SHARPS REDMORE

ACOUSTIC CONSULTANTS ▪ Established 1990

Report

34 Westferry Circus, Canary Wharf

Environmental noise Assessment of a Proposed Roof Terrace Bar and Restaurant

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Date 30th November 2022
Project No 2221519

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Executive Summary

A noise assessment has been carried out for a proposal for the development of an open roof terrace bar & restaurant development at 34 Westferry Circus, Canary Riverside, London, E14 8RR.

This report contains a consideration of relevant planning policy and derivation of appropriate assessment criteria, an environmental noise survey carried out in the vicinity of the site and an assessment of the main potential noise sources, together with consideration of local policy.

Consideration has been given to the noise impact of the proposal on the nearest residential apartments to the north and north east of the site.

The sources identified with the potential to produce an impact are:

- Noise from patrons of the bar and restaurant, and
- Noise from plant or equipment on site.

Each of these sources has been assessed and it has been concluded that there would be no significant adverse noise impact on the closest residential properties from the proposed development, given the proposed operating hours, management, and the existing noise climate.

Computer modelling has been undertaken via SoundPLAN™ modelling to demonstrate the noise impact of the proposed development on residential properties outlined above.

A planning condition has been suggested to control plant noise in accordance with local policy.

1.0 Introduction

1.1 Sharps Redmore Limited (SR) has been instructed to undertake an environmental noise assessment for a development of an open roof terrace bar and restaurant.

1.2 The purpose of this assessment is to assess noise from the proposal to include patron noise and plant.

1.3 The existing site comprises of a six-storey detached commercial premises currently in use as a gym. The gym uses the first four floors with the upper floors currently vacant with existing restaurant & bar use. The proposal is sited on the existing flat roof forming the 6th floor.

1.4 Section 2 discusses the Government's Planning Policy and relevant guidance and standards relevant to the case.

1.5 A noise survey over 4 days and nights has been undertaken at the rear of the site on the flat roof to be representative of the nearest noise sensitive premises to determine existing background and ambient noise levels.

1.6 SoundPLAN^{TM} computer modelling has been undertaken to show the predicted levels of patron noise at the nearest noise sensitive properties across the heights of the residential development. The model demonstrates the levels in the L_{Aeq} parameter and are shown at Appendix A.

1.7 The assessment is contained in Section 4 where predicted levels are compared to existing levels at the nearest noise sensitive premises.

2.0 Assessment Methodology and Criteria

2.1 The National Planning Policy Framework (NPPF), amended in July 2021, sets out the Government's economic, environmental and social planning policies for England and "these policies articulate the Government's vision of sustainable development." In relation to noise, paragraph 185 states:

"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

a) 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;

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason."

2.2 The NPPF reinforces the March 2010 DEFRA publication, "Noise Policy Statement for England" (NPSE), which states three policy aims, as follows:

"Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- avoid significant adverse impacts on health and quality of life;
- mitigate and minimise adverse impacts on health and quality of life; and
- where possible, contribute to the improvement of health and quality of life."

2.3 Together, the first two aims require that no significant adverse impact should occur and that, where a noise level which falls between a level which represents the lowest observable adverse effect and a level which represents a significant observed adverse effect, then according to the explanatory notes in the statement:

"… all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life whilst also taking into consideration the guiding principles of sustainable development. This does not mean that such effects cannot occur."

2.4 The WHO guideline values are appropriate to what are termed “critical health effects”. This means that the limits are at the lowest noise level that would result in any psychological, physiological or sociological effect. They are, as defined by NPSE, set at the Lowest Observed Adverse Effect Level (LOAEL), but do not define the level above which effects are significant (the SOAEL). Compliance with the LOAEL should, therefore, be seen as a robust aim.

2.5 The WHO guideline noise values are summarised in the following table:

Table 2.1: WHO guideline noise values

Document	Level	Guidance
World Health Organisation “Community Noise 2000”	L_{AeqT} = 55 dB	Serious annoyance, daytime and evening. (Continuous noise, outdoor living areas)
	L_{AeqT} = 50 dB	Moderate annoyance, daytime and evening. (Continuous noise, outdoor living areas).
	L_{AeqT} = 35 dB	Moderate annoyance, daytime and evening. (Continuous noise, dwellings, indoors)
	L_{AeqT} = 30 dB	Sleep disturbance, night-time (indoors)
	L_{AMAX} = 60 dB	Sleep disturbance, windows open at night. (Noise peaks outside bedrooms, external level).
	L_{AMAX} = 45 dB	Sleep disturbance at night (Noise peaks inside bedrooms, internal level)

2.6 For L_{AeqT} criteria the time base (T) given in the documents is 16 hours for daytime limits and 8 hours for night time limits.

