# CAMDEN GOODS YARD

### CAMDEN GOODS YARD NOISE AND VIBRATION ADDENDUM

March 2025



### **ST GEORGE WEST LONDON LTD**

### **CAMDEN GOODS YARD**

### **NOISE AND VIBRATION ADDENDUM**

REPORT REF. 2105801-R05D

**March 2025** 

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REV	ISSUE PURPOSE	AUTHOR	CHECKED	APPROVED	DATE
-	Draft	СМ	LD	DRAFT	06/02/25
-	FINAL	СМ	LD	AS	13/02/25
А	Updated following legal review	СМ	LD	AS	21/02/25
В	Minor amendments to terminology	LD	LD	AS	27/02/25
С	Final	LD	LD	AS	28/02/25
D	Final – minor updates to development description	LD	LD	AS	04/03/25

### **Document Control Sheet**

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### CAMDEN GOODS YARD NOISE AND VIBRATION ADDENDUM

### 1. Introduction

- 1.1 This Noise and Vibration Assessment (NVA) has been prepared by Ardent Consulting Engineers on behalf of St George West London Limited ('the Applicant'), to assess the effects of noise and vibration of the Proposed Development forming the Section 73 application to vary the March 2023 Consented Scheme for the Camden Goods Yard project. The Planning Statement provides the full description of development the proposal.
- 1.2 This Section 73 application comprises the proposed amendments in respect of BlocksC, D, E1, E2 and F of the Main Site Parcel, identified in the detail within the accompanying DAS Addendum and identified here for ease of reference:
  - Insertion of secondary stairs to Blocks C, E1 and F in accordance with fire safety guidelines for residential buildings;
  - Reduction of affordable housing from 38% to 15% by habitable room (from 203 to 83 homes);
  - Minor tenure and unit mix changes to approved plans ;
  - Marginal increase to footprint of Block E1 (0.5m on the east, west and north elevations) to accommodate a secondary staircase ;
  - Minor reduction in heights of Blocks C, D, E1, E2 and F.
- 1.3 The following conditions attached to the Operative Permission control development and are the subject of this Section 73 Application:-
  - Condition 3, 4 and 6 approved drawings and documents these contains drawings which identify affordable homes (references amended) and new drawings are submitted to comply with fire regulations including a second stair core introduced into Blocks C, E1 and F and associated changes;
  - Condition 5 contains drawings which identify affordable homes (references amended). The condition also refers to the 'affordable housing statement (June 2017)' which is amended;
  - Condition 73 refers to '203 affordable' homes. This will be revised to '83 affordable homes'. The condition also refers to a total of 27,983 sqm GEA of non-residential floorspace. This is revised to 28,792 sqm, a de-minimis increase of 809 sqm following re-measurement of the scheme and marginal building footprint increase to building E1. We also note that the 2,769 sqm GEA of ancillary floorspace (gym, concierge, plant room, parking and energy centre) previously

referred to in condition 73 (2020/3116/P, dated 3rd December 202) has unintentionally been omitted from the Operative Permission and is proposed for reinserted.

### **Application Background**

- 1.4 In June 2017, a full planning application was submitted for the redevelopment of the application site. This application was accompanied by a Noise and Vibration Assessment and an Environmental Statement (the '2017 ES') which reported on the outcomes of an environmental impact assessment (EIA) of the proposed mixed-use Development. Planning permission was granted for the mixed-use Development in June 2018 under planning permission reference 2017/3847/P (the 'June 2018 Consented Scheme'). This was accompanied by a Section 106 Agreement dated 15<sup>th</sup> June 2018 (the 'S106 Agreement'). Since the June 2018 Consented Scheme, a number of amendments have been secured, including three Section 73 applications.
- 1.5 A Noise and Vibration Assessment accompanied an Environmental Statement Chapter and was prepared by Ardent in July 2017 (report reference: 160630-10) for planning application 2017/3847/P.
- 1.6 The first Section 73 application related to the Petrol Filling Station (PFS) parcel specifically (application reference: 2020/0034/P) and sought amendments which allowed the insertion of a new Development phase (Phase 1a) to allow for a single storey temporary food store to be constructed enabling the development of the MS parcel to come forward sooner. This application was approved in May 2020 and is referred to as the 'May 2020 Consented Scheme'. An updated EIA was undertaken in January 2020 and reported in an Environmental Implications Letter (the 'January 2020 EIL')
  - 1.7 The second Section 73 related to amendments to the MS parcel only and did not propose any further amendments to the PFS parcel. This application was approved in December 2020 (application reference: 2020/3116/P) and is referred to as the 'December 2020 Consented Scheme'. An updated EIA was undertaken in July 2020 and reported in an EIL (the 'July 2020 EIL').
  - 1.8 The third Section 73 related to amendments to the PFS parcel only and did not propose any further amendments to the MS parcel. This application was approved in

March 2023 (application reference 2022/3646/P) and is referred to as the 'March 2023 Consented Scheme'. An updated EIA was undertaken in August 2022, with an NVA produced as a technical appendix to the EIL (the 'August 2022 EIL').

