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66 Rochester Place
Camden

Noise Impact Assessment Report
Report 22426.NIA.01

Ultimate Pole
66 Rochester Place
Camden
London NW1 9JX

KP acoustics

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1.0 INTRODUCTION

KP Acoustics Ltd has been commissioned by Ultimate Pole, 66 Rochester Place, Camden, London, NW1 9JX, to assess the suitability of an extension in the days of operation of the 66 Rochester Place dance studio in accordance with the provisions of the National Planning Policy Framework and the Noise Policy Statement for England (NPSE).

This report presents the results of the environmental survey and noise breakout measurements undertaken in order to assess the noise impact of the proposed operation and outlines any necessary mitigation measures.

2.0 SITE SURVEYS

2.1 Site Description

The site is bounded by residential gardens to the North-East, commercial properties to the North-West and South-East, and Rochester Place to the South-West. Entrance to the site is located on Rochester Place. At the time of the survey, the background noise climate was dominated by road traffic noise from Rochester Place, as well as Royal College Street and Kentish Town Road.

2.2 Environmental Noise Survey Procedure

A noise survey was undertaken on the proposed site as shown in Figure 2.1. The location was chosen in order to collect data representative of the ambient and background noise levels expected on the site due to all nearby sources, for comparison with the predicted noise breakout levels from the studio.

Continuous automated monitoring was undertaken for the duration of the survey between 11:06 on 19/03/2021 and 10:54 on 22/03/2021, but data obtained on Sunday, 21/03/2021 will specifically be considered as this report aims to address the noise breakout implications of dance studio extending its operational days to include Sundays.

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 and Noise Sensitive Receivers

Measurement positions, as well as the closest noise sensitive receivers to the North-East and South-West facades of the site are as described within Table 2.1 and shown within Figure 2.1.

Icon	Descriptor	Location Description
	Noise Measurement Position 1	The meter was installed on the 1st floor on a South-West façade window. A correction of 3dB has been applied to account for non-free field conditions
	Noise Measurement Position 2	The meter was installed on the ground floor on a North-East façade window. A correction of 3dB has been applied to account for non-free field conditions
	South-West Façade Closest Noise Sensitive Receiver	The closest noise sensitive receiver to the property South-West façade has been identified as the ground and 1st floor North East facing windows of 238 Royal College Street
	North-East Façade Closest Noise Sensitive Receiver	The closest noise sensitive receiver to the property North-East façade has been identified as the rear ground and 1st floor windows of 20 Rochester Terrace

Table 2.1 Measurement positions and descriptions

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

2.4 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.	Date	Cert no.
Noise Kit 4	Svantek Type 977B Class 1 Sound Level Meter	36453	27/02/2020	14015014-1
	Free-field microphone Aco Pacