

## Supplementary Planning Document (SPD)

# Development Control for Noise Generating and Noise Sensitive Development



Adopted September 2018

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# Part 1: Policy



## 1.0 Introduction

This Supplementary Planning Document (SPD) has been produced by the London Borough of Richmond Upon Thames in conjunction with LB Hounslow and LB Hillingdon in order to address noise issues affecting the Borough and assist in providing a consistent approach to development where noise is an issue.

This SPD supplements the Borough's Local Plan by providing interpretation of national planning and noise policy in a local context along with advice on the technical requirements that the Borough regards as relevant to meeting those requirements.

The SPD is divided into two main parts:

- **Part 1** deals with the policy context, aims and objectives.
- **Part 2** deals with the technical aspects of acoustic design and contains details on requirements relating to design criteria for noise sensitive and noise generating development.

*The main purpose is to assist developers, decision makers, agents, residents and others to identify issues to be addressed in any application for development in which noise and/or vibration will be an important consideration when assessing that application.*

## 1.1 Purpose of the SPD

Noise can have a significant effect on the environment, and on the health and quality of life enjoyed by individuals and communities. Consequently, noise needs to be considered when new developments may create noise and when new developments would be sensitive to the existing noise conditions.

Noise can interfere with residential and community amenity and the utility of noise sensitive land uses. Furthermore, noise exposure can lead to adverse effects including sleep disturbance and annoyance, which impact on health and quality of life. Across the Borough, noise arises from a variety of existing sources, in particular Heathrow Airport and aircraft arriving and leaving the airport, major roads and railways. There are also numerous industrial and commercial sources of noise.

This SPD will form part of the Local Plan for the Borough. A formal consultation process has been undertaken before the SPD has been officially adopted. This SPD details the main requirements of the Borough as the "Local Planning Authority" (LPA) with regard to planning and noise. The main purpose is to assist developers, decision makers, agents, residents and others to identify issues to be addressed in any application for development in which noise and/or vibration will be an important consideration when assessing that application.

It is important that acoustic design is considered at an early stage of the development control process. This SPD contains guidance intended to help protect occupiers of new or existing noise sensitive buildings from existing or introduced noise sources respectively and to seek to protect and improve the residential amenity of the Borough overall. It is government policy that noise should not be considered in isolation or separately from the economic, social and other environmental dimensions of proposed development. However there may be circumstances where noise considerations could override other planning concerns and advice is provided in this SPD on when this situation is likely to arise.

## 2.0 Regulatory Framework

### 2.1 National Policy

The Government's planning policies for England are contained in the [National Planning Policy Framework 2012](#) (NPPF). This sets out the key requirements for the planning system and provides a framework by which local policy should be made to reflect local needs and priorities.

NPPF policies are supplemented by additional advice contained in [National Planning Practice Guidance](#) (NPPG). Revised and updated advice on how planning can help to manage potential noise impacts was first published on 6 March 2014; the most recent advice can be found at <https://www.gov.uk/guidance/noise--2>.

The NPPF does not contain specific policies for nationally significant infrastructure projects for which particular considerations apply. These considerations are set out in the Planning Act 2008 and relevant national policy statements. These [National Policy Statements](#) (NPSs) form part of the overall framework of national planning policy, and are a material consideration in decisions on relevant planning applications.

The long term vision and aims of the Government's policy on noise is contained in the [Noise Policy Statement for England](#) (NPSE).

### 2.2 Regional Policy

At the regional level, both the London Plan and the Mayor's Ambient Noise Strategy promote the efficient management of noise in London and the application of good acoustic design principles. Policy 7.15 of the London Plan, "Reducing Noise and Enhancing Soundscapes", seeks to minimize the impacts of noise and to separate noise sensitive development from major sources of noise. Policy 7.15 includes promoting good acoustic design of buildings whenever opportunities arise.

It is intended that the application of this SPD will help achieve the objectives of the Mayor's Ambient Noise Strategy (and any successor). The Mayor has also published a number of factsheets on sound conscious urban design that illustrate a range of ways in which buildings and public spaces can be designed to improve city soundscapes.

### 2.3 Local Policy

Strategic local policy priorities include the provision of homes, jobs, suitable transport infrastructure, and the reduction of pollution and the conservation and enhancement of the natural and historic environment. All of these strategic priorities require the effective management of noise within the context of sustainable development.

Where appropriate and in the context of the Government's policies on sustainable development, the Borough is committed to securing high quality design and to preventing, avoiding, mitigating and minimising the adverse effects of noise and vibration on residents, residential amenity and noise sensitive land use. Relevant policies will be applied both to development that generates noise and to development that is sensitive to noise. The Borough will also seek to improve and enhance the acoustic environment when suitable opportunities arise and will aim, in the longer term, to develop local policies to promote appropriate soundscapes, including identifying and protecting special quiet areas and relatively tranquil places. Further information on the Borough's Local Plan and planning policies can be found via the following web site: London Borough of Richmond upon Thames - <http://www.richmond.gov.uk/planning>

## 3.0 Development Control: General Approach

### 3.1 Principles and Requirements

The following broad principles for the consideration of noise (and vibration) will be applied in the planning process:

Principles & Requirements
<ul style="list-style-type: none"> <li>■ Encourage good acoustic design</li> </ul>
<ul style="list-style-type: none"> <li>■ Improve living and working conditions where the acoustic environment already has a significant adverse effect on people’s quality of life; and</li> </ul>
<ul style="list-style-type: none"> <li>■ Improve and enhance the acoustic environment and promote soundscapes that are appropriate for the local context, including the promotion of a vibrant acoustic environment where this is appropriate and the protection of relative tranquillity and quietness where such features are valued.</li> </ul>
<ul style="list-style-type: none"> <li>■ Mitigate and reduce to a minimum the adverse effects of noise within the context of sustainable development;</li> </ul>
<ul style="list-style-type: none"> <li>■ Avoid significant adverse effects of noise on people living and working in the Borough within the context of sustainable development;</li> </ul>
<ul style="list-style-type: none"> <li>■ Prevent development which is unacceptable in terms of noise.</li> </ul>

### 3.2 Aviation Noise

In regard to aviation noise the Borough has taken into account that the UK is a signatory to international treaties on the subject. Particularly relevant to this SPD is the UK’s adoption of the International Civil Aviation Authority’s (ICAO) “Balanced Approach to Aircraft Noise Management” which is designed to produce a transparent process for managing the problem of aviation noise on an airport-by-airport basis. It recognises and is based on the principle that solutions need to be tailored to the specific

characteristics of the airports concerned, which in this case are Heathrow and Northolt. It calls for an assessment of all available options before the most appropriate one is selected.

The four elements of the Balanced Approach are outlined below:

- Reduction of noise at source;
- Land-use management and planning;
- Noise abatement operational procedures; and
- Operating restrictions on aircraft.

The ICAO balanced approach has been considered throughout the drafting of this document which as a consequence places a number of requirements and restrictions on developers in relation to acoustic design and the location of noise sensitive development. For example, by presuming that noise sensitive development will be prevented in locations with unacceptably high aviation noise levels; and in locations where aviation noise is below such a level, but is still likely to have adverse effects, requiring the design of noise sensitive development to include measures to suitably mitigate and minimise the adverse effects of aviation noise.

### 3.3 Existing Business

It is our intention that existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because future noise sensitive uses are subsequently permitted (including by a change of use) and where people may object to the inevitable noise that is produced. The Borough will therefore expect proposed new noise sensitive developments to follow good acoustic design principles and to incorporate adequate mitigation measures and to work with existing businesses to ensure appropriate acoustic standards in the new developments.

### 3.4 Brownfield Development

Policies to encourage the use of brownfield land in order to minimise pressure on open space may well challenge a desire to separate conflicting land uses. Policies to increase housing supply may mean that some of the noisier locations in the Borough will have to be considered for future development. Where such circumstances arise and where a site is deemed suitable within the wider context of sustainable development, then any potential adverse effects should be controlled and mitigated through the application of good acoustic design principles.

### 3.5 General Approach to Noise Sensitive Development (NSD)

The Borough will consider carefully in each case whether proposals for new noise sensitive development (including by a change of use) would be incompatible with existing activities. Such new noise sensitive development will not normally be permitted in areas which are, or are expected to become, subject to high levels of noise or an otherwise unacceptable acoustic environment. When determining planning applications for development which will be exposed to an existing noise source, the Borough will consider both the likely noise exposure at the time of the application and any change that may reasonably be expected in the foreseeable future e.g. from future intensification of transportation noise sources or future changes in commercial/industrial activities or positive regeneration effects. Where the application site is considered to be otherwise suitable then the principle requirement will be to secure and achieve appropriate acoustic standards through the application of good acoustic design.