1.9 The 2017 EIA/ES as updated by the January and July 2020, and August 2022 EILs is hereafter referred to as the 2017 EIA/ES (as amended).

### Scope of Report

- 1.10 This NVA is a Technical Appendix to the February 2025 EIL and informs the reported findings. The February 2025 EIL should be read in conjunction with the 2017 EIA/ES (as amended).
- 1.11 Noise and vibration impacts arising from the February 2025 Amended Proposed Development have been assessed by considering any changes against the March 2023 Consented Scheme, as reported in the August 2022 EIL.
- 1.12 The baseline in the 2017 ES remains valid as there have been no substantial changes in the area that would materially change the baseline noise environment. Therefore, no further baseline measurements are considered necessary as part of this NVA.
- 1.13 Changes to local, regional and national policy and guidance have also been considered, as well as effects on the acoustic context of the February 2025 Amended Proposed Development
- 1.14 The NVA demonstrates that the February 2025 Amended Proposed Development as a whole would not give rise to any new or amended significant noise and vibration effects when compared to the conclusions of the 2017 ES (as amended).

### **Policy Context**

- 1.15 There have been changes to the National Planning Policy Framework since the August 2022 EIL, the changes are summarised in the table below. The changes do not affect the approach of this NVA or introduce new matters for consideration. A summary of
- 1.16 The National Planning Policy Framework (NPPF), the Noise Policy Statement for England (NPSE) and other relevant policy and guidance detailed in **Appendix A**.

Policy or Guidance	Issue / Latest Update	Changes / Implications on Proposed Development
NPPF	December 2024	No specific updates in relation to noise and vibration policy that affect the approach or outcome of assessments.

Table 1.1: Policy and Guidance Changes

### 2. February 2025 Amended Proposed Development

- 2.1 This application proposes minor amendments to Blocks C, D, E1, E2 and F of the MS parcel. The changes lead an overall reduction in the number of homes on site from 644 to 637. The buildings subject of this application are highlighted in **Figure 2.1**.
- 2.2 The changes set out in this section are only in respect of the Main Site Parcel and those blocks affected. Blocks A and B, and the PFS Parcel forming the remainder of the CGY development are not amended by the Section 73 application for the February 2025 Amended Proposed Development.



Figure 2.1: Buildings Subject of this Application

2.3 **Table 2.1** below outlines the breakdown for the change of home numbers when compared to the consented scheme.

Overall	Consented	Proposed	Change
Studio	61	57	-4
1-bed	248	247	-1
2-bed	238	239	+1
3-bed	89	89	-
4-bed	8	5	-3
Summary	644	637	-7

**Table 2.1:** Proposed Development Residential Comparison

- 2.4 Taking the above into account, the overall February 2025 Amended Proposed Development at the Main Site parcel would comprise the following (PFS Site parcel remaining unchanged):
  - Replacement Morrisons supermarket the gross floor area will be circa 17,709sqm (GIA) including parking and service bays. The floorspace of the consented store will not change as part of the Proposed Development.
  - 637 residential flats comprising:
    - 57 studio homes
    - 247 1-bed homes
    - o 239 2-bed homes
    - 89 3-bed homes
    - o 54-bed homes
  - 7,059sqm GIA offices/workspace/urban farm/community.
  - 900sqm GIA retail space.
- 2.5 At the PFS site there are no changes to the area of retail and office floorspace, or associated parking spaces.