2.7 British Standard 4142 2019 +A1: Methods for Rating and Assessing Industrial and Commercial Sound is the relevant standard to determine impact from sound from industrial and manufacturing processes, sound from fixed installations which comprise mechanical and electrical plant and equipment. The scope of the Standard does not include noise from people and is specifically excluded in Paragraph 1.3 (f) of the Standard.

2.8 The revised BS 4142:2019 +A1 document was published following extensive consultation with industry and local authorities. Amongst the changes to the Standard, the concepts of certainty in results and the consideration of context of measured values was introduced. In particular, the assessment of impacts reinforces and expands on the concept of context and a commentary is available in Chapter 11 of the Standard, which is reproduced in part below. Further changes include the replacement of 'likelihood of complaint' with the 'likelihood of adverse impact or serious adverse impact'. This is consistent with the approach in the Noise Policy Statement for England (NPSE), also reproduced in part above in 2.2. The character and level of the residual sound compared to the character and level of the specific sound has been considered, together with an assessment of uncertainty of the measured values.

"*The significance of sound of an industrial nature depends on 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. An effective assessment cannot be undertaken without an understanding of the reason(s) for the assessment and the context in which the sound occurs/will occur. When making assessments and arriving at decisions, therefore, it is essential to place the sound in context."*

2.9 BS 4142: 2019 +A1 comments further in Chapter 11 (Assessment of impacts) on the derivation of the impact of the specific sound by subtracting the measured background level from the rating level and gives consideration to the following:

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 significant adverse impact depending on 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 level, the less likely it is that the specific sound source will have an adverse or significant adverse impact. Where the rating level does not exceed the background level, this is an indication that the specific sound source will have a low impact, depending on context.

2.10 BS 4142:2019 +A1 comments further with reference to low levels in section 11 in the assessment of impacts and context. It maintains that where background and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true for night time or where daytime levels are also low.

2.11 The national interpretation of the WHO guidelines is contained in BS 8233:2014 'Sound Insulation & Noise Reduction for Buildings'. BS 8233 recommends the following desirable guideline values for internal ambient noise:

Table 4 **Indoor ambient noise levels for dwellings**

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 dB $L_{Aeq,16hour}$	—
Dining	Dining room/area	40 dB $L_{Aeq,16hour}$	—
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hour}$	30 dB $L_{Aeq,8hour}$

2.12 There is no longer a L_{Amax} standard for bedrooms In BS 8233. However, footnote 4 to Table 4 states that "Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,F}$ depending on the character and number of events per night. Sporadic noise events could require separate values." In this case, it is proposed that the previous BS 8233 internal standard (also referenced in World Health Organisation Guidelines for Community Noise) is applied. This is 45 dB L_{Amax}, inside bedrooms.

Changes in Level

2.13 Changes in noise levels of less than 3 dBA are not perceptible under normal conditions and changes of 10 dBA are equivalent to a doubling of loudness. This guidance has been accepted by inspectors, at inquiry, to encompass changes in noise levels in the index L_{AeqT}.

2.14 The following table shows the response to changes in noise (known as a Semantic Scale):

Table 2.2: Response to changes in noise

Change in noise level L_{AeqT} dB	Response	Impact
<3	Imperceptible	None
3 – 5	Perceptible	Slight
6 – 10	Up to a doubling	Significant
11 – 15	More than a doubling	Substantial
>15	-	Severe

Ref: Manning "Criteria for the Environmental Assessment, Planning and Mitigation of Railway Noise" Proc. IOA Vol. 20 Part 1 (1998) pp 195 – 202.

Local Policy

2.15 LB Tower Hamlets Policy D.ES9 Noise and vibration contains the following guidance in italics:

Development is required to:

a. use the most appropriate, layout, orientation, design and use of buildings to minimise noise and vibration impacts

b. identify/outline mitigating measures to manage noise and vibration from new development, including during the construction phase

c. separate noise-sensitive development from existing operational noise, and

d. provide a noise assessment where noise-generating development or noise-sensitive development is proposed.

Where new noise-sensitive land uses are proposed in proximity to existing noise-generating uses, development is required to robustly demonstrate how conflict with existing uses will be avoided, through mitigation measures.

