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Parker Mews, London
WC2B 5NT

Noise Impact Assessment Report
Report 30013.NIA.01

CP CO 13 Limited
Bartholomew Lane,
London
EC2N 2AX

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1.0 INTRODUCTION

KP Acoustics Ltd has been commissioned by CP CO 13 Limited, 1 Bartholomew Lane London EC2N 2AX to assess, by means of a noise assessment, the proposal to convert existing underground car-parking space into Class-B8 self-storage units. Based on the information provided by the client, it is understood that the main operation will involve the loading, unloading, and storage of goods. All such activities are expected to be carried out entirely within the underground levels of the car park, namely levels -2 to -5 of the building. Delivery vehicle operations are expected to take place during daytime hours only.

In order to assess the impact of the above processes, a hypothetical 'worst case' scenario has been used as the basis for the assessment of the impact of proposed operations, based on BS4142:2014 *Methods for rating and assessing industrial and commercial sound.* The assessment period according to BS4142 is one hour for daytime, and therefore the levels measured in the noise survey have been corrected based on assumed operations during a one-hour time period.

2.0 SITE SURVEYS

2.1 Site Description

The entrance to the underground site is bounded by a commercial building to the north, a residential building to the east, a street of mixed commercial and residential buildings across Parker street to the south and the Gillian Lynne Theatre to the west. The entrance to the site is located off Parker Mews.

During the survey, the noise climate was dominated by road traffic noise from Parker Mews and Parker Street and vehicle movement noise associated with the car park. The Theatre has a loading bay entrance next to the entrance to the car park that takes many deliveries every day.

2.2 Environmental Noise Survey Procedure

A noise survey was undertaken at the entrance to the proposed site as shown in Figure 2.1-2.2. Long-term unattended measurements and short-term attended measurements were undertaken. The location was chosen in order to collect data representative of existing background noise levels.

Due to access and security constraints, the noise measurement location was positioned just inside the building entrance.

Continuous automated monitoring was undertaken for the duration of the survey between 11.00am on 08/04/2025 and 12.30pm on 09/04/2025.

Weather conditions were generally dry with light winds and therefore suitable for the measurement of environmental noise. The measurement procedure complied with ISO 1996-2:2017 Acoustics '*Description, measurement and assessment of environmental noise - Part 2: Determination of environmental noise levels*'.

2.3 Measurement Positions

Measurement positions are as described within Table 2.1 and shown within Figure 2.1-2.2.

Icon	Descriptor	Location Description
1	Noise Measurement Position 1	The microphone was installed behind a fence on a tripod in the entrance to the car park in Figure 2.1-2.2. The microphone was positioned at approx. 1 metres from the nearest surface.
2	Short-term Noise Measurement Position 1	The microphone was installed on a tripod a tripod next to the boundary of the residential block.