### 3. Noise Impact

- 3.1 The potential impacts of the proposed amendments have been compared against the March 2023 Consented Scheme, as reported in the August 2022 NVA.
- 3.2 There are no changes to national or local policies and guidance which affect the approach to the NVA or introduce new matters for consideration.
- 3.3 The existing acoustic environment at the Site considered as part of the 2017 ES (as amended) has not changed significantly and therefore the noise and vibration survey data presented within the 2017 ES (as amended) remains valid.
- 3.4 The minor changes in demolition and construction stage activities and traffic flows will be minimal when compared to the March 2023 Consented Scheme, therefore the proposed amendments will not result in a significant change in noise levels. Similarly the changes in demolition and construction stage activities will not result in a significant change in vibration levels. Measures to control noise from construction and demolition activities and traffic remain unchanged.
- 3.5 There are no changes to the consented schemes in the area around the site which lead to a change in the nearest noise sensitive receptors which were assessed as part of the 2017 ES (as amended). Any new consented schemes are further away than the noise sensitive receptors addressed as part of the 2017 ES (as amended).
- 3.6 The conclusions of the 2017 ES (as amended) remain valid in relation to noise from demolition and construction traffic flows and activities.
- 3.7 Mechanical plant associated with the March 2023 Consented Scheme is controlled by planning condition. The March 2023 Consented Scheme rationalised plant on lower floors and reconfigures and optimises roof mounted plant. The plant would be selected, located, oriented and if necessary attenuated to meet the requirements of, planning Condition 10 (Fixed Mechanical Plant Noise). Therefore the conclusions of the 2017 ES (as amended) remain valid in relation to noise from fixed mechanical plant.
- 3.8 The changes in the number of homes due to the proposed amendments would not cause an increase in traffic flows which arise from the occupied Development. Therefore, the change in noise levels will not increase due to the proposed

amendments. The conclusions of the 2017 ES (as amended) remain valid in relation to noise due to traffic at the occupied Development

- 3.9 The February 2025 Amended Proposed Development will lead to alterations to the massing of Blocks C, D, E1, E2 and F. However, the mitigation measures to provide suitable internal amenity sound levels within homes remain appropriate and unchanged.
- 3.10 The layout of the February 2025 Amended Proposed Development do not lead to significant changes to the location of external amenity spaces and therefore noise levels at these spaces will be similar to those presented within the 2017 ES (as amended). Therefore the conclusions of the 2017 ES (as amended) would remain valid in relation to internal and external amenity sound levels at proposed homes at the Development.
- 3.11 There will be no changes to noise emissions from the PFS parcel as a result of the February 2025 Amended proposed Development. Therefore the conclusions of the 2017 ES (as amended) remain valid in relation to noise from the operation of the PFS parcel.

### 4. Summary and Conclusions

- 4.1 This NVA has been produced by Ardent on behalf of St George West London Ltd in relation to this Section 73 application for the February 2025 Amended Proposed Development.
- 4.2 This NVA assess the potential changes to the noise and vibration impacts of the February 2025 Amended Proposed Development against the March 2023 Consented Scheme.
- 4.3 The existing noise environment at the Site considered as part of the 2017 ES (as amended) has not changed significantly and therefore the survey data presented within the 2017 ES (as amended) remains valid.
- 4.4 There would be no changes to the PFS parcel associated with the February 2025 Amended Proposed Development and therefore the conclusions of the 2017 ES (as amended) would remain valid for this part of the Site.
- 4.5 There would not be significant changes to noise and vibration levels from demolition and construction stage activities, or a significant change in noise levels associated with demolition and construction stage traffic flows. Therefore, the existing effects as set out in the 2017 ES (as amended) remain valid.
- 4.6 Operational traffic flows are not expected to change significantly due to the slight reduction in the number of proposed homes at the February 2025 Amended Proposed Development. The changes to Blocks C, D, E1, E2 and F will not lead to changes to mitigation measures to provide suitable internal and external amenity sound levels at the February 2025 Amended Proposed Development. There are also no changes to fixed mechanical plant which would lead to a change in the conclusions of the 2017 ES (as amended).
- 4.7 Therefore the February 2025 Amended Proposed Development would not have a greater noise impact and as such the conclusions of the 2017 ES (as amended) remain valid.