There will be a general presumption against new noise sensitive development that is likely to experience significant adverse effects from noise unless it can be demonstrated that the economic and/or social and/or environmental benefits associated with the proposed development outweigh the adverse effects.

### 3.6 General Approach to Noise Generating Development (NGD)

Much of the development which is necessary for the creation of jobs and the construction and improvement of essential infrastructure will generate noise. In some circumstances noise may be an inevitable consequence of an essential or desirable activity. The planning system should not place unjustifiable obstacles in the way of such development.

The LPA will consider carefully in each case whether proposals for new development that may generate noise (including by a change of use) would be incompatible with existing noise sensitive activities and any noise sensitive activities that may reasonably be expected in the foreseeable future. The applicant will be expected to demonstrate, as part of the planning application, that noise has been mitigated and reduced to a minimum and that the principles of good acoustic design have been followed.

For schemes that may generate noise, developers must consider the cumulative noise impact from their proposed scheme and the existing acoustic environment; and where appropriate the future cumulative impact of any already permitted or proposed noise generating development in the vicinity.

There will be a general presumption against development which gives rise to significant adverse effects from noise unless it can be demonstrated that the economic and/or social and/or environmental benefits associated with the proposed development outweigh the adverse effects.

*For schemes that may generate noise, developers must consider the cumulative noise impact from their proposed scheme and the existing acoustic environment.*

## 4.0 Assessment Outcomes

In determining the outcome of the noise assessment the Borough will take account of the impact and effect on the acoustic environment and quality of life and in doing so consider:

### Determining the Noise Impact and Effect

- Whether or not opportunities have been taken to improve or protect the existing acoustic environment where relevant;
- Whether or not a good acoustic design process has been followed and whether or not appropriate acoustic standards have been achieved; and
- Whether or not a good standard of amenity can be achieved;
- Whether or not an adverse effect is occurring or likely to occur;
- Whether or not a significant adverse effect is occurring or likely to occur;
- Whether or not an unacceptable adverse effect is occurring or likely to occur.

Following the SPD guidance will lead the Borough to the choice of one of four possible recommendations regarding the acoustic acceptability of the development proposal:

### Planning Outcome

- A** Planning consent may be granted without any need for noise conditions;
- B** Planning consent may be granted subject to the inclusion of suitable noise conditions;
- C** Planning consent should be refused on noise grounds in order to avoid significant adverse effects (“avoid”);
- D** Planning consent should be refused on noise grounds in order to prevent unacceptable adverse effects (“prevent”).



## No Objection on Noise Grounds

### 4.1 A – Grant Consent without the need for Noise Conditions

Where it has been demonstrated that the SPD guidance has been followed and where a potential residential development site poses a negligible risk from a noise perspective, the Borough will typically not require any specific measures and it should be possible to expedite consideration of the planning application on noise grounds and to make a recommendation that planning consent may be granted without the need for noise conditions requiring further assessment.

In some cases there may well be no effect or no adverse effect arising from noise as a consequence of the proposed development.

### 4.2 B – Grant Consent with Suitable Noise Conditions

In some circumstances it may be necessary to make a recommendation that planning consent may be granted subject to the inclusion of suitable noise conditions, for example to address specific acoustic design aspects of a particular site.

In most circumstances it is likely that adopting the SPD guidance, in particular following a good acoustic design process and producing an accompanying noise report including an Acoustic Design Statement, should reduce delays and reduce the need for noise conditions.

*In most circumstances it is likely that adopting the SPD guidance, in particular following a good acoustic design process and producing an accompanying noise report including an Acoustic Design Statement, should reduce delays and reduce the need for noise conditions.*

## Objection on Noise Grounds

### 4.3 C – Refusal of New Residential Development on Noise Grounds – Avoid

Unless there are overwhelming reasons to the contrary, the Borough will refuse permission for the proposed NSD or NGD on noise grounds if:

- There is a failure to follow a good acoustic design process OR
- Internal noise levels are regarded as “unreasonable”; OR
- There is an unacceptable “external amenity area noise assessment”: OR
- There is an unacceptable “assessment of other relevant issues”.

### 4.4 D – Refusal of New Residential Development on Noise Grounds – Prevent

In the particular circumstances where high noise levels or otherwise unacceptable acoustic conditions remain despite following a good acoustic design process, then the proposed NSD or NGD will be prevented on noise grounds, notwithstanding any case for the development to proceed in the context of Government policy on sustainable development, if:

- Internal noise levels are regarded as “unreasonable” AND either there is an unacceptable “external amenity area noise assessment” or an unacceptable “assessment of other relevant issues”; OR
- Internal noise levels are regarded as “unacceptable”.

## Part 2: Technical Requirements

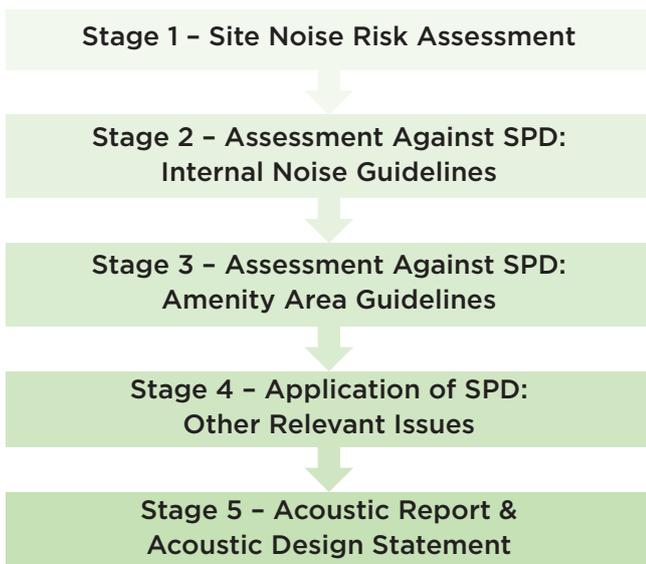


## 5.0 Noise Sensitive Development

Noise sensitive development includes residential properties, residential institutions, educational establishments and hospitals as well as noise sensitive land such as certain parks and gardens. The main environmental noise sources affecting noise sensitive development within the Borough are road traffic, aircraft over flight, and rail traffic. Other common sources of noise affecting noise sensitive development include building services plant, commercial / industrial premises, Licenced Premises and general activities associated with the night time economy.

The following process diagram describes the stages that the assessment of noise for NSD proposals must follow.

**Figure 1: Noise Sensitive Development - Noise Assessment Process**



### 5.1 Stage 1 – Initial Site Noise Risk Assessment

An initial noise risk assessment of the proposed development site should be conducted by a competent noise practitioner at the earliest opportunity, before any planning application is submitted. The noise risk assessment should provide an indication of the likely risk of adverse effects from noise were no subsequent mitigation to take place as part of the development proposal.

It should indicate whether the proposed site is considered to pose a negligible, low, medium or high risk from a noise perspective.

The risk assessment should not include the impact of any new or additional mitigation measures that may subsequently be included in development proposals for the site and proposed as part of a subsequent planning application. In other words, the risk assessment should include the acoustic effect of any existing site features that will remain (e.g. retained buildings, changes in ground level) and exclude the acoustic effect of any site features that will not remain (e.g. buildings to be demolished, fences and barriers to be removed) if development proceeds.

The noise risk assessment may be based on measurement or prediction (or a combination) as appropriate, and should aim to describe noise levels over a “typical worst case” 24 hour day either now or in the foreseeable future.

Care should be taken so that the risk assessment includes the combined free-field noise level from all relevant sources of transport noise that affect the site. The assessment may also include industrial/commercial noise where this is present but is “not dominant”.

Figure 2 summarises the Stage 1 Initial Site Noise Risk Assessment. The indicative noise levels provided in Figure 2 are considered to be appropriate in most circumstances as they should give a broad indication of the extent of the noise challenge at a potential residential development site. It should be noted, however, that these levels could be varied (by local agreement) to suit local and project context without undermining the overall approach. In the final column, the initial noise risk assessment is aligned with pre-planning application guidance that reflects the increasing importance of good acoustic design as the noise risk increases.