Table 2.1 Measurement positions and descriptions

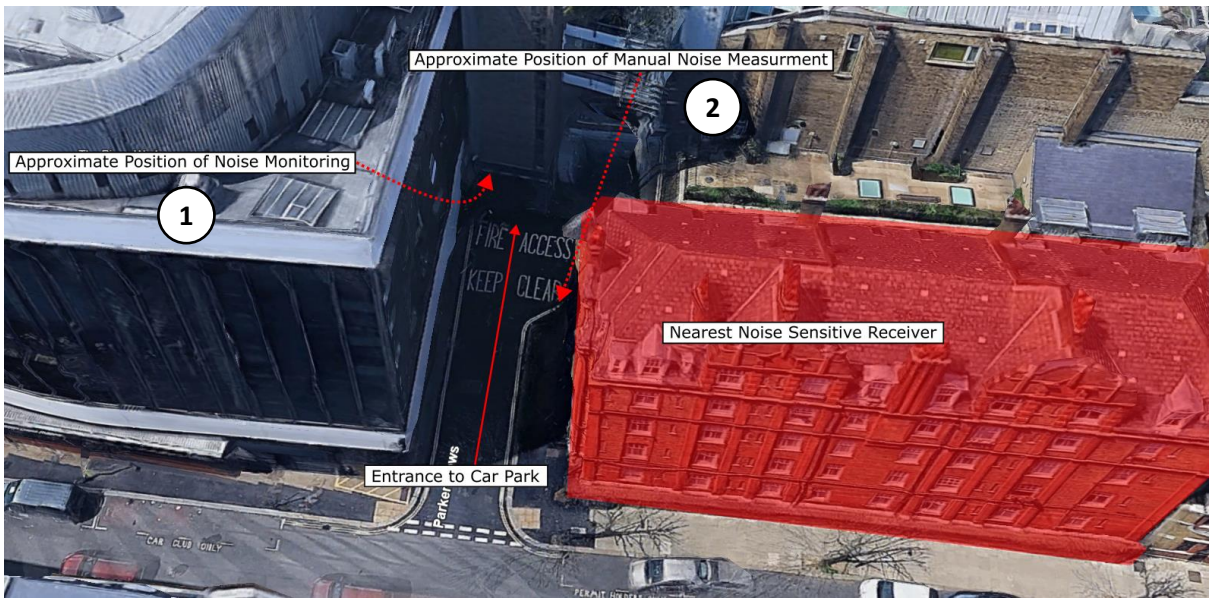

Figure 2.1 Site measurement location (Image Source: Google Maps)