**APPENDIX A** 

### **RELEVANT POLICY & GUIDANCE**

### National Planning Policy Framework (NPPF) – December 2024

Under the NPPF: paragraph 198 of Section 15, with regard to environmental noise; Planning policies and decisions should aim to: -

- mitigate and reduce to a minimum, potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;
- identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

### Noise Policy Statement for England (NPSE)

To avoid and mitigate adverse noise effects on health arising from and impacting on new development, the NPPF makes reference to NPSE. The NPSE was published in March 2010 and covers all forms of noise, other than occupational noise. For the purposes of this report, "Neighbourhood Noise" is most relevant as NPSE defined at paragraph 2.5:

"neighbourhood noise which includes noise arising from within the community such as industrial and entertainment premises, trade and business premises, construction sites and noise in the street. "

NPSE introduces three concepts to the assessment of noise in the UK:

- NOEL No Observed Effect Level This is the level below which no effect can be detected and below which there is no detectable effect on health and quality of life due to noise.
- LOAEL Lowest Observable Adverse Effect Level This is the level above which adverse effects on health and quality of life can be detected.
- SOAEL Significant Observed Adverse Effect Level This is the level above which significant adverse effects on health and quality of life occur.

NPSE does not numerically define levels for the NOEL, LOAEL or SOAEL rather it makes it clear that the noise level is likely to vary depending upon the noise source, the receptor and the time of day/day of the week, etc.

### National Planning Practice Guidance (2023)

The purpose of the guidance is to complement the NPPF and provide advice on how to deliver its policies.

The guidance includes a table (as shown in Table 1) that summarises "the noise exposure hierarchy, based on the likely average response" and which offers "examples of outcomes" relevant to the NOEL, LOAEL and SOAEL effect levels described in the NPSE.

Response	Examples of outcomes	Increasing effect level	Action			
No Observed Effect Level						
Not present	No Effect	No Observed Effect	No specific measures required			
	No Observed Adverse Effect Level					
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but no such that there is a change in the quality of life.	No Observed Adverse Effect Level	No specific measures required			
	Lowest Observed Adverse Effect	ct Level				
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.	Observed Adverse Effect Level	Mitigate and reduce to a minimum			
	Significant Observed Adverse Eff	ect Level				
Present and Disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect Level	Avoid			
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent			

Table 1: Noise Exposure Hierarchy, Based on the Likely Average Response.

### Calculation of Road Traffic Noise – 1988

For new developments, road traffic noise levels should be predicted in accordance with CRTN. This prediction method uses the traffic flow, vehicle speed, and percentage of heavy-duty vehicles (HDVs, over 3.5 tonnes), road gradient and other factors to calculate noise levels at receptor points.

### Design Manual for Road and Bridges, Volume 11 (LA111 – Noise and Vibration

Changes in noise level as a result of additional vehicles on the public highway can be assessed using methodologies presented in Design Manual for Road and Bridges (DMRB LA111),

This guidance document sets out the requirements for noise and vibration assessments from road projects. The construction, operation and maintenance of highway projects can lead to changes in noise and vibration levels in the surrounding environment.

The magnitude of change (in sound level) is defined in Table 3.54a of the guidance for short term and Table 3.54b for long term, as presented in Table 2:

Short term magnitude	Short term noise change (dB LA10,18hr or Lnight)
Major	Greater than or equal to 5.0
Moderate	3.0 to 4.9
Minor	1.0 to 2.9
Negligible	less than 1.0
Long term magnitude	Long term noise change (dB L <sub>A10,18hr</sub> or L <sub>night</sub> )
Long term magnitude Major	Long term noise change (dB L <sub>A10,18hr</sub> or L <sub>night</sub> ) Greater than or equal to 10.0
Long term magnitude Major Moderate	Long term noise change (dB L <sub>A10,18hr</sub> or L <sub>night</sub> )         Greater than or equal to 10.0         5.0 to 9.9
Long term magnitude Major Moderate Minor	Long term noise change (dB LA10,18hr or Lnight)Greater than or equal to 10.05.0 to 9.93.0 to 4.9

Table 2 (Table 3.54a and b DMRB, LA 111 - Magnitude of Change)

### Control of Pollution Act 1974

The local authority has powers under the Control of Pollution Act 1974 to control noise from construction sites. Section 60 of the Act allows a local authority to serve

a notice of its requirements for the control of site noise. This notice may include specification of plant that is or is not to be used, hours during which the construction works can be carried out and levels of noise emission. Section 61 of the Act allows a contractor or developer to take the initiative and agree with the local authority the methods of construction, steps to minimise noise and hours of work.

### The Environmental Protection Act 1990

Local authorities have a duty to deal with statutory nuisances under the Environmental Protection Act 1990. For noise to amount to a statutory nuisance, it must be "prejudicial to health or a nuisance" as outlined in Section 79 of the Act. Any proposed development should not result in a statutory nuisance being declared.