**Figure 2: Initial Site Noise Risk Assessment**

Noise Significance Risk	Noise Significance (without mitigation)	Indicative Noise Levels	Pre-Planning Application Advice
<b>Negligible</b>	No adverse noise effect	L <sub>Aeq</sub> , 16hr <50dB L <sub>Aeq</sub> , 8hr < 40dB	Low noise levels indicate that the development site is likely to be acceptable from a noise perspective.
<b>Low</b>		L <sub>Aeq</sub> , 16hr 50-63dB L <sub>Aeq</sub> , 8hr 40-55dB	Noise levels in this region mean that the development site is likely to be acceptable from a noise perspective, provided that good acoustic design is followed and demonstrated in an Acoustic Design Statement which confirms how the adverse impacts of noise will be mitigated and minimised in the completed development.
			As noise levels increase, the site is less likely to be suitable for development from a noise perspective and planning consent is more likely to be refused unless a good acoustic design process is demonstrated in a detailed Acoustic Design Statement which confirms how adverse noise impacts will be mitigated and minimised, and which clearly demonstrates that any significant adverse noise impacts will be avoided in the completed development.
<b>Medium</b>	Increasing risk of adverse effect	L <sub>Aeq</sub> , 16hr 63-69dB L <sub>Aeq</sub> , 8hr 55-60dB	High noise levels indicate that there is an increased risk that development may be refused on noise grounds.
			The risk of refusal may be reduced by following a good acoustic design process. Applicants are strongly advised to seek expert advice and discuss the proposals in advance with the Local Authority.
<b>High</b>		L <sub>Aeq</sub> , 16hr >69dB L <sub>Aeq</sub> , 8hr >60dB	

Notes:

- a. \*The indicative noise levels should be assessed without including the acoustic effect of any scheme-specific noise mitigation measures.
- b. \*The indicative noise levels are the combined free-field noise level from all sources of transport noise and may also include industrial/commercial noise where this is present but is "not dominant".
- c. L<sub>Aeq,16hr</sub> is for daytime 0700 – 2300, L<sub>Aeq,8hr</sub> is for night-time 2300 – 0700.
- d. An indication that there may be more than 10 noise events at night (2300 – 0700) with L<sub>Amax,F</sub> > 60 dB means the site should not be regarded as negligible risk
- e. A site should be regarded as high risk if the L<sub>Amax, F</sub> exceeds, or is likely to exceed 80 dB more than 20 times a night.

## 5.2 Stage 2 – Internal Design Noise Levels

The Borough will normally expect applicants to achieve the design noise levels contained in Table 4 of BS8233:2014 (and to consider the impact and effect of any noise events) in all noise-sensitive rooms. It should be noted that the acoustic performance of the building envelope will be reduced in the event windows are opened for ventilation or cooling purposes, typically reducing the insulation to no more than 10 to 15 dB(A). Most residents value the ability to open windows at will, for a variety of reasons, and the Borough normally requires that designers principally aim, through the use of good acoustic design, to achieve the internal noise level guidelines in noise-sensitive rooms with windows open. On certain sites the Borough may agree to assess the proposal assuming windows are closed.

## 5.3 Stage 3 – Design Noise Levels for External Amenity Spaces

The acoustic environment of external amenity areas shall always be assessed and noise levels should ideally not be above the range 50 to 55 dB LAeq,16hr. It may be necessary to carefully locate and design amenity areas and/or to provide acoustic screening in order to meet this goal.

Developers are encouraged to enter into pre application discussion where noise levels in proposed amenity spaces are likely to be above 55 dB LAeq,16hr. In such cases, the availability of reasonable access to an outdoor recreational area away from but close to the development site, that meets the above target external levels will be taken into account in deciding whether the scheme is acceptable in noise terms. Soundscape management techniques, including psychological masking, may also help to provide a suitable outdoor acoustic environment in otherwise noisy locations. It is accepted that, in some circumstances it may be appropriate to vary, or not to apply, these goals in order to meet wider planning objectives.

**Table 1: Internal Ambient Noise Levels for Dwellings**

Situation	Location	07:00 – 23:00 hrs.	23:00 – 07:00 hrs.
Resting	Living room	35 dB LAeq,16 hour	-
Dining	Dining room/area	40 dB LAeq, 16 hour	-
Sleeping (daytime resting)	Bedroom	35 dB LAeq,16 hour	30 dB LAeq, 8 hour

Notes:

- (i) The internal LAeq target levels shown in the Table are based on the existing guidelines issued by the WHO and assume normal diurnal fluctuations in external noise. In cases where local conditions do not follow a typical diurnal pattern, an appropriate alternative period, e.g. 1 hour, may be used, but the level should be selected to ensure consistency with the internal LAeq target levels recommended in the Table.
- (ii) These levels are based on annual average data and do not have to be achieved in all circumstances. For example, it is normal to exclude occasional events, such as fireworks night or New Year’s Eve.
- (iii) Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. *In noise-sensitive rooms at night (e.g. bedrooms) individual noise events should not normally exceed 45dB LA<sub>Fmax</sub> more than 10 times a night.* This guideline is supported by advice contained in the WHO Community Noise Guidelines (2000).
- (iv) Designing the site and the dwellings so that the internal LAeq target levels are achieved with open windows in as many properties as possible demonstrates good acoustic design. Where it is not possible to meet the LAeq target levels with windows open then special care must be taken with building design (see below).
- (v) Where development is considered necessary or desirable, despite external noise levels above guidelines, the internal LAeq target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved. The more often internal LAeq levels start to exceed the internal target LAeq levels by more than 5 dB, the more that most people are likely to regard them as “unreasonable”. Once internal LAeq levels exceed the target levels by more than 10 dB they are highly likely to be regarded as “unacceptable” by most people. Development will be prevented where such levels are likely to occur frequently.

BS8233:2014 (Section 7.7.3.2 Design criteria for external noise) contains the following guidance:

*“For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB<sub>L<sub>Aeq,T</sub></sub>, with an upper guideline value of 55 dB<sub>L<sub>Aeq,T</sub></sub> which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited.”*

*Other locations, such as balconies, roof gardens and terraces, are also important in residential buildings where normal external amenity space might be limited or not available, i.e. in flats, apartment blocks, etc. In these locations, specification of noise limits is not necessarily appropriate. Small balconies may be included for uses such as drying washing or growing pot plants, and noise limits should not be necessary for these uses. However, the general guidance on noise in amenity space is still appropriate for larger balconies, roof gardens and terraces, which might be intended to be used for relaxation. In high-noise areas, consideration should be given to protecting these areas by screening or building design to achieve the lowest practicable levels. Achieving levels of 55 dB<sub>L<sub>Aeq,T</sub></sub> or less might not be possible at the outer edge of these areas, but should be achievable in some areas of the space.”*

### 5.3.1 Ventilation and Cooling Design

Ideally, the above internal design noise levels could be met with windows open. However on some of the potentially noisy sites in the Borough, high specification acoustic glazing may be necessary to achieve the above internal design noise levels. In such circumstances alternative means of ventilation and cooling will be required.

Where the Borough accepts that there is a justification that the internal target noise levels can only be practically achieved with windows closed, which is likely to be the case in some areas of the Borough, special care must be taken to design the accommodation so that it provides good standards of acoustics, ventilation and thermal comfort without unduly compromising other aspects of the living environment. In such circumstances, internal noise levels can be assessed with windows closed but with any façade openings used to provide “whole dwelling ventilation” in accordance with Building Regulations Approved Document F (e.g. trickle ventilators) in the open position. Furthermore, in this scenario the internal LAeq target noise levels should not generally be exceeded.

It should also be noted that the internal noise level guidelines are generally not applicable under “purge ventilation” conditions as defined by Building Regulations Approved Document F, as this should only occur occasionally (e.g. to remove odour from painting and decorating, or from burnt food). In addition to providing purge ventilation, open windows can also be used to mitigate overheating. Therefore, should the Borough accept a scheme is to be assessed with windows closed, but this scheme is reliant on open windows to mitigate overheating, it is also necessary to consider the potential noise impact during the overheating condition. In this case a more detailed assessment of the potential impact on occupants should be provided in the ADS.