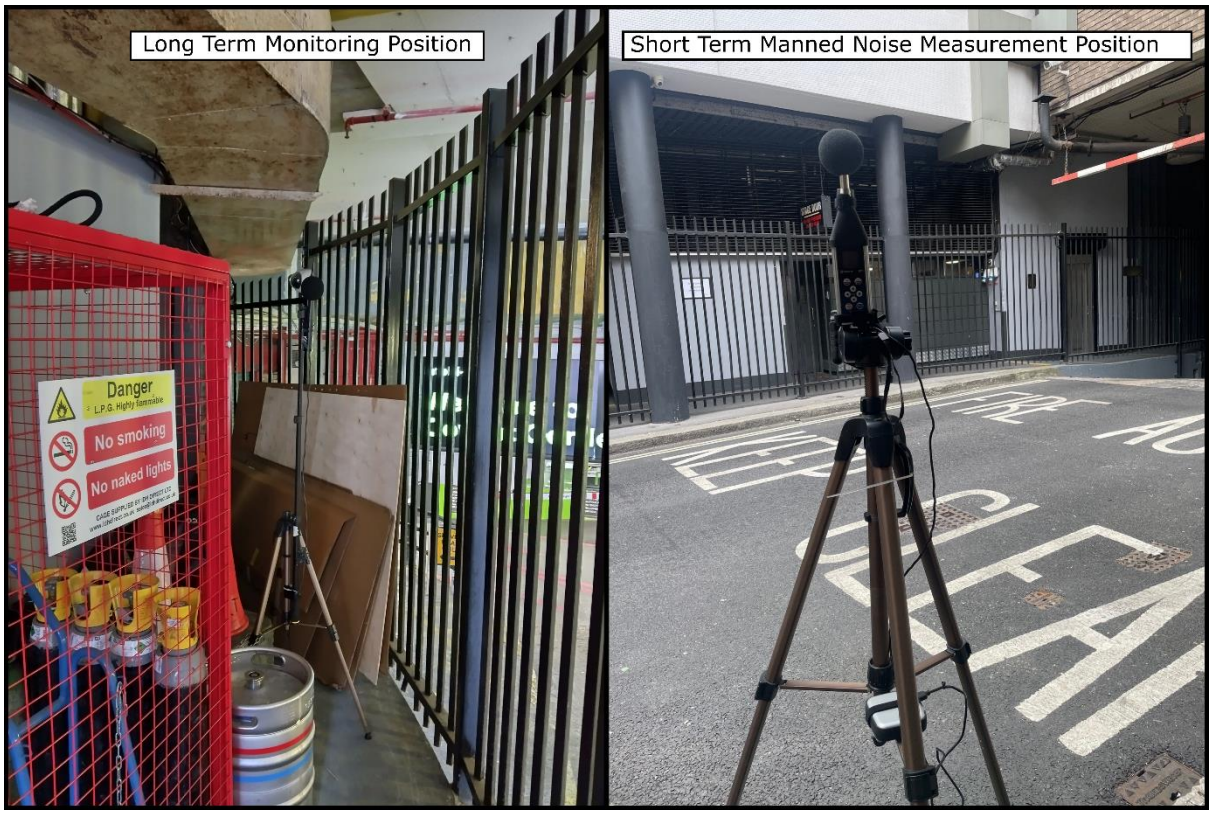

Figure 2.2 Site measurement positions

2.4 Closest Noise Sensitive Receiver

The closest noise-sensitive receiver to the existing car park entrance has been identified as a residential block to the east of the car park entrance. This residential block is approximately 11 metres from the existing car park entrance, as shown in Figure 2.2.

2.5 Equipment

The equipment calibration was verified before and after use and no abnormalities were observed. The equipment used is described within Table 2.2.

Measurement instrumentation		Serial no.	Calibration Date	Cert no.
Noise Kit 38	NTI Audio XL2 Class 1 Sound Level Meter	A2A-23182-E1	12/09/2023	UK-23-104
	Free-field microphone NTI Acoustics MC230A	A25833		
	Preamp NTI Acoustics MA220	13818		
	NTI Audio External Weatherproof Shroud	-	-	-
B&K Type 4231 Class 1 Calibrator		2147411	14/06/2024	UKAS24/06 438

Table 2.2 Measurement instrumentation

3.0 RESULTS

3.1 Noise Survey

The $L_{Aeq:\ 5min}$, $L_{Amax:\ 5min}$, $L_{A10:\ 5min}$ and $L_{A90:\ 5min}$ acoustic parameters were measured throughout the duration of the survey. Measured levels are shown as a time history in Figure 30013.TH1.

Measured noise levels are representative of noise exposure levels expected to be experienced by the facade of the nearest residential block, and are shown in Table 3.1 with representative background levels (typical $L_{A90,T}$) shown in Table 3.2 and the results of the manual measurement given in Table 3.3.

Time Period	Noise Measurement Position 1 (Measured Noise level – dBA)
Daytime $L_{Aeq,16hour}$	63
Night-time $L_{Aeq,8hour}$	58

Table 3.1 Site average noise levels for daytime and night time

Time Period	Noise Measurement Position 1 Representative background noise level L_{A90} dB(A)
Daytime (07:00-23:00)	48
Night-time (23:00-07:00)	47

Table 3.2 Representative background noise levels

Time Period	Noise Measurement Position 2 (Measured Noise level – dBA)
Daytime 13:20-13:40 $L_{Aeq,T}$	63

Table 3.3 Noise level for manual measurement

4.0 NOISE ASSESSMENT GUIDANCE

4.1 BS4142 Assessment

Due to the proximity of the entrance to the storage units to the nearest noise sensitive receiver, an assessment should be undertaken to ensure that residential amenity can be protected.

British Standard BS4142:2014 '*Methods for rating and assessing industrial and commercial sound*' describes a method for rating and assessing sound of an industrial and/or commercial nature, which includes:

- Sound from industrial and manufacturing processes
- Sound from fixed installations which comprise mechanical and electrical plant and equipment
- Sound from the loading and unloading of goods and materials at industrial and/or commercial premises, and
- Sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes.

This Standard compares the Rating Level due to the noise source under assessment for a one-hour period during the daytime (07:00 – 23:00 hours) and a fifteen-minute period during the night-time (23:00 – 07:00 hours) with the existing background noise level in terms of an L_{A90} when the noise source is not operating.