Should the Local Authority declare a development to cause a statutory nuisance, an abatement notice can be served to the developer who has up to 21 days to appeal to Magistrates' Court, as detailed in Section 80 of the Act.

### The Building Regulations 2010

Building Regulations approvals are required for most new buildings and for most types of works on existing buildings. Part 10 of The Building Regulations 2010 contains provisions, including power for local authorities to test building work, take samples, and provision to ensure compliance. Part E of the Regulation 'Resistance to the passage of sound' is expanded in Approved Document E, which provides robust details to control and mitigate noise within buildings. This Document is separated over four parts which include:

- E1: Protection against sound from other parts of the building and adjoining buildings;
- E2: Protection against sound within dwelling-house etc.;
- E3: Reverberation in the common internal parts of buildings containing flats or rooms for residential purposes;
- E4: Acoustic conditions in schools.

### World Health Organisation

The WHO document Guidance on Community Noise specifies additional information for noise affecting noise sensitive receptors and forms the basis of many noise limitations and design ranges for internal and external ambient noise levels. It defines noise as 'a class of sounds that are considered unwanted' (by the listener), 'that adversely affects, or may affect the physiological and psychological wellbeing of people.' Much of the research around this study is based on transportation noise.

Further guidance on the recommended levels is given in the World Health Organisation (WHO) Guidelines for Community Noise. In this document it is stated that:

"To protect the majority of people from being seriously annoyed during the daytime, the outdoor sound level from steady, continuous noise should not exceed 55 dB  $L_{Aeq}$  on balconies, terraces and in outdoor living areas. To protect the majority of people from being moderately annoyed during the daytime, the outdoor sound level should not exceed 50 dB  $L_{Aeq}$ ."

WHO also states the following paragraph with regard to the effects of LAmax events in a night-time period:

"For a good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45dB L<sub>Amax</sub> more than 10-15 times per night (Vallet & Vernet 1991)."

WHO guidance 'Night Noise Guidelines for Europe' is concerned with the longer-term average noise levels that are covered by the EU Directive on Environmental Noise, although this does appear to suggest external maximum noise levels of around 57dBA outside bedrooms during the night to achieve internal maximum levels of 42dBA.

The World Health Organisation has recently published Environmental Noise Guidelines – for the European Region (2018) to provide recommendations for protecting human health from exposure to noise sources such as transportation (road traffic, railway and aircraft), wind turbine noise and leisure noise.

The guidance document defines the 'strength' of recommendation (for protecting against noise exposure) as either 'strong' or conditional', outlined below.

### Strength of Recommendation

"A **strong** recommendation can be adopted as policy in most situations. The guideline is based on the confidence that the desirable effects of adherence to the recommendation outweigh the undesirable consequences. The quality of evidence for a net benefit – combined with information about values, preference and resources – inform this recommendation, which should be implemented in most circumstances."

"A **conditional** recommendation requires a policy-making process with substantial debate and involvement of various stakeholders. There is less certainty of its efficacy owing to lower quality of evidence of a net benefit, opposing values and preferences of individuals and populations affected or the high resource implications of the recommendation, meaning there may be circumstances or settings in which it will not apply."

External (free-field) recommendations included in the Environmental Noise Guidelines for the European Region are presented in Table 3 for specific noise sources.

Noise Source	dB L <sub>den</sub>	dB L <sub>night</sub>	dB L <sub>Aeq, 24hr</sub> (yearly average)	Recommendation
Road Traffic	53	45	-	Strong
Railway	54	44	-	Strong
Aircraft	45	40	-	Strong
Wind Turbine	45	-	-	Conditional
Entertainment	-	-	70	Strong/Conditional

Table 3: Extract from Environmental Noise Guidelines for the European Region

### BS8233:2014 – Guidance on Sound Insulation and Noise Reduction for Buildings

Formerly a Code of Practice, the 2014 revision of BS8233 is now presented and intended as a guidance document. The standard is mainly concerned with building design from an acoustic standpoint. It does however, contain information relevant

to environmental noise more specifically by stating guidance for desirable internal noise levels for dwellings and other buildings.

Table 2 of BS8233:2014 provides suitable internal levels for spaces such as openplan offices and restaurants and notes that an upper and lower noise levels should be considered, as presented in Table 4.