Further guidance on ventilation is available from ProPG: *Planning & Noise – New Residential Development*: Supplementary Document 2: Good Acoustic Design <http://www.association-of-noise-consultants.co.uk/propg/>

## 5.4 Stage 4 – Assessment of Other Relevant Issues

The fourth element of the preferred process is an assessment of other relevant issues. For this element the SPD reflects and extends the advice contained in Government policy and guidance documents such as the NPSE and Noise Action Plans. Government guidance (in Planning Practice Guidance – Noise [PPG-Noise]) already lists examples of acoustic factors that influence whether noise could be a concern – these include the source and absolute level of the noise; the time of day noise occurs; the number, frequency and pattern of noise events; the spectral content of the noise (i.e. whether or not the noise contains particular high or low frequency content); the character of the noise (i.e. the presence of tones or other features such as impulsiveness), possible cumulative impacts from several sources as well as local topology and topography.

PPG-Noise also mentions some wider acoustic-related factors such as the planned character of the area (this should include consideration of the acoustic environment); the possible need to keep windows closed “most of the time” to keep out the noise; the possible need to provide acoustically suitable outdoor amenity space; and the potential effect on an existing business.

It is recommended that these factors and the following additional issues should always be included as part of a systematic assessment of other relevant issues before making a judgement about the noise aspects of a particular planning proposal for new residential development.

Not all of the issues discussed will arise in each and every planning application and some may already have been addressed as an inherent part of good acoustic design. In addition, the Borough may add other relevant issues depending on local circumstances and priorities.

### 5.4.1 Magnitude and Extent of Compliance with SPD

It is recognised that it may not always be possible to achieve the recommended internal noise level guidelines in all rooms within noise-sensitive developments. Where it is not possible to achieve good acoustic standards in every respect, regard will be had to the number of dwellings and number of habitable rooms in each of the dwellings where the good standard cannot be achieved. Similarly, the external amenity area noise assessment is multi-faceted and, where it cannot be met in its entirety, regard will be had to the extent to which the guidance has been followed.

### 5.4.2 Likely Occupants of the Development

The Borough will bear in mind the extent to which occupants are likely to be able to exercise choice about living with the acoustic conditions in and around the proposed residential development. In addition, certain groups such as families with young children, students and the elderly may all have different requirements and sensitivities as regards acoustic conditions and, in particular, varying needs for access to quiet external space. Care should additionally be taken as far as possible to anticipate future changes in types of occupancy that may result in differing acoustic requirements.

### 5.4.3 Acoustic Design v Unintended Adverse Consequences

Design measures taken to reduce intrusion by noise may have unintended adverse consequences for the building or the nearby environment and may affect the attractiveness of the living environment for the occupants. Examples include sealed up balconies that result in a lack of connection with the external environment, roadside barriers that remove views or prevent crossing roads, specialist ventilation / thermal comfort measures that affect personal control over the internal environment etc. Such unintended consequences should normally be avoided by good acoustic design.

#### 5.4.4 Acoustic Design v Wider Planning Objectives

Some wider planning objectives may have unforeseen acoustic implications. For example, the encouragement of 'active façades' that overlook public footpaths etc. to ensure 'safe by design' could result in some residential units facing noisy streets or railways. The encouragement of active outdoor lifestyles may require the careful protection of amenity spaces from sources of transport noise. The creation of vibrant mixed use commercial and residential neighbourhoods can introduce particular challenges that will need to be overcome by careful acoustic design.

#### 5.5 Other Noise Sensitive Development

New housing is the most common type of residential development in the Borough. However, the general principles outlined above will be applied to other types of residential development such as residential institutions, care homes etc.

There are other types of noise sensitive development. For example, many, but not all, activities undertaken at schools (including "free schools"), and other educational establishments are considered to be noise sensitive. Applicants are advised to refer to "Building Bulletin 93: Acoustic Design of Schools" for further advice. Because some activities at educational establishments are also likely to generate noise then any such applications will be assessed on a case by case basis.

Advice on the acoustic design of hospitals is contained in Health Technical Memorandum 08-01.

The Borough does not prescribe noise and vibration standards for hotel bedrooms although it is recommended that hotels are designed to meet the criteria provided in BS 8233:2014.

Other types of noise sensitive development will be dealt with on a case by case basis using similar principles and with reference to any authoritative specialist acoustic design guidance.



## 6.0 New Noise Generating Industrial and Commercial Development

The Borough recognises the contribution of industrial and commercial developments in helping to achieve wider sustainable development goals. However, there are many kinds of industrial and commercial developments that have the potential to generate noise. In the Borough some of the most commonly occurring noise issues with commercial developments are associated with building services plant, usually air-conditioning equipment or kitchen extraction systems. In addition to plant noise, noise associated with deliveries or collections and an increase in traffic noise levels may also impact on local residents.

An assessment of the impact of noise from these types of development will be required. Applicants should be aware that the Borough will always seek to encourage good acoustic design and will prevent development where unacceptable acoustic conditions are anticipated at nearby noise sensitive premises as a result of noise from new industrial or commercial development.

### 6.1 Noise Standards for New Industrial and Commercial Development

All industrial and commercial development with the potential to generate noise will be assessed and, where relevant, controlled by planning conditions in order to protect residential amenity. Conditions may be used, for example, to restrict noise levels and to control hours of operation. The most relevant standard for assessing new industrial and commercial development is BS4142:2014.

### 6.2 BS4142:2014 Methods for Rating and Assessing Industrial and Commercial Sound

The standard describes methods for rating and assessing sound of an industrial and/or commercial nature. The methods described use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.

The standard is applicable to the determination of the following:

- rating levels for sources of sound of an industrial and/or commercial nature;
- ambient, background and residual sound levels, for the purposes of:
  - (i) assessing sound from proposed, new, modified or additional source(s) of sound of an industrial and/or commercial nature;
  - (ii) assessing sound at proposed new dwellings or premises used for residential purposes.

The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs. The greater this difference, the greater the magnitude of the impact.

**A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context**

**A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context**

**The lower the rating level is relative to the measured background sound level the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact**

**Table 2: New Industrial and Commercial Development**

Noise Significance Risk	BS4142 Outcome	Planning Advice
Minimal	$L_{A,Tr} - L_{A90,T} \leq -5$	Where the rating level of noise is below the background noise level by at least 5dB, this indicates that the proposed NGD is likely to be acceptable from a noise perspective. The Borough will seek this level of compliance in most noise sensitive areas and/or where there is a requirement to mitigate creeping background effects.
Low	$L_{A,Tr} - L_{A90,T}$ is $> -5$ & $\leq 0$	Where the rating level of noise is equal to, or below the background noise level by up to 5dB, this indicates that the proposed NGD may be acceptable from a noise perspective but will be more context dependent, i.e. extent and effect on noise sensitive receivers (externally and internally). Compliance within this range is more applicable to less sensitive sites or where there is no requirement to mitigate creeping background effects.
Medium	$L_{A,Tr} - L_{A90,T}$ is $> 0$ & $\leq +5$	Where the rating level of noise is equal to, or above the background noise level by up to 5dB, this indicates that the proposed NGD is less likely to be acceptable from a noise perspective and will be context dependent, i.e. extent and effect on noise sensitive receivers (externally and internally). Compliance within this range is typically only applicable to non-sensitive sites or where there are overriding other reasons why development should be considered. It will typically be necessary for the applicant to confirm how adverse impacts from the NGD will be mitigated and minimised. It is less likely that planning consent will be granted.
High	$L_{A,Tr} - L_{A90,T} > +5$	Where the rating level of noise is above the background noise level by more than 5dB, this indicates that the proposed NGD is unlikely to be acceptable from a noise perspective and planning consent is likely to be refused on noise grounds.

Note: All terms as defined in BS4142

As a general rule, the Borough will seek to achieve the external noise standards detailed in Table 2 above.

The Borough will not impose unreasonable restrictions on businesses but applicants should be aware that it is usually simpler and less expensive to design in noise management and noise control measures at the planning stage rather than wait for complaints to arise.

### 6.3 Internal Noise Levels in Nearby Dwellings

In addition to an assessment of external noise, in some cases it will also be necessary to predict internal noise levels at the closest and/or worst affected noise sensitive premises and

to demonstrate the means of achieving suitable internal noise levels within noise sensitive rooms (with windows partially open for ventilation where this is the norm for the building likely to be affected).