It should be noted that the Rating Level is the Specific Sound Level in question ($L_{Aeq,\ Tr}$), including any relevant acoustic feature corrections, as follows:

- **Tonality** – '*For sound ranging from not tonal to prominently tonal the Joint Nordic Method gives a correction of between 0dB and +6dB for tonality. Subjectively, this can be converted to a penalty of 2dB for a tone which is just perceptible at the noise receptor, 4dB where it is clearly perceptible, and 6dB where it is highly perceptible'*

- **Impulsivity** – '*A correction of up to +9dB can be applied for sound that is highly impulsive, considering both the rapidity of the change in sound level and the overall change in sound level. Subjectively, this can be converted to a penalty of 3dB for impulsivity which is just perceptible at the noise receptor, 6dB where it is clearly perceptible, and 9dB where it is highly perceptible'*
- **Intermittency** – '*If the intermittency is readily distinctive against the residual acoustic environment, a penalty of 3dB can be applied'*
- **Other sound characteristics** – '*Where the specific sound features characteristics that are neither tonal nor impulsive, though otherwise are readily distinctive against the residual acoustic environment, a penalty of 3dB can be applied'*

Once the Rating Level has been obtained, the representative background sound level is subtracted from the Rating Level to obtain an initial estimate of the impact, as follows:

- Typically, 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 could 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 there will be an adverse impact or significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound having a low impact, depending on the context

NOTE: Adverse impacts may include but not be limited to annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact.

The initial estimate of the impact may then be modified by taking consideration of the context in which the sound occurs.

We would suggest that the following rating level range of acceptability is followed, see Table 4.1. This takes into account the context of the environment in which the proposed storage units will operate.

Assessment Location	Rating Level Acceptability Range		
	Green: noise is considered to be at an acceptable level	**Amber:** noise is observed to have an adverse effect level, but which may be considered acceptable when assessed in the context of other merits of the development	**Red:** noise is observed to have a significant adverse effect.
1m Outside living or dining or Bedroom window (façade)	10dB below background	9 dB below and 5dB above background	5dB above background

Table 4.1 Noise criteria

4.2 Noise Assessment of Proposed Self-Storage Unit Operations

The proposed development involves a change of use for Levels -2 to -5, all below ground level, of the existing car park, converting them into Class B8 self-storage units. Between 70% and 75% of the floor area of each level will be converted into self-storage units.

The proposed change of use in the carpark will greatly reduce the overall parking capacity and this may reduce the number of vehicles entering and exiting the site. The exact number of spaces to be removed has not been confirmed by the client.

The client has stated that while the proposed storage units will be accessible 24 hours a day, delivery operations are expected to occur between 9:00 AM and 5:00 PM, Monday to Saturday, and between 10:00 AM and 3:00 PM on Sundays.

The main operations involving self-storage—such as loading, unloading, and storage—are expected to occur entirely within the existing car park space, all below ground. Consequently, the primary noise sources associated with self-storage are limited to vehicle movements through the main entrance of the existing car park, which also serves as the access point for the storage units.

It is expected that a range of vehicles will be used by the customers of the self-storage facilities although entrance height restrictions will limit this to cars and light goods vehicles. As a means of assessing the worst-case scenario, noise from delivery vans is being used as a typical noise source.

The typical noise level generated by a delivery van is presented in Table 4.2 below. This noise level is based on noise measurement records obtained by KP Acoustics.

Unit Ref.	Descriptor	Octave Frequency Band (Hz)								
		63	125	250	500	1k	2k	4k	8k	Overall (dBA)
Van traveling at 30mph	SPL@5m (dB)	67	68	57	57	62	65	61	51	67

Table 4.2 Typical $LAeq_{30sec}$ levels for delivery vehicle movement

The calculations have been based on a source noise level for a van traveling at 30 mph, averaged over a 30-second period. However, the actual rating level is expected to be lower, as vehicles accessing and exiting the car park entrance are required to reduce their speed to safely manoeuvre in and out of the facility and merge with street traffic.

The typical vehicle speed in this area is estimated to be 10 mph whilst entering and leaving the car park main entrance. Therefore, to represent a worst-case scenario, a reduction of 5 dB from the value shown in Table 4.2 has been applied. As a result, an estimated level of 62 dB has been used for the calculations.

The existing operation of the car park already includes vehicle movements, with cars accessing and exiting the car park.

