

# Noise Design Advice



**Noise can be a major factor to consider in any new development.**

**This design advice is to help those involved in development in Leeds achieve an acceptable noise environment for people living and working in the area.**

**The following advice indicates the noise levels that may be considered acceptable for various scenarios.**

**Look at which of the following scenarios best describes your development and follow the advice given.**

**For further advice contact Leeds City Council Environmental Health on:  
(0113) 2146297.**

## 1 New Industrial or Commercial Use near to Residential Use

- 1.1 *This advice aims to protect the present and future occupiers of residential properties from your new industrial or commercial noise.*

Developers should carry out an assessment in accordance with BS4142 to determine the rating level of the new development. It is recommended that during normal daytime hours (0700 to 2300 hours), the BS4142 rating level, measured over 1 hour, should be 5dB below the background ( $L_{A90}$ ). During the night-time period (2300 to 0700 hours), the BS4142 rating level, measured over 5 minutes should be 5dB below the background ( $L_{A90}$ ).

The assessment should be carried out at the site boundary or at the nearest noise sensitive premises depending on the circumstances. These noise levels are intended to ensure that existing noise sensitive premises and land which may be used for noise sensitive development in future does not become blighted by noise.

To aid regeneration, in certain circumstances a higher rating level **may** be accepted provided the need is justified.

In addition, the levels specified in Appendix 1 should not be exceeded. These should be calculated assuming windows in noise sensitive premises are open for ventilation (see Appendix 1)

- 1.2 Justification for advice

PPG24 states that local planning authorities must ensure that development does not cause an unacceptable degree of disturbance, while at the same time not placing unreasonable restrictions on development and to allow for the creation of jobs and the construction and improvement of essential infrastructure. It accepts that development of this nature will generate noise. PPG24 also refers to the use of BS4142:1997 (where appropriate) to consider noise from industrial and commercial developments. This standard assesses the likelihood of complaints in relation to noise. PPG24 also states that acceptable internal noise levels are given in BS 8233. Levels in BS 8233 are used in this guidance.

## 2 New Residential Properties near to Transportation Noise Sources (such as busy roads) or in Areas of Mixed industrial and Transportation Sources

- 2.1 *This advice aims to protect the future occupiers of your residential development from transportation noise or mixed transportation and industrial noise.*

Developers should carry out an assessment in accordance with PPG24 to determine the Noise Exposure Category (NEC) of the proposed residential development site. Noise Exposure Categories are used to determine whether noise is a factor in granting permission for the development. They range from Category A where noise is unlikely to be a determining factor to Category D where the development should normally be refused on noise grounds.

Once the NEC of the site has been determined the advice contained in PPG24 for that category of NEC **should** be followed. However the following minimum standards **may** be accepted:-

- Where the site falls into **Category B** the design/orientation of the site or sound insulation of the new dwelling must be sufficient to produce noise levels that don't exceed the levels specified in Appendix 1. Levels can be calculated with windows closed but if trickle vents are provided then levels will be calculated with the vents open. It may be necessary, depending on the external noise levels, to install glazing with a higher sound attenuation than the basic package, and to acoustically treat the trickle ventilation in order to achieve these levels.
- Where the site falls on the **boundary of Category B and C, in Category C or Category D** the design/orientation of the site and/or the sound insulation of the new dwelling must be sufficient to produce internal noise levels that don't exceed the levels specified in Appendix 1. It may be necessary, depending on the external noise levels and building design/orientation, to install glazing with a higher sound attenuation than the basic package, and to acoustically treat the trickle ventilation in order to achieve these levels. All indoor levels shall be taken with windows open **or** with alternatively provided acoustic ventilation over and above "background" ventilation.

## 2.2 Justification for advice

PPG24 should be used to try and separate noise sensitive developments from major sources of noise. It is good practice to try and keep a suitable distance between noise sensitive development and sources of transportation noise. PPG24 also states that acceptable internal noise levels are given in BS 8233. Levels in BS 8233 are used in this guidance.

## 3.0 **New Residential Development near to existing Industrial or Commercial Use where industrial noise is the dominant source.**

### 3.1 *This advice aims to protect the occupiers of your new noise sensitive premises from noise from existing industrial or commercial premises.*

Developers should carry out an assessment in accordance with BS4142 to determine the rating level at the new development. **This rating level can be determined including proposed attenuation measures.** It is recommended that during normal daytime hours, 0700 to 2300 hours, the BS4142 rating level, measured over 1 hour, should be 5dB below the background level ( $L_{A90}$ ). During the night-time period, 2300 to 0700 hours, the BS4142 rating level, measured over 5 minutes, should be 5dB below the background level ( $L_{A90}$ ).

However, it is recognised that a flexible approach may be required in certain circumstances where the need is justified. The following minimum standards may be accepted notwithstanding the rating level:-

- NR 25 in bedrooms (2300 to 0700)
- NR 30 in all habitable rooms (0700 to 2300)
- If there is a distinguishable tone the NR curves should be reduced to NR 20 and NR 25 respectively

- Noise Rating curves should be measured as a 15 minute linear  $L_{eq}$  at the octave band centre frequencies 31.5 Hz to 8 kHz.
- For outdoor areas a BS4142 rating of up to +5 dB higher than the background level ( $L_{A90}$ ) may be accepted.
- In addition the levels specified in Appendix 1 should not be exceeded.
- All indoor levels shall be taken with windows open **or** with alternatively provided acoustic ventilation over and above “background” ventilation.