In some cases, e.g. for steady continuous noise without a specific character, the guidance on suitable internal noise levels found in Table 4 of BS8233 may be relevant. The application should demonstrate that these levels can be complied with. In other cases, it may be necessary to seek to achieve better standards in nearby dwellings, for example where the proposed industrial or commercial development may emit noise with a tonal, impulsive or other discrete characteristics the Borough may consider it appropriate to apply a character correction penalty for internal noise standards.

## 6.4 Desktop Assessment

In certain circumstances e.g. the installation of a single air conditioning unit, a desktop noise assessment may be submitted where the applicant can demonstrate that the plant will achieve the set criteria below and therefore negate the need for a full acoustic report. Information supporting the application will need to include:

1. The location of the nearest residential window that may be affected by noise from the proposed plant.
2. Indicate the distance of the window from the source in metres and any natural barrier or shielding to the noise path.
3. The proposed operational hours of the plant.
4. Maximum noise emission criteria of 45dB(A) LAeq,1hour daytime (07.00-23.00) and 35dB(A) LAeq,15minute night time.
5. Manufacturers' noise specifications of plant: Sound Power/Sound Pressure Level, octave band spectral levels.
6. Calculations for the predicted noise level 1 metre from the window of the nearest residential property. Include any proposed attenuation measures.

## 6.5 Low Frequency Noise

If the proposed development is expected to produce significant low frequency noise then the assessment must take this into account and specialist advice should be sought. The document [DEFRA NANR 45](#) "Procedure for assessment of low frequency noise" provides a possible method of assessment.

## 6.6 Creeping Background and Ambient Noise Levels

Creeping outdoor background and ambient noise levels may occur in situations where there are an increasing number of noise sources in an area, each of which makes a small contribution to an overall deteriorating and locally unacceptable situation. Typically, this may occur, where there are multiple mechanical services installations on a number of commercial premises in close proximity to residential development. Furthermore, it may also be necessary to prevent creeping outdoor background noise levels affecting any specially designated quiet and/or tranquil areas in the Borough.

In such circumstances the Borough may apply more stringent conditions to the control of noise from industrial and commercial premises. This will be dealt with on a case by case basis and the Borough will justify their position accordingly when making such a decision.

## 6.7 Delivery and Collections

The Borough recognises that throughout London, there is a need to reduce congestion and air pollution and the retiming of deliveries is one method to assist with this sustainability objective. The Borough will therefore apply a risk based approach to applications where vehicle delivery-noise may be a source of disturbance.

Where applications are for retiming of deliveries, the use of quiet technology is also encouraged in the context of wider sustainability aims.

A Delivery Noise Management Plan may also be required and should include:

- risk based approach
- noise assessment, where appropriate
- introduction of physical and managerial controls including quiet technology

Further guidance on managing noise from deliveries has been produced by the Borough and is available upon request.

## 6.8 Multi Use Games Areas and Artificial Grass Pitches

Both Multi Use Games Areas (MUGA's) and Artificial Grass Pitches (AGP's) are becoming a more common feature in school and community redevelopments and play a key role in developing sporting opportunities for school children and the wider community. However, if inappropriately located and operated they can cause noise and other forms of disturbance to residents and businesses located in the vicinity of the development.

Recent guidance has been produced by [Sports England: Artificial Grass Pitches – Acoustics – Planning Implications](#). This guidance provides information on the application of appropriate noise criteria, assessment methods as well as examples of noise mitigation measures that can be implemented.

**Table 3: MUGA & AGP – External Noise Standards**

Noise Impact from MUGA or AGP	Development Outcome
50dB(A) LAeq,1hour	Normally acceptable

The Borough would expect that in most cases for any new or modified MUGAs or AGPs the Sports England guidance is applied and the application should demonstrate that these levels can be complied with. In other cases, it may be necessary to seek to achieve better standards due to particular sensitivity of the location or hours of proposed use. In such cases it is recommended that early discussions are undertaken between the applicant and the Borough.



## 7.0 Places of Entertainment (Clubs, Pubs And Bars)

The Borough recognises that clubs, public houses, bars and other places of entertainment help to achieve wider sustainable development goals. However, places of entertainment can also cause significant levels of noise disturbance and pose particular noise issues, not least because associated activities are often at their peak in the evening and late at night. Developers will need to bear in mind and incorporate noise mitigation at the design stage.

The Borough intends to apply the IOA Good Practice Guide on the Control of Noise from Places of Entertainment when this is published. The Guide is expected to contain details of the entertainment noise standards that will normally be applied in situations where entertainment noise exposure is likely to arise as a result of new development in the Borough. These noise standards will normally be applied to any proposals that may generate new noise from entertainment sources within a mixed use area and for noise sensitive development that is proposed in a mixed use area containing entertainment establishments.

Proposed developments will be assessed on a case by case basis and the design criteria may be modified depending on the nature of the business, frequency, time, duration and number of entertainment events and sensitivity of the area. It is expected that any likelihood of structure borne sound (and vibration) transmission problems will be separately assessed and that effective control measures

will be included in proposals. Developers are encouraged to enter into pre-application discussions with the Borough to discuss these issues at an early stage.

In addition to noise from entertainment activities applicants will also be expected to consider noise from patrons, the wider use of indoor and outdoor areas, deliveries and collections and the use of car parks and access roads.

### 7.1 Outdoor Concerts

The guideline noise values presented in Table 4 are based on the current Code of Practice on Environmental Noise Control at Concerts (1995) which is considered to provide suitable guidance for noise control at concerts and similar large music events held in sporting stadia, arenas, open air sites and within lightweight buildings. These noise guidelines are outdoor levels and will normally be applied to proposals for outdoor concerts but each application will be dealt with on a case by case basis.

For outdoor events held between 0900 and 2300 the Music Noise Level (MNL) when assessed at the prediction stage or measured during sound checks or concerts should not normally exceed the guidelines in the table below.

In certain circumstances low frequency noise may be an issue which needs to be addressed and it is recommended that early discussions are undertaken with the Environmental Health Department to agree a set of low frequency noise criteria and limit levels appropriate for the event.

**Table 4: Guideline Music Noise Levels for Outdoor Concerts**

Concert Days per Year	Venue Category	Guideline
1 to 3	Urban Stadia & Arenas	The MNL should not exceed 75dB(A) over a 15 minute period
1 to 3	Other Urban & Rural Venues	The MNL should not exceed 65dB(A) over a 15 minute period
4 to 12	All Venues	The MNL should not exceed the background noise level by more than 15dB(A) over a 15 minute period

Note: The Music Noise Level (MNL) value is the LAeq, 15minute, due to music measured or predicted at a distance of 1 metre from the facade of any noise sensitive premises (all terms as defined in the Code of Practice).

## 8.0 Sound Insulation Between Commercial and Residential Development

The requirements of the Building Regulations are usually deemed to be adequate for the control of sound insulation between dwellings. However, the Borough encourages applicants to adopt higher standards. In particular, the requirements of the Building Regulations can be inadequate where certain types of commercial use adjoin residential use. The level of sound insulation performance required will be dependent upon the use type, for example a higher level of airborne sound insulation performance will typically be required for a proposed commercial catering unit located below a residential flat than will be required for a small café. Higher standards would also be appropriate when D1 and D2 use classes, such a dental surgery or a day nursery adjoins residential premises. The examples in Table 5 demonstrate the typical range that may need to be applied dependent on the circumstances (more stringent values may apply in some cases).

If, as a result of a planning application, a situation arises where a residential use and a commercial use will share a separating floor or wall then an assessment of the required sound insulation performance of the floor or wall should be submitted together with the construction details proposed to achieve the required standard of sound insulation.

A sound insulation test may also be required by the Borough in order to demonstrate that the sound insulation performance standard has been achieved.

A high level of airborne and impact sound insulation, often only achievable by complex design methods that structurally isolate the noise generating and noise sensitive premises, will be required in situations such as where music and dancing or gym or health and fitness activities adjoin a residential use. Each case will take into account the specific circumstances of the proposed development, and the example limits in Table 5 may not be appropriate for assessing performance as they do not take account of the full extent of low frequency noise transmission. The following type of information would be considered in such applications:

1. Establish the noise and vibration transfer paths from source to noise sensitive receiver.
2. Establish the potential airborne and impact noise and vibration transfer magnitudes from source to noise sensitive receiver.
3. Design sound isolation and insulation treatment such as a floating floor and wall treatment which mitigates and minimises adverse noise and vibration effects and is appropriate for the types of activity being undertaken within the proposed development.
4. Undertake post completion testing to demonstrate how noise and vibration has been controlled adequately.