The number of vehicles accessing the storage units is not expected to exceed the original usage of the car park. Therefore, since the overall number of vehicle movements associated with both the remaining car park and the proposed storage units is not anticipated to increase, no significant rise in noise levels is expected because of the proposed development.

However, in order to assess the impact of the expected delivery vehicle movements accessing the proposed storage units, a hypothetical ‘worst case’ scenario has been calculated for daytime operation. The assessment period according to BS4142 is one hour for daytime, and therefore the levels measured above have been corrected based on assumed operation during a one-hour time period.

For the calculation sequence of the 1-hour Noise Dose Level, as presented in the table below.

Data for a van traveling at 30mph@5m	67dB(A)
Derived data for a van traveling at 10mph@5m	62 dB(A)
*Correction for 10 number of vehicles (In and Out)	13 dB(A)
Time Correction 20 seconds to 1 hour averaging	-23 dB(A)
Corrected Noise level for 1 hour	**52 dB(A)**

Table 4.3 calculation sequence of the 1-hour Noise Dose Level

*** Calculations are based on a delivery vehicle entering the car park every 6 minutes, resulting in a total of 10 vehicles in and out per hour.**

Description of Activities	Calculated 1 hour Noise Dose Level L_{Aeq} dB(A)
Delivery vehicle movement 10 vehicle per hour in and out @5m	52

Table 4.4 Typical rating noise level scenario for 1 hour period

The characteristics of the sound scape in the vicinity of the entrance to the carpark and proposed storage facility is not expected to change. Therefore, based on the guidance provided in BS4142 no acoustic feature corrections are required to be applied to the noise source. Table 4.5 presents the predicted noise levels from the proposed storage unit at the nearest sensitive receiver (NSR) window.

Description	Results	Comments
Calculated operational noise delivery vehicle operating day time @ 5m	$L_{Aeq,\ 1\ hour}$ 52dB(A)	Calculated noise dose of operations from delivery vehicle movement based on typical noise level of the delivery van
Distance correction from closest operation to Nearest NSR window @10m	-6dB	Approx. 11 meters from car park entrance and exit to nearest NSR window
Rating Noise Level at residential window	**L_{Aeq} 46dB**	**Calculated operational source level, minus distance correction**

Description	Results	Comments
Residual sound level	L_{Aeq} 64dB(A)	The measurement was carried out under normal operating conditions of the existing car park.
Representative background sound level	$L_{A90, 9\ hour}$ 50dB(A)	Representative L_{A90} during 09:00-17:30
Excess rating level over background sound level	(46-50) dB = -4dB	For background levels during full operating hours delivery vehicle movement.
Assessment		
Noise from the proposed development is likely to be 4 dB below the background noise level when measured near the existing residential dwellings. It is also important to note that any noise generated by delivery vehicles accessing the proposed storage facility would be at least partially masked by the existing ambient noise levels. The calculated noise level falls within the "Amber" category and is considered acceptable as no increase in noise level is expected and the characteristic of the noise is not likely to change. This is assessed under a worst-case scenario, it is not expected that the amenity of the identified noise-sensitive receptors would be affected, and the likelihood of complaints is low.		The lower the rating level is relative to the measured background sound level, the less likely it is that there will be an adverse impact. Noise levels below the typical background level would be in indication of a Low Impact according to BS4142.

Table 4.5 BS4142 assessment

As shown in Table 4.5, the proposed storage unit operations would not be expected to have an impact on the amenity of existing nearby noise sensitive receivers.

5.0 CONCLUSION

An environmental noise survey has been undertaken at Parker Mews, London WC2B 5NT allowing for the assessment of daytime levels likely to be experienced by the nearby residents due to the proposed development of self-storage units in the underground parking.

According to Table 4.5, the potential impact is classified as "amber", indicating that the resulting noise could result in adverse effects on nearby residents, however, as the resulting noise level is predicted to be below prevailing background noise levels and the characteristics of the sound scape are unlikely to change the chances of adverse effects are low.

The proposed development will reduce the existing vehicle parking capacity. As a result, vehicle movements associated with the car park and self-storage units are expected to

decrease rather than increase. Therefore, noise levels in the vicinity of the car-park entrance may reduce due to this development.