Objective	Typical Situation	Design range dB LAeq,T
	Restaurant	40 - 55
Typical noise levels for	Open plan office	45 - 50
acoustic privacy in shared spaces	Night club, public house	40 - 45
	Ballroom, banqueting hall	35 - 40

Table 4: Extract from Table 2 – Indoor ambient noise levels in spaces when they are unoccupied and privacy is also important

An extract of Table 4 of the document relevant for residential development is reproduced in Table 5.

Activity	Location	07:00 to 23:00 dB L <sub>Aeq</sub> , 16hour	23:00 to 07:00 L <sub>Aeq</sub> , 8hour
Resting	Living room	35	-
Dining	Dining room / area	40	-
Sleeping (daytime resting)	Bedroom	35	30

Table 5: Extract from Table 4 – Indoor ambient noise levels in dwellings

Whilst the above criteria is for dwellings, BS8233 states that these recommendations are similar for hotel guestrooms and therefore these have been adopted as the criteria for assessment.

The guidance of BS8233:2014 with regards to external amenity spaces is as follows:

"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  $L_{Aeq,T}$ , with an upper guideline value of 55 dB  $L_{Aeq,T}$  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."

### ProPG: Planning and Noise - May 2017

Guidance in ProPG Planning and Noise provides an approach which aims to inform developers, practitioners and local authorities on how potential residential sites should be assessed. ProPG states that the guidance can be used for other types of residential institution and therefore it is considered applicable to the site.

The guidance also builds upon government planning policy that noise should not be treated in isolation and there should be a holistic approach to good acoustic design.

ProPG sets out a 2-stage approach; the first of which is a risk assessment to identify the likelihood of significant adverse impact, then depending on the outcome of this risk assessment the extent of the acoustic design statement required. The graphic in Figure 1 is an extract from ProPG and indicates the level of risk associated with ranges of sound levels and provides some guidance on the likely extent of work associated with progressing a development exposed to these sound levels.

In relation to maximum noise levels, ProPG states that:

"In most circumstances in noise sensitive rooms at night (e.g. bedrooms) good acoustic design can be used so that individual noise events do not normally exceed 45dB L<sub>Amax,F</sub> more than 10 times a night. However, where it is not reasonably practicable to achieve this guideline then the judgement of acceptability will depend not only on the maximum noise levels but also on factors such as the source, number, distribution, predictability and regularity of noise events."



Figure 1: Extract from Figure 1 in ProPG – Initial Site Noise Risk Assessment

The second stage involves four key elements where discussion is expanded on:

- Element 1 Good Acoustic Design Process
- Element 2 Internal Noise Level Guidance
- Element 3 External Amenity Area Noise Assessment
- Element 4 Assessment of Other Relevant Issues

Having worked through the approach practitioners can present a recommendation to the decision maker.

### Acoustics Ventilation and Overheating - Residential Design Guide, January 2020

Acoustics Ventilation and Overheating (AVO) recommends an approach to acoustic assessments for new residential development taking consideration for acoustics, ventilation, and overheating. AVO states that the guidance can be used for other types of residential institution and therefore it is considered applicable to the site.

Section 3 involves a two-level risk assessment approach to estimate the potential impact on occupants in the case of overheating.

The Level 1 site risk assessment is based on external free-field noise levels and the assumed scenario where a partially open window is used to mitigate overheating (Table 3-2 of the guidance).

The sound level reduction from outside to inside for a partially open window is 13dB in this instance. A Level 1 site risk assessment is considered adequate if the site falls within the 'Negligible risk' category. A Level 2 assessment can optionally be undertaken to give more confidence in the case of Low or Medium risk sites, where appropriate. The Level 2 assessment is strongly recommended for 'High' risk sites.

The Level 2 assessment suggests that assessment of the adverse effect from noise exposure should include an estimate of how frequently and for what duration the overheating condition occurs (Table 3-3 of the guidance)

Figure 2 explains the two-level noise assessment procedure for overheating conditions.



Figure 2: Two-level Assessment Procedure (Figure 3.1 of AVO Guidance)

Figure 3 shows the Level 1 site risk assessment of noise, relating to overheating conditions.