It is recommended that early discussions are undertaken with the Environmental Health Department to discuss the specific application.

**Table 5: Sound Insulation Examples – Commercial to Residential**

Performance Standards for separating walls, separating floors and stairs that have a separating function		
Commercial to Residential	Airborne Sound Insulation Performance $D_{nTw} + C_{tr}$ dB	Impact Sound Transmission Performance $L_{nTw}$ dB
Walls	48-60	-
Floors and Stairs	48-60	58-53

## 9.0 Vibration

Human response to vibration varies with the magnitude, the frequency and duration of exposure. Significant vibration within the Borough (apart from temporary construction works) is most likely to be generated by railways, including underground railways. Road traffic is unlikely to generate significant vibration where the road surface is in reasonable repair. Consequently, the Borough will normally require a vibration assessment where railways, either surface or underground, are within 30m of a proposed development site. The need for a vibration assessment at other sites will be assessed on a case by case basis.

Excepting from construction, raw vibration acceleration ( $\text{ms}^{-2}$  rms) shall be measured at foundation level in each of the three orthogonal directions x, y and z in better frequency resolution than 1/3 octave. The Vibration Dose Values ( $\text{ms}^{-1.75}$ ) (VDV) should be calculated and assessed from the measured acceleration levels in accordance with BS6472-1:2008. For residential development, the VDV after any required mitigation should not exceed the levels in Table 6 below (taken from Table 1 of BS 6472-1:2008).

**Table 6: Residential Development - Vibration Dose Values**

07:00 - 23:00 16 hour day	23:00-07:00 8 hour night
< 0.2 $\text{ms}^{-1.75}$	< 0.1 $\text{ms}^{-1.75}$

The VDV's given in Table 6 above are for in-property levels of exposure. Measurements made on an undeveloped site should allow for transfer functions from the ground into foundations, and amplification of vibration magnitudes in suspended floors. Where a site has existing buildings, vibration should, if possible, be measured on the foundations, ground beams or pile caps, as well as on the ground. Measurements made within existing buildings need to be corrected to derive VDV which would apply to the new buildings on the same site.

Re-radiated noise, as a result of vibration from adjacent railways and other sources, shall not exceed 35 dB  $L_{Amax}(slow)$  within habitable

residential rooms. Where it is predicted that noise from this source will exceed 35dB  $L_{Amax}(slow)$ , proposals to mitigate re-radiated noise to acceptable levels shall be submitted to and approved in writing by the LPA. However, due to the high cost of mitigating vibration effects, this should be subject to early discussion with the LPA.

All building services plant and equipment such as air conditioning and air handling plant can generate vibration which in turn can re-radiate as noise within buildings. All services and equipment plant shall be supported on proprietary anti-vibration mounts. Any permission granted for the installation of services and equipment plant will normally contain a condition necessary to control plant vibration.

The content of a vibration assessment report shall follow the format suggested in Annex A (informative) of BS 6472-1:2008.



## 10.0 Construction and Demolition Work

The Control of Pollution Act 1974 is primary legislation which deals with the control of noise from construction sites. However in certain situations, for instance where there is a proposal for a substantial development or infrastructure project, a Demolition Method Statement and Construction Method Statement, detailing the management and control of noise and vibration, will be required as part of planning consent.

### 10.1 Noise and Vibration Demolition Method Statement and Construction Method Statement

The Noise and Vibration Demolition Method Statement (DMS) and Construction Method Statement (CMS) will typically include an acoustic report undertaken by a suitably qualified and experienced consultant and should include all the information opposite:



- **Baseline Noise Assessment** – undertaken for a least 24-hours under representative conditions to determine the pre-existing ambient noise environment.
- **Noise predictions and the significance of noise effects** – Predictions should be included for each phase of the demolition, and construction, vehicle movements and an assessment of the significance of noise effects must be included based on the guidance in BS 5228
- **Piling** – Where piling forms part of the construction process, a low noise and vibration method must be utilised wherever possible, and good practice guidelines should be followed e.g. BS 5228.
- **Vibration Predictions and the significance of vibration effects** - Predictions should be included for each phase of demolition, and construction, and an assessment of the significance of vibration effects must be included e.g. as per BS 5228.
- **Noise and Vibration Monitoring** – Permanent real time web enabled and/or periodic noise and vibration monitoring must be undertaken for the duration of the demolition and construction phases which may result in a significant impact. The location, number of monitoring stations and the measurement data must be agreed with the LPA prior to the start of construction.
- **Community engagement** – The steps that will be taken to notify and update residents and businesses that may be affected by the construction of the proposed development.

*In certain situations, a Demolition Method Statement and Construction Method Statement will be required as part of planning consent.*

## Annex 1

### Town and Country Planning (General Permitted Development) (England) (Amendment) Order 2016

#### Guidance for Applicants: Impacts of noise from commercial premises on the intended occupiers of the development

##### Legislative Requirements

The Government introduced a new clause of 'noise impacts' in the Town and Country Planning (General Permitted Development) (England) (Amendment) Order 2016 Schedule 2, Part 3, Class O. In particular condition O.2 (1)(d).

Therefore when an applicant proposes a prior approval change of use from office to residential, the developer must apply to the local planning authority for a determination as to whether the prior approval of the authority will be required as to:

- a) transport and highways impacts of the development,
- b) contamination risks on the site,
- c) flooding risks on the site, and
- d) impacts of noise from commercial premises on the intended occupiers of the development. ("commercial premises" means any premises normally used for the purpose of any commercial or industrial undertaking which existed on the date of application and includes any premises licensed under the Licensing Act 2003 or any other place of public entertainment")

##### Scope

With regard to noise LPAs can only consider noise impacts from existing commercial premises on the proposed residential development and cannot consider general transportation noise impact (However, if there is traffic noise associated with a commercial activity it is considered that this can be taken into account.

With regard to commercial noise impact the following general areas should be considered by the applicant:

- i. Noise generating plant and equipment associated with existing commercial uses i.e. air conditioning, refrigeration, kitchen extraction systems etc. which impact on amenity space areas and internal spaces
- ii. Any structural noise transmission associated with adjoining commercial business (not B1)
- iii. Any permitted delivery noise associated with existing commercial uses
- iv. Music/Entertainment noise breakout and structure borne noise impact
- v. Builders merchants/yards with significant external noise impacts
- vi. Regard to use outside normal office hours

##### Information required

If the applicant considers that there will be no adverse impacts of noise from commercial premises on the intended occupiers of the development they should provide a written (short description of the situation) / photographic evidence to justify this opinion.

Where any of the above situations may impact negatively on the proposed residential development a noise assessment will be required to determine the extent of the impact and detail measures which will mitigate and reduce to a minimum any adverse impacts on health and quality of life.

##### Outcome

If no significant changes are required to the building or façade that would require a full planning application, then noise is only required to be considered under permitted development rights when noise from commercial premises may potentially affect a site. Transportation noise is not a specific issue that requires consideration under such planning terms.

# Appendices



## Appendix 1: Working Party

This SPD has been produced by a working party consisting of:

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**Colin Grimwood, CJG Environmental Management** – Technical Contributor/Editorial Support

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The SPD working party would like to acknowledge the consultation draft and final published version (May 2017) of the Professional Practice Guidance on Planning & Noise: New Residential Development (ProPG) which has helped to inform the content of the SPD. The SPD working party and the ProPG working group have a number of members in common, and there has been an inevitable overlap in the drafting periods of the two documents. However, the SPD is both broader in scope and also contains guidance specifically adapted to the needs and aspirations of the Borough. Any future revision of the ProPG, and/or Government planning policy and guidance, may result in further updates to this document.



## Appendix 2: Good Acoustic Design

The use of good acoustic design is an inherent part of the recommended approach that is described in the SPD and will help to deliver planning and noise policy objectives. Good acoustic design should help produce sustainable buildings that provide healthy conditions for future occupants, that are sensitive to the likely expectations of future occupants and to the acoustic characteristics of the location, that are efficient in the use of resources and energy both during construction and subsequent occupation, and that are matched by an appearance that demonstrates good aesthetics as far as possible. Figure 3 below presents the areas that should be considered when applying good acoustic design.