The assessment has been based on a worst-case scenario—where vehicle movements remain at current levels—the noise contribution from the proposed development is not expected to exceed existing traffic noise levels.

It has been concluded that noise emissions from the storage unit operations that are external (delivery vehicles entering and exiting the car park) are not expected to have an adverse impact on the nearest residential receptors, and no additional mitigation measures are deemed necessary.

Parker Mews, Covent Garden, London - Position 1
Environmental Time History
08/04/2025 to 09/04/2025

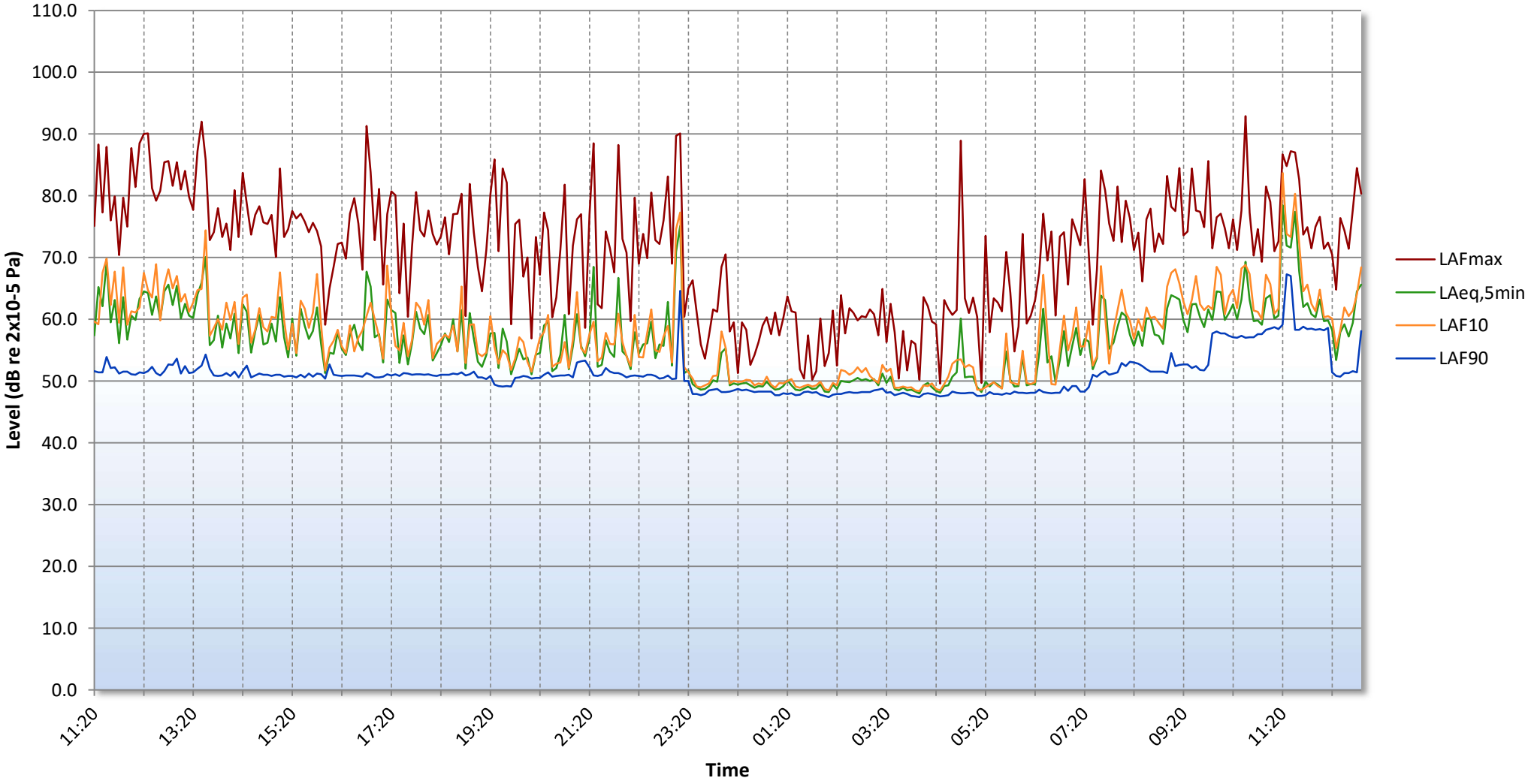

Figure 30013.TH1

APPENDIX A

GENERAL ACOUSTIC TERMINOLOGY

Decibel scale - dB

In practice, when sound intensity or sound pressure is measured, a logarithmic scale is used in which the unit is the 'decibel', dB. This is derived from the human auditory system, where the dynamic range of human hearing is so large, in the order of 10^{13} units, that only a logarithmic scale is the sensible solution for displaying such a range.

Decibel scale, 'A' weighted - dB(A)

The human ear is less sensitive at frequency extremes, below 125Hz and above 16Khz. A sound level meter models the ears variable sensitivity to sound at different frequencies. This is achieved by building a filter into the Sound Level Meter with a similar frequency response to that of the ear, an A-weighted filter where the unit is dB(A).

L_{eq}

The sound from noise sources often fluctuates widely during a given period of time. An average value can be measured, the equivalent sound pressure level L_{eq}. The L_{eq} is the equivalent sound level which would deliver the same sound energy as the actual fluctuating sound measured in the same time period.

L_{10}

This is the level exceeded for no more than 10% of the time. This parameter is often used as a "not to exceed" criterion for noise.

L_{90}

This is the level exceeded for no more than 90% of the time. This parameter is often used as a descriptor of "background noise" for environmental impact studies.

L_{max}

This is the maximum sound pressure level that has been measured over a period.

Octave Bands

In order to completely determine the composition of a sound it is necessary to determine the sound level at each frequency individually. Usually, values are stated in octave bands. The audible frequency region is divided into 11 such octave bands whose centre frequencies are defined in accordance with international standards. These centre frequencies are: 16, 31.5, 63, 125, 250, 500, 1000, 2000, 4000, 8000 and 16000 Hertz.

