of Section 61 consents but it does support a system of prior agreement on similar lines, as this allows a much more flexible approach of greater benefit to the Contractor where site impact may be more nuanced due to time constraint and challenging work environments or construction methods.

Should the contractor consider it necessary to apply for Section 61 consent It is recommended that a draft application is made to the local authority in the first instance **at least one month** before the intended formal submission date to facilitate these

discussions. If the Local authority is satisfied that there is sufficient information submitted within the Section 61 application it will give prior consent for the works usually with:

- attached conditions
- limiting or qualifying the consent to allow for any change in circumstances
- limiting the duration of a consent

Section 60 notices will be served where they are considered necessary. Contraventions of either Section 60 or 61 may well result in legal proceedings, leading to further costs and delays for the Contractor.

Vehicle Movements and Deliveries

All deliveries of materials and plant to the site and removal of waste should, where possible, be carried out within normal site working hours. Any early morning or evening deliveries must have approval from the Pollution Team. This should be requested using the copy of the Site Hours Variation Request Sheet (page 13).

The site layout should be designed to minimise potential effects on neighbours. A competent banksman should be employed to provide assistance to vehicles accessing and leaving the site, thereby ensuring minimal traffic disturbance and pedestrian safety.

Vehicle movements should be planned to ensure that Lorries do not arrive or depart outside standard hours. No daytime or night-time parking of lorries will be permitted outside agreed areas.

Where appropriate, deliveries should be arranged on a just-in-time basis in order to prevent vehicles queuing outside site.

The generation of dust whilst loading or unloading materials must be controlled by the use of chutes, bagging, sheeting and damping down. Where vehicles are leaving unpaved sites, adequate wheel washing arrangements should be employed to prevent contamination of the highway. Loads containing waste material leaving site should be sheeted before travelling on the highway.

Light Pollution

Light pollution is now a statutory nuisance and is defined as any form of artificial light which shines outside the area it is required to illuminate. Unnecessary use of lights is considered a waste of energy. Any use of lighting should have regard to

these facts and should be designed to prevent any nuisance to residents or road traffic and be used primarily for reasons of health and safety or security.

Site lighting will be located and aligned so as not to intrude into residential properties, on sensitive areas, or constitute a road or rail hazard.



SITE INFORMATION SHEET (Doc 1)

This form must be completed and forwarded to WRS within 5 days following the start of activities on site

Date	
Contractor	
Contractor Contact	
Client Name, Address and Contact Number	
Site Name & Address	
Direct Number	
Fax Number/Email	
24 Hour Contact Number	
Additional/Useful Contact Names and Numbers	
Proposed Working Hours	
Company Contact(s) for Operation(S)	
Brief Details of work to be carried out	

Approximate Duration of Work	
Plant and/or tools to be used and likely to be noisy	
Works predicted to be noisy/or cause vibration and their location	
Mitigation Measures to minimise noise and vibration levels	
Works generating dusty and control measures	
Residents and businesses likely to be affected	
Method of notifying residents and businesses	
Site Plan to be attached	



Site Hours variation Request Form (Doc 2)
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This form must be completed and forwarded to WRS community Protection Team at least 5 days before activities take place. The site hours variation can only be worked if approval is given and this form is countersigned by the Relevant approved officer of Worcestershire Regulatory Services.

Date	
Contractor	
Contractor Contact	
Client Name, Address and Contact Number	
Site Name & Address	
Direct Number	
Fax Number/Email	
Date of operation(s)	
Reason for the operation	
Pant and/or tools used	

Predicted noise levels at sensitive location	Location	High	Medium	Low

Mitigation measures to minimise high and medium levels of noise	
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Criteria for predicted noise levels	
High	Operations that involve frequent mechanical impact, large numbers of plant and/or are continuous for 30 to 60 min in every hour.
Medium	Operations that involve manual impact noises, movement of plant (e.g. excavation, movement of materials etc) and/or are continuous for 10 to 25 minutes in every 1 hour.
Low	Little or no perceptible noise above background levels at receptor, manual activities, limited plant and/or are continuous for up to 10 minutes in every 1 hour

Residents and Businesses likely to be affected. e.g. address and site maps	
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Notification method proposed. (copies of written communications to be included).	
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For WRS use only

Variation No. :

Variation Granted : Yes/No (delete as appropriate)

If Yes , any additional comments/specific conditions :

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If NO, please provide brief details/reasons :

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Name	
Signature	
Date	