### 3.2 Justification for advice

PPG24 recommends that wherever practicable noise sensitive developments should be separated from major sources of noise. PPG24 also refers to the use of BS4142: 1997 (where appropriate) to consider noise from industrial and commercial developments. This standard assesses the likelihood of complaints in relation to noise.

Noise Rating (NR) curves is another way of setting acceptable levels in noise sensitive premises where industrial/commercial noise may be an issue. From experience of statutory nuisance investigation work, the setting of broad band A weighted noise level limits on their own are not appropriate for industrial noise.

## 4. New Entertainment Premises near to existing Residential.

### 4.1 *This advice aims to protect existing residents from noise from your new entertainment premises, such as public houses, nightclubs and restaurants.*

Developers should assess the likely impact of the new entertainment premises on the noise environment. The premises must be designed to ensure that music and associated noise is controlled so as to be inaudible inside any residential premises in the vicinity.

Inaudibility shall be defined as

- 4.1.1 No increase in the difference between  $L_{Aeq, 1 \text{ min}}$  and  $L_{A90}$  when the music is on and off.
- 4.1.2 No increase in the difference between  $L_{10, 1 \text{ min}}$  and  $L_{90}$  when the music is on and off in each  $1/3^{\text{rd}}$  octave band between and including 40Hz and 160Hz.
- 4.1.3 All levels shall be taken assuming windows open at the residential property (see Appendix 1).
- 4.1.4 Other noise sources from these developments, such as air conditioning plant and kitchen odour extraction systems shall be treated as industrial development and scenario 1 is applicable.

### 4.2 Justification for advice.

PPG 24 recognises that new entertainment premises such as public houses and nightclubs may pose particular difficulties in respect of potential noise disturbance; however it offers no specific guidance. The most relevant guidance available is the Good Practice Guide on the Control of Noise from Pubs and Clubs (2003) which recommends that noise from such premises shall be inaudible inside noise sensitive premises.

## 5 New Noise Sensitive Premises near to Places of Entertainment

- 5.1 *This advice aims to protect your new residents from noise from existing places of entertainment or where your new development includes residential and entertainment facilities.*

Developers should assess the likely impact of the entertainment premises on the noise environment. The residential premises must be designed to ensure that music and associated noise is inaudible inside any residential premises in the vicinity.

Inaudibility shall be defined as:-

- 5.1.1 No increase in the difference between  $L_{Aeq, 1 \text{ min}}$  and  $L_{A90}$  when the music is on and off.
  - 5.1.2 No increase in the difference between  $L_{10, 1 \text{ min}}$  and  $L_{90}$  when the music is on and off in each 1/3<sup>rd</sup> octave band between and including 40Hz and 160Hz.
  - 5.1.3 All indoor levels shall be taken with windows open or with alternatively provided acoustic ventilation over and above "background" ventilation.
  - 5.1.4 Other noise sources from places of entertainment, such as air conditioning plant and kitchen odour extraction systems shall be treated as industrial development and scenario 1 or 3 is applicable.
- 5.2 Justification for advice.

PPG 24 recognises that developments such as public houses and nightclubs may pose particular difficulties in respect of potential noise disturbance; however it offers no specific guidance. The most relevant guidance available is the Good Practice Guide on the Control of Noise from Pubs and Clubs (2003) which recommends that noise from such premises shall be inaudible inside noise sensitive premises.

## Appendix 1

Room/Area	Any L <sub>Aeq</sub> (1 hr)	Any L <sub>Aeq</sub> (1 hr)	L <sub>Amax</sub> 2300-0700
	0700-2300	2300-0700	
Living Rooms/Studies	35dB	xxxxx	xxxxx
Gardens	55dB	xxxxx	xxxxx
Bedrooms	xxxxx	30dB	45dB

### Table of Noise Levels that should not be exceeded

#### Notes

The above values are taken

1. Where windows are to remain closed to ensure good internal noise levels and an alternative means of ventilation is provided, ventilation that complies with the performance specification given in Part 6 of Schedule 1 of the Noise Insulation Regulations 1975 will be accepted. Alternatively four air changes per hour will be accepted.
2. We will accept that an open window will provide a sound reduction of 15dB(A) unless the developer has a good reason why a higher reduction is acceptable.
3. When calculating/predicting attenuation of noise levels we will except single figure Sound Reduction Indexes provided they are suitable for that particular source, for example Pilkington's R<sub>tra</sub> for Road traffic. However if the Sound Reduction Index is not specifically for the sound source under consideration then a frequency analysis of the noise, and attenuation in that octave band and recalculation of a single "A" weighted level will be required.
4. It will be acceptable to use the shortened method for calculating the daytime NEC.
5. It will be acceptable to use 1 hours monitoring at night to determine NEC provided the method can be justified (for example if the busiest predicted hour is measured).

#### References:

PPG 24: September 1994, Planning Policy Guidance: Planning and Noise.

BS 4142: 1997, Method for rating industrial noise affecting mixed residential and industrial areas.

Good Practice Guide on the Control of Noise from Pubs and Clubs: March 2003. Institute of Acoustics.

BS 8233:1999 Sound Insulation and noise reduction for buildings- Code of Practice

The Noise Insulation Regulations 1975 (S.I.1975 No.1763)

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