### Noise Sensitive Development – Good Acoustic Design

In the context of this SPD, good acoustic design is that which will achieve good acoustic

standards, as far as is reasonably practicable, both internally (inside noise sensitive parts of the building(s)) and externally (in spaces to be used for amenity purposes). Consideration of what is reasonable will include the practicability and availability of technical solutions as well as the associated costs and financial implications, legal requirements and health and safety issues.

Good acoustic design must also provide an integrated solution whereby good acoustic design principles are aligned with, or do not otherwise conflict with, other design aspects that will affect living conditions and the quality of life of the inhabitants or other sustainable design objectives and requirements. Solely relying on sound insulation of the building envelope to achieve acceptable acoustic conditions in new residential development, when other means may be available to achieve good acoustic standards or to reduce the need to rely on sound insulation of the building envelope is not regarded as good acoustic design.

Figure 3: Good Acoustic Design Principles



**Good Acoustic Design Critical Steps**

The following questions illustrate the types of consideration that will help to achieve the good acoustic design of a noise sensitive scheme:

Noise Sensitive Development - Acoustic Design Critical Steps
■ Has noise from the surrounding area been taken into consideration in arranging the site layout? For example, have residential units been located as far away as practicable from an adjacent noise source?
■ Is it practicable to use screening by existing structures or methods incorporated into the proposal to reduce noise levels affecting the sensitive façades and parts of the scheme?
■ Where practicable has the surrounding acoustic environment been taken into account in relation to the internal layout of residential units? Are bedrooms located on the quieter façades? Are gable ends and non-noise sensitive façades orientated towards the dominant source in preference to noise sensitive façades?
■ Will there be part of the habitable space in each unit which does not overlook the significant noise source? Have sensitive rooms been placed on the quietest façade? NB: Single aspect units where all the habitable space overlooks the significant noise source should be avoided.
■ Has consideration been given to suitable noise insulation of the building envelope? Remember that this is not currently covered by Building Regulations and can be overlooked if not considered at the planning stage. How will this affect the residential amenity and utility of the proposed scheme?
■ Has consideration been given to the acoustic quality of private or communal outdoor spaces within the scheme? What measures have been included to enhance the acoustic quality of any outdoor amenity spaces? Where access to private or communal quiet outdoor amenity space cannot be, or has not been, provided within a scheme then is there ready access to a suitable quiet outdoor amenity space nearby?

The Borough will consider the use of Section 106 agreements to contribute to the improvement and enhancement of the acoustic environment; including, engagement by developers with the owners and operators of existing noise generating land uses to explore how noise emissions at source or on the transmission pathway beyond the proposed noise sensitive site boundary may be reduced or better managed. It is recognised that it may not always be possible to achieve good acoustic standards in all rooms within noise sensitive developments or at all external amenity spaces associated with new residential development. Where it is not possible to achieve good standards in every respect, the acceptability of the proposed development will be considered having regard to:

- The degree (extent and magnitude) to which good acoustic standards cannot be achieved and whether acceptable acoustic standards can be achieved instead;
- Measures which may help to off-set adverse impacts on certain parts of the dwelling or building. For example, whether there is access to a habitable room/s on a relatively quiet façade (i.e. a façade where noise is at least 15 dBA lower than the most exposed façade) or access to a relatively quiet external amenity space<sup>1</sup>; and
- Whether the achievement of good acoustic standards will give rise to undesirable consequences for other aspects of the living or working environment. For example, having to keep windows closed may result in adverse consequences on the comfort and health of occupants, and having to provide acoustic barriers or screens may result in significant visual impacts.

<sup>1</sup> The quiet facade principle is normally inappropriate for noise from aircraft in flight as usually the noise emanates from above and tends to affect every facade approximately equally; unlike road or rail noise where the noise is normally transmitted laterally from at or near ground level (excepting viaducts, embankments and raised roadways - where nearside barriers can be effective), and a significant difference in level can be found on the opposite side of the building from the source. Where the noise climate is dominated by noise from aircraft in flight the quiet facade principle will not normally be applied and other innovative design solutions will be expected.

**Noise Generating Development – Good Acoustic Design & Noise Control Measures**

A mitigation hierarchy should be used as part of the design process. Noise control measures applied at source will be preferred to noise control on the transmission path from source to receiver. Façade protection measures represent the least preferred method of noise control. Noise control measures should be proportionate and reasonable and may include one or more of the following:

Noise Control Measures
<ul style="list-style-type: none"> <li>■ Engineering: reduction of noise at point of generation (e.g. by using quiet machines and/or quiet methods of working); containment of noise generated (e.g. by insulating buildings which house machinery and/or providing purpose-built barriers around the site);</li> </ul>
<ul style="list-style-type: none"> <li>■ Lay-out: adequate distance between source and noise-sensitive building or area; screening by natural barriers, other buildings, or non-critical rooms in a building;</li> </ul>
<ul style="list-style-type: none"> <li>■ Administrative: limiting operating time of source; restricting activities and noise limits.</li> </ul>

Early consultation between the applicant and the LPA about the possible use of noise control measures is desirable and may enable the measures to be incorporated into the design of the proposal before it is formally submitted for determination. This is likely to reduce costs in the long run and will help facilitate quicker decision making. The LPA may, otherwise, or in addition, seek further clarification on noise control measures which may introduce delays, and they may ensure that adequate noise control measures are included by applying planning conditions.

The NPPF places emphasis on good design in managing and mitigating the environmental impacts both from and on new development. This SPD recognises the importance of good acoustic design and we wish to emphasise to developers that noise problems can often be prevented or resolved through the careful design of noise sensitive and noise generating development at an early stage in the planning process.

The overall goal of this SPD is to encourage and reward good acoustic design and to ensure that noise is appropriately taken into account and that the measures used to mitigate and manage the impact of noise do not unacceptably compromise other planning objectives.

**Good Acoustic Design Critical Steps**

The following questions illustrate the types of consideration that will help to achieve the good acoustic design of a noise generating scheme:

Noise Generating Development – Acoustic Design Critical Steps
<ul style="list-style-type: none"> <li>■ Has the noise sensitivity and the typical existing acoustic environment of the surrounding area been taken into consideration in arranging the site layout? Have noise generating activities and/ or plant been located as far away as possible from noise sensitive receptors?</li> </ul>
<ul style="list-style-type: none"> <li>■ Is it practicable to use screening by existing structures or are other methods incorporated into the proposal to reduce noise from the scheme affecting the sensitive façades and other parts of nearby noise sensitive land uses?</li> </ul>
<ul style="list-style-type: none"> <li>■ Has consideration been given to including appropriate noise insulation of the building envelope to parts of the scheme that will generate noise? Are any doors and windows in sensible locations as regards noise impact on any neighbours? What about the roof or ceiling construction, it’s often an acoustic weak point in commercial buildings?</li> </ul>
<ul style="list-style-type: none"> <li>■ Has the need to appropriately manage noise emissions from the site been taken into account in selecting plant and equipment?</li> </ul>

*Early consultation between the applicant and the LPA about the possible use of noise control measures is desirable.*

## Appendix 3: Assessment by Competent Person

The assessment of noise is a complex task requiring specialist training, experience, techniques and equipment. Consequently, noise surveys, impact assessments, mitigation design and report writing is best carried out by suitably qualified persons with appropriate knowledge, skills and experience. The Borough is not able to endorse or recommend the services of individual consultants. However, details of acoustic consultants may be obtained from:

### The Institute of Acoustics

3rd Floor St Peter's House, 45-49 Victoria Street, St Albans, Hertfordshire, AL1 3WZ, UK  
Tel: +44 (0)1727 848195  
[www.ioa.org.uk](http://www.ioa.org.uk)

### The Association of Noise Consultants

Airport House, Purley Way, Croydon, CR0 0XZ  
Tel: +44 (0)20 8253 4518  
[www.association-of-noise-consultants.co.uk](http://www.association-of-noise-consultants.co.uk)

### The Chartered Institute of Environmental Health

Chadwick Court, 15 Hatfields, London SE1 8DJ  
Tel: +44 (0)20 7827 6307  
[www.cieh.org](http://www.cieh.org)

## Appendix 4: General Requirements for Acoustic Reports

It should be noted that noise assessment and report writing is a skilled operation and should be undertaken only by competent persons. Notwithstanding the inevitable technical content of the subject matter the best acoustic reports are written using plain English and should be possible for a lay person to understand. The acoustic report should be well structured and precise in its use of language and presentation of data. A typical acoustic report should include the following information.