Development is required to demonstrate that the level of noise emitted from any new heating or ventilation plant will be below the background level by at least 10 dBA.

2.16 Considering the above, the following assessment methods are recommended:

- Noise from mechanical services plant – BS 4142:2019 +A1
- Noise from patrons – WHO Guidelines/Change in noise level
- The sensitivity of the receptors – BS 4142:2019 +A1/WHO Guidelines
- Internal residential ambient noise levels – BS 8233:2014

3.0 Survey Methodology, Details and Results

3.1 A survey has been undertaken between the 11th-15th November 2022 to provide data to inform the existing ambient, maximum and background levels representative of the nearest residential properties.

3.2 The survey was undertaken at a point shown below as MP1 at the rear of the roof of the proposal. It was noted that the noise climate was dominated by road traffic noise from Westferry Road and the A1203 together with local traffic, general neighbourhood noise typical of the area, and existing plant.

Figure 3.1 Monitoring position for survey:

3.3 The instrumentation used to carry out the short term noise survey was as follows.

- Norsonic 140 type 1 precision sound level meter (SLM)
- Norsonic 1250 acoustic calibrator

3.4 The SLM was set to measure the following "A" weighted parameters: $L_{Aeq,}$, L_{A90} and L_{Amax}. The measurement sample period was 15 minutes. Immediately before and after the measurements were carried out, the SLM was calibrated using the acoustic calibrator with no noticeable drift.

3.5 The weather during the survey was dry with temperatures of around 15°C at the start of the survey with wind speeds suitable for noise measurements.

3.6 The noise survey that established the measured noise levels at the measurement location is summarised below in Table 3.1. The results are summarised for brevity however full survey data is available if required.

Table 3.1: Summary Survey Noise Levels-: MP1

Measurement Period	Measured Free-Field Noise Level, dB			
	$L_{Aeq,T}$ *	$L_{Aeq,15m}$ (range)	$L_{A90,15m}$ (typical)	L_{Amax} (typical)
Daytime 0700-1800	55dB	48-66dB	50dB	77dB
Evening 1800-2300	55dB	50-65dB	50dB	76dB
Night 2300-0700	49dB	46-54dB	46dB	71dB

*= Logarithmic average

4.0 Assessment

4.1 Noise associated with the proposal is noise from patrons using the restaurant/bar and plant associated with the proposal such as refrigeration, air conditioning and extraction/ventilation. Noise levels from patrons has been predicted using data within SoundPLAN^{TM} software and a model produced showing likely levels at the residential properties and surrounding area. SR has used SoundPLAN 8.2 noise modelling software package to predict the noise levels from these activities.

4.2 SoundPLAN calculates $L_{Aeq,T}$ levels at defined receptors in accordance with the relevant standards. The calculation is based on a number of input parameters including, source noise level data, receptor positions, barriers and screening, topography and intervening ground conditions. The location and dimensions of the physical elements of the model such as location and dimensions of buildings, have been taken directly from architectural drawings, and OS mapping. The topography has been derived from online GIS data.

4.3 Noise contours can be plotted at defined intervals, and height above ground level. The results can also be plotted as façade noise maps. Predictions have been made and the resulting noise map is included at Appendix A. The predictions are based on the following to provide a robust assessment which gives a sound power level of 66dB/m^2 across the roof space as an appropriate source level for the model:

Topography – EA 1m LIDAR

Base mapping – OS Vector map

Ground Absorption – 100% hard ground for site and surroundings

Source data from SoundPLAN Data base

For a beer garden (up to about 300 persons):

LwA" = LwA + 10lg n + 10lg k

LwA = 65 dB/person (Level of a single person)

n = 2,3 m² (occupied area per person)

k = 50 % (percentage of persons speaking at the same time)

LwA" = 66 dB/m²

4.4 The levels predicted at the residential premises include a 2m high screen to the northern and eastern elevations. It is understood that this will be opaque to address over-looking concerns. The noise levels from patrons summarised in the model indicate that predicted L_{Aeq} levels from patron activity are below existing levels for ambient, background, and maximum levels at all times within the proposed operating times of the proposal up to 2300.