Figure 3: Level 1 Risk Assessment (Figure 3.2 of AVO guidance)

Interna	l ambient noise lev	vel <sup>[Note 2]</sup>		
L <sub>Aeq,T</sub> [Note 3] during 07:00 — 23:00 [Note 6]	L <sub>Aeq. 8h</sub> during 23:00 – 07:00	Individual noise events during 23:00 – 07:00 <sub>[Note 4]</sub>	Exam	ples of Outcomes <sup>[Note 5]</sup>
> 50 dB	> 42 dB	Normally exceeds 65 dB LAF.max	Noise causes a material change in behaviour e.g. having to keep windows closed most of the time	Avoiding certain activities during periods of intrusion. Having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.
	Increasing noise level		Increasing likelihood of impact on reliable speech communication during the day or sleep disturbance at night	At higher noise levels, more significant behavioural change is expected and may only be considered suitable if occurring for limited periods. As noise levels increase, small behaviour changes are expected e.g. turning up the volume on the television; speaking a little more loudly; having to close windows for certain activities, for example ones which require a high level of concentration. Potential for some reported sleep disturbance. Affects the acoustic environment inside the dwelling such that there is a perceived change in quality of life. At lower noise levels, limited behavioural change is expected unless conditions are prevalent for most of the time. <sup>[Note 8]</sup>
≤ 35 dB	≤ 30 dB	Do not normally exceed La <sub>Fmax</sub> 45 dB more than 10 times a night	Noise can be heard, but does not cause any change in behaviour	Noise can be heard, but does not cause any change in behaviour, attitude, or other physiological response <sup>[Note 9]</sup> . Can slightly affect the acoustic character of the area but not such that there is a perceived change in the guality of life.

Figure 4 shows the Level 2 site risk assessment of noise, relating to overheating conditions.

Figure 4: Level 2 Risk Assessment (Figure 3.3 of AVO guidance)

The noise levels suggested in Figure 3 and Figure 4 assume a steady road traffic noise source but may be adapted for other types of transport by taking account of the differing responses to different transport sources.

### BS6472-1:2008 – Guide to Evaluation of Human Exposure to Vibration in Buildings - Part 1: Vibration sources other than blasting

This document offers guidance on how people inside buildings respond to vibration: the judgement criteria are more stringent at higher frequencies than in the superseded standard due to changes in the vertical frequency weighting.

Assessment of building vibration with respect to human response: When the appropriately-weighted vibration measurements or predictions have been used to derive the VDV (Vibration Dose Value) for either 16hr (daytime) or 8h (night-time) at the relevant places of interest, their significance in terms of human response can be derived from Table 6, shown below:

Place and time	Low probability of adverse comment m·s <sup>-1.75 1)</sup>	Adverse comment possible m·s <sup>-1.75</sup>	Adverse comment probable m·s <sup>-1.75</sup> <sup>2)</sup>	
Residential buildings 16 h day	0.2 to 0.4	0.4 to 0.8	0.8 to 1.6	
Residential buildings 8 h night	0.1 to 0.2	0.2 to 0.4	0.4 to 0.8	

Table 6: Vibration Dose Values from BS6472-1:2008

### BS4142:2014 Methods for rating industrial and commercial sound

BS4142:2014 uses a comparison between the rating and background sound levels to establish an initial estimate of the likely significance of impact. The standard notes:

- *a)* Typically, the greater this difference, the greater the magnitude of the impact.
- *b)* A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.

- c) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.
- d) 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. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

The context of the assessment must then be considered, which can significantly alter the outcome of the assessment. Factors that might alter the outcome of the assessment include the absolute level of sound compared to the residual sound level, the character of the sound compared to the residual, the sensitivity of the receptor etc.

### The London Plan 2021

The latest version of the London Plan, as published in March 2021, provides an overall strategic plan for London, setting out an integrated economic, environmental, transport and social framework for the development of London over the next 20–25 years. The 'Publication London Plan' brings together the geographic and locational aspects of the Mayor's other strategies, including a range of environmental issues such as climate change (adaptation and mitigation), air quality, noise and waste.

The most relevant guidance in terms of the impact and assessment of noise is found within Policy D14: Noise, which states:

### "...Policy D14 Noise

- A In order to reduce, manage and mitigate noise to improve health and quality of life, residential and other non-aviation development proposals should manage noise by:
  - 1) avoiding significant adverse noise impacts on health and quality of life
  - 2) reflecting the Agent of Change principle as set out in Policy D13 Agent of Change

- 3) mitigating and minimising the existing and potential adverse impacts of noise on, from, within, as a result of, or in the vicinity of new development without placing unreasonable restrictions on existing noise-generating uses
- 4) improving and enhancing the acoustic environment and promoting appropriate soundscapes (including Quiet Areas and spaces of relative tranquillity)
- 5) separating new noise-sensitive development from major noise sources (such as road, rail, air transport and some types of industrial use) through the use of distance, screening, layout, orientation, uses and materials – in preference to sole reliance on sound insulation
- 6) where it is not possible to achieve separation of noise-sensitive development and noise sources without undue impact on other sustainable development objectives, then any potential adverse effects should be controlled and mitigated through applying good acoustic design principles
- 7) promoting new technologies and improved practices to reduce noise at source, and on the transmission path from source to receiver.
- *B* Boroughs, and others with relevant responsibilities, should identify and nominate new Quiet Areas and protect existing Quiet Areas in line with the procedure in Defra's Noise Action Plan for Agglomerations..."