### 1. Introduction

- a. Outline the scope, aims and objectives of the report.
- b. Include the site address or other location details.
- c. Include a brief description of the development proposal it relates to (with the correct case reference number).
- d. Clearly identify the client and/or person who commissioned the survey(s).

### 2. Executive Summary

This should contain the summary of the whole report and a clear statement regarding delivery of the aims and objectives.



### 3. Title Page

Shall have a title page identifying the person and organisation undertaking the survey and writing the report and their qualifications and contact details, the date of the report, and shall be signed by the author and quality control reviewers. Document references i.e. revision and version numbers should be included to indicate the development of the report and its status e.g. draft for comment, final etc.

### 4. Contents Page

Here the contents of the report shall be listed.

### 5. Methodology

- a. Clearly identify applicable policies, guidelines and standards from this SPD.
- b. Detail any other standards / policies to be used and give a brief outline of why they have been chosen.
- c. Provide detail and justification where accepted standards have not been used.
- d. Outline the process to be followed.

### 6. Site Description and Noise Measurements

- a. A brief qualitative description of the site and its surroundings is useful here.
- b. Labelled and annotated photographs are often very useful in communicating the nature and character of the site and its environs.
- c. Details of how any noise survey was carried out and any observations made during the survey e.g. on typical or unusual noise sources making up the acoustic environment.
- d. Detail the location, dates and times of all measured data and provide suitable summaries of results obtained. Clearly state the height above ground, ground conditions and proximity of any acoustic reflecting surfaces (i.e. façade, free-field or reverberant conditions). Photographs of noise measuring equipment in-situ may be useful here.
- e. Clearly state the reasons for the chosen measurement positions.
- f. Provide clear explanations for any unusual or anomalous results.
- g. Provide details of the equipment used i.e. make model and serial numbers of sound level meters, field calibrators etc.; details of equipment calibration history; details of field calibration.

- h. Detail the weather conditions during the survey period. Include wind speed, wind direction, temperature and precipitation. Average wind speeds above 5 m/sec and persistent heavy rain are not conducive to effective noise measurements, although intermittent light rain and gusts over 5 m/sec can be tolerated.

### 7. Noise Predictions

Where it has been necessary to predict noise levels, then a brief explanation of how this has been undertaken, the data used, the software used, the prediction standards used, and any assumptions made are required. Details of any validation checks should be included.

### 8. Noise Source Emission Levels

Whether the scheme is noise sensitive or is likely to generate noise the report should include the following:

- Details of the type, number, location and spatial relationship of noise sources and receptors
- Details of the noise emission from each noise source, at and/or within each noise sensitive receiver
- Details of how the noise emission levels were derived.

### 9. Assessment

- a. Give details of the assessment made based on measured and/or predicted data.
- b. State any assumptions made.
- c. Show any calculations to sufficient detail that they could be checked for accuracy (possibly in an Appendix).

### 10. Outcome of Pre-Survey Discussions with the LPA, Including Potential Noise Conditions

Here the report should discuss the outcome of any pre-survey discussions with the LPA, including any acoustic standards the LPA wishes to see used on the scheme; and the details and justification of any alternatives the applicant may wish to propose.

## 11. Mitigation

The report should clearly identify any mitigation measures that may be required in order to comply with the policies, guidance and standards in this SPD.

All proposed noise management measures that have been considered and their effectiveness should be presented and discussed so as to enable informed recommendations on suitable mitigation measures.

## 12. Recommendations and Conclusions

This section should clearly reflect the scope, aims and objectives of the report. Where the report is supporting a planning application then it should normally recommend what noise management measures should be taken by the developer in order to demonstrate that:

- a. The adverse effects of noise as a consequence of the new development have been mitigated and minimised in accordance with the policies in this SPD.
- b. Good acoustic design principles have been considered and applied given the particular circumstances of the proposed development in accordance with the policies in this SPD.

## 13. Appendices

The amount of material included in any Appendices should be proportionate to the assessment and may typically include the following:

- a. Plans, maps, photographs showing site location and monitoring/prediction locations,
- b. Unabridged details of noise monitoring where critical to recommendations and conclusions,
- c. Details of any calculations relied upon,
- d. Copies of equipment calibration certificates.

Note:

Further practical guidance on undertaking and reporting environmental noise and vibration measurements can be found in the "ANC Green Book" - Environmental Noise Measurement Guide and the "ANC Red Book" - Measurement and Assessment of Groundborne Noise and Vibration: both available from the Association of Noise Consultants.

## Appendix 5: Glossary of Terms

**'A' weighting (dB(A)):** A frequency dependent correction which weights sound to correlate with the sensitivity of the human ear to sounds of different frequencies.

**Ambient Noise:** A measure of the typical noise (excluding any unusual events) present at a site, or in a room. This is usually described in terms of LAeq,T.

**Audible:** Sound that can be heard or is perceptible by the human ear.

**Background Noise:** A measure of the underlying noise (excluding any unusual events) which is present at a site before a new noise source is introduced. This is usually described in terms of the LA90 level: the sound pressure level exceeded for 90% of the time.

**DMRB:** The "Design Manual for Roads and Bridges" (DMRB) was introduced in 1992 in England and Wales. The DMRB sets a standard of good practice that has been developed principally for Trunk Roads. It may also be applicable in part to other roads with similar characteristics. (Volume 11, Section 3, Part 7 covers Noise and Vibration, see <http://www.standardsforhighways.co.uk/dmr/index.htm>)

**DnT,W Standardised level difference:** A single-number quantity which characterizes the airborne sound insulation between rooms. See BS EN ISO 717-1: 1997.

**Decibel (dB):** A unit used for many acoustic quantities to indicate the level of sound with respect to a reference level.

**Design Noise Levels:** These are the internal and external noise standards (as appropriate) that the Borough will normally expect to achieve in new residential development. See Section 5 of this SPD.

**External Amenity Space:** An outdoor area near to a residential building which is designed and intended primarily for leisure and recreational use by the occupants of the dwelling. This will include gardens, patios, balconies, roof gardens and terraces.

**Façade measurement:** Noise measurements made outside an external wall of a structure (usually 1 metre from the wall).

**Habitable room:** A room used for sleeping or recreation / relaxation.

**Inaudible:** Sound that cannot be heard or is imperceptible to the human ear.

**LA90,T:** Sound pressure level exceeded for 90% of the measurement period “T” or ‘background level’.

**LAeq,T:** Equivalent continuous sound pressure level measured over the time period “T”.

**LAm<sub>ax</sub>:** The maximum RMS A weighted sound pressure level.

**Noise:** Unwanted sound.

**Noise assessment:** A basic evaluation of an acoustic environment by a suitably qualified person to assist in the determination of a planning application.

**Noise impact:** the noise level of the source under consideration, and/or any change in noise levels due to the scheme, and/or the relationship between the noise level of the source under consideration and a descriptor of the existing noise climate; at a receptor or group of receptors.

**Noise effect:** the consequence of the noise impact e.g. annoyance, sleep disturbance, speech interference, disruption of learning/teaching, health consequences, fauna displacement etc. Noise impact and noise effect are related to each other and the noise effect is related to the magnitude of the noise impact as well as other factors e.g. sensitivity of the receptor, duration of the noise, how frequently it occurs, the time of day or night it occurs, whether the noise is temporary, reversible or permanent etc.

**Noise level (L<sub>p</sub>):** the logarithmic measure of the RMS sound pressure of a sound relative to a reference value that represents the threshold of hearing. It is measured in decibels (dB) e.g. L<sub>p</sub> = 20 lg (p/p<sub>0</sub>) dB re 20 µPa for air.

**Noise sensitive premises / developments:**

Principally comprising residential premises, hospitals and schools. Other premises and sites may be deemed to be noise sensitive depending upon circumstances.

**Rating Level:** The noise level of an industrial noise source which includes an adjustment for the character of the noise, as used in BS4142:1997.

**Spectrum adaptation term (Ctr):** A correction added to a sound insulation quantity to take account of specific (traffic noise) spectra. See BS EN ISO 717-1:1997.

**SEL:** Sound Exposure Level – An Leq noise level of an acoustic event normalised to a 1 second reference period.

**Structure borne noise:** Noise that propagates through a structure, for example through a building.

Supplementary Planning Document (SPD)

Development Control for Noise Generating  
and Noise Sensitive Development