4.5 Patron activity would not be introducing a new or different noise source to the area. The site is located on the River Thames by the Thames Clipper Ferry and adjacent to additional commercial premises including the Quadrato Restaurant, Bar & Lounge located on the ground-floor of the Canary Riverside Plaza Hotel with an outside terrace located approx. 25m from the eastern façade of 34 Westferry Circus. Mala Indian Kitchen & Bar are also located adjacent to the proposed development at 37 Westferry Circus with an outside terrace seating area and open until 10.30pm located approx. 39 metres away from the north-western façade.

Noise from fixed plant and equipment

4.6 Since it is not possible to predict what type and number of plant is to be used at the site an appropriate planning condition could control noise levels from plant in accordance with LB Tower Hamlet's policy along the lines of:

"*All fixed plant and machinery within the development should be designed and installed such that the cumulative rating level of the fixed development shall be 10 dB below the typical background level using BS 4142:2014 at the nearest noise sensitive receptor*"

4.7 To provide robust compliance it is recommended that the night time typical background is used, as the lowest background time period. Given the distances and existing screening involved and the scope for simple on-site noise control measures (such as selection of quieter plant, careful siting and orientation, enclosure and additional screening), if needed, these limit values can be readily achievable without the need for any novel or complex mitigation schemes.

5.0 Conclusions

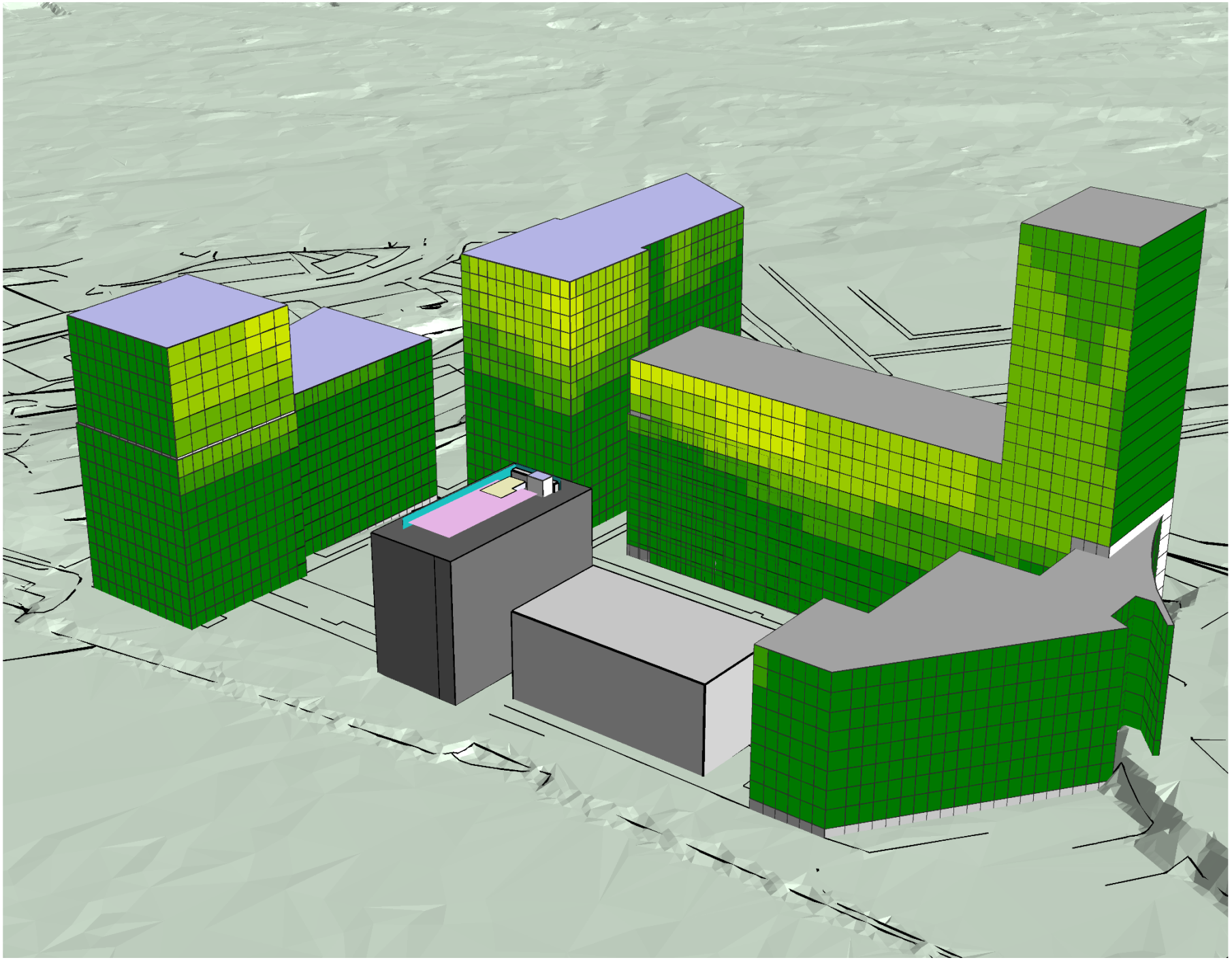
5.1 An assessment of the existing ambient, maximum and background noise levels has been undertaken at the boundary to the nearest residential properties to inform a study for the development of the site.