Policy D14: Noise refers to Policy D13: Agent of Change, which states:

### "....Policy D13 Agent of Change

A The Agent of Change principle places the responsibility for mitigating impacts from existing noise and other nuisance-generating activities or uses on the proposed new noise-sensitive development. Boroughs should ensure that Development Plans and planning decisions reflect the Agent of Change principle and take account of existing noise and other nuisance generating uses in a sensitive manner when new development is proposed nearby.

- B Developments should be designed to ensure that established noise and other nuisance-generating uses remain viable and can continue or grow without unreasonable restrictions being placed on them.
- C New noise and other nuisance-generating development proposed close to residential and other noise-sensitive uses should put in place measures to mitigate and manage any noise impacts for neighbouring residents and businesses.
- D Development proposals should manage noise and other potential nuisances by:

1) ensuring good design mitigates and minimises existing and potential nuisances generated by existing uses and activities located in the area

2) exploring mitigation measures early in the design stage, with necessary and appropriate provisions including ongoing and future management of mitigation measures secured through planning obligations

*3)* separating new noise-sensitive development where possible from existing noise-generating business and uses through distance, screening, internal layout, sound-proofing, insulation and other acoustic design measures.

*E* Boroughs should not normally permit development proposals that have not clearly demonstrated how noise and other nuisances will be mitigated and managed..."

**APPENDIX B** 

### ACOUSTIC TERMINOLOGY

The effects of noise on human beings may be expressed in terms of physiological damage and annoyance. It is, however, only the annoyance impacts that need to be considered in detail when addressing environmental noise impacts. Annoyance also includes the immediate effects of activity interference, for example sleep disturbance and speech interference.

The practice has become to measure sound levels in decibels (dB). The decibel scale is logarithmic rather than linear and it is useful to bear in mind that a noise level change of 3dB would be equivalent to doubling the energy level (for example doubling the volume of traffic) and that an increase of 10 dB is perceived, subjectively, as a doubling of loudness. The human ear responds differently to sounds of different frequency. The ear perceives high frequency sound of a given sound pressure level more loudly than a low frequency sound at the same level. The A-weighted sound level, dB(A), takes this response into consideration and is commonly used for measurement of environmental noise in UK. It thus indicates the subjective human response to sound.

Environmental noise levels vary continuously from second to second, it is clearly impractical to specify the sound level continuously and thus time averaging is required. In practice human response has been related to various units which include allowance for the fluctuating nature of sound with time. For the purpose of this report these include:

### L<sub>Aeq,T</sub> : the equivalent A-weighted continuous sound level.

This unit relates to the equivalent level of continuous sound for a specific time period T, for example 16 hours for daytime noise. It contains all the sound energy of the varying sound levels over the same time period and expresses it as a continuous sound level over that period.

# $L_{A10,T}$ : the A-weighted level of sound exceeded for 10% of the time period T.

This unit is used for traffic noise measurement and is the preferred unit for prediction of traffic noise in the publication, 'Calculation of Road Traffic Noise'.

# $L_{A90,T}$ : the A-weighted level of sound exceeded for 90% of the time period T.

This unit is commonly used to represent the background noise and is used in assessing the effects of industrial noise in UK.

## $L_{\mbox{\scriptsize Amax}}$ : the maximum A-weighted level of sound over a period of measurement.

### $L_{Ar,T}$ : the rating level.

The specific Noise plus any adjustments for the characteristic features of the noise. Used for comparison between background levels with the noise source off.

### SEL : the Sound Exposure Level.

Sound exposure level abbreviated as SEL and LAE, is the total noise energy produced from a single noise event condensed into a 1 second time period.

### **R**<sub>w</sub> : weighted sound reduction index.

A laboratory-measured value as defined in ISO717 Part 1.

### D<sub>nTw</sub>:

The equivalent of Rw, but measured onsite as oppose to in a laboratory