Environmental noise terms are defined in BS7445, *Description and Measurement of Environmental Noise*.

APPENDIX A

APPLIED ACOUSTIC TERMINOLOGY

Addition of noise from several sources

Noise from different sound sources combines to produce a sound level higher than that from any individual source. Two equally intense sound sources operating together produce a sound level which is 3dB higher than a single source and 4 sources produce a 6dB higher sound level.

Attenuation by distance

Sound which propagates from a point source in free air attenuates by 6dB for each doubling of distance from the noise source. Sound energy from line sources (e.g. stream of cars) drops off by 3dB for each doubling of distance.

Subjective impression of noise

Hearing perception is highly individualised. Sensitivity to noise also depends on frequency content, time of occurrence, duration of sound and psychological factors such as emotion and expectations. The following table is a guide to explain increases or decreases in sound levels for many scenarios.

Change in sound level (dB)	Change in perceived loudness
1	Imperceptible
3	Just barely perceptible
6	Clearly noticeable
10	About twice as loud

Transmission path(s)

The transmission path is the path the sound takes from the source to the receiver. Where multiple paths exist in parallel, the reduction in each path should be calculated and summed at the receiving point. Outdoor barriers can block transmission paths, for example traffic noise. The effectiveness of barriers is dependent on factors such as its distance from the noise source and the receiver, its height and construction.

Ground-borne vibration

In addition to airborne noise levels caused by transportation, construction, and industrial sources there is also the generation of ground-borne vibration to consider. This can lead to structure-borne noise, perceptible vibration, or in rare cases, building damage.

Sound insulation - Absorption within porous materials

Upon encountering a porous material, sound energy is absorbed. Porous materials which are intended to absorb sound are known as absorbents, and usually absorb 50 to 90% of the energy and are frequency dependent. Some are designed to absorb low frequencies, some for high frequencies and more exotic designs being able to absorb very wide ranges of frequencies. The energy is converted into both mechanical movement and heat within the material; both the stiffness and mass of panels affect the sound insulation performance.