5.2 Consideration has been given to the likely noise levels associated with this type of proposal and the levels predicted at the nearest noise sensitive property using SoundPLAN™ computer software modelling. The impact from operation of the proposal has been assessed against national guidance, local policy and existing noise levels.

5.3 It is concluded that the proposal will operate below existing ambient and background levels at the likely operating times at the boundaries with the nearest residential properties as proposed and will not cause an adverse impact on the health and life of local residents in accordance with the national policy aims contained within the NPPF, NPSE and in accordance with noise guideline values contained in BS 8233:2014, BS 4142:2014 and World Health Organisation Guidelines for Community Noise 1999 together with local aims.

APPENDIX A

SOUNDPLAN™ MODEL



Noise level
LAeq(T)
(dB)

		<=	37
37	<	<=	39
39	<	<=	41
41	<	<=	43
43	<	<=	45
45	<	<=	47
47	<	<=	49
49	<	<=	51
51	<	<=	53
53	<	<=	55
55	<	<=	57
57	<	<=	59
59	<	<=	61
61	<		

Westferry Circus

Noise levels

LAeq(T)

Date: 28.11.2022

PGR/MPC-2221519-28.11.22-FF-FNMP02

Consultant: M. Court

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APPENDIX B

ACOUSTIC TERMINOLOGY

Acoustic Terminology

1. Noise, defined as unwanted sound, is measured in units of decibels, dB. The range of audible sound is from 0 dB to 140 dB. Two equal sources of sound, if added together will result in an increase in level of 3 dB, i.e. 50 dB + 50 dB = 53 dB. A 10 dB increase in sound is perceived as a doubling of loudness.

2. Frequency (or pitch) of sound is measured in units of Hertz. 1 Hertz = 1 cycle/second. The range of frequencies audible to the human ear is around 20 Hz to 18000 Hz (or 18 kHz). The capability of a person to hear higher frequencies will reduce with age. The ear is more sensitive to medium frequency than high or low frequencies.

3. To take account of the varying sensitivity of people to different frequencies a weighting scale has been universally adopted called "A-weighting". The measuring equipment has the ability to automatically weight (or filter) a sound to this A scale so that the sound level it measures best correlates to the subjective response of a person. The unit of measurement thus becomes dBA (decibel, A-weighted).

4. The second important characteristic of sound is amplitude or level. Two units are used to express level a) sound power level - Lw, and b) sound pressure level - Lp. Sound power level is an inherent property of a source whilst sound pressure level is dependent on surroundings/distance/directivity etc. The sound level that is measured on a meter is the sound pressure level, Lp.

5. External sound levels are rarely steady but rise or fall in response to the activity in the area - cars, voices, planes, birdsong, etc. A person's subjective response to difference noises has been found to vary dependent on its temporal distribution (i.e. its variation with time). For this reason, a set of statistical indices have been developed.

6. There are four main statistical indices in use in the UK:

   L_{A90} The sound level (in dBA) exceeded for 90% of the time. This unit gives an indication of the sound level during the quieter periods of time in any given sample. It is used to describe the "background noise level" of an area.

   L_{AeqT} The equivalent continuous sound level over a period of time, T. this unit may be described as "the notional steady noise level that would provide, over a period, the same energy as the varying noise in question" (In other words, the energy average level). This unit is now used to measure a wide variety of different types of noise of an industrial or commercial nature, as well as road traffic, aircraft and trains.

   L_{A10} The sound level (in dBA) exceeded for 10% of the time. This level gives an indication of the sound level during the noisier periods of time in any given sample. It has been used over many years to measure and assess road traffic noise.

   L_{AMAX} The maximum level of sound, i.e. the peak level of sound measured in any given period. This unit is used to measure and assess transient noises, i.e. gun shots, individual vehicles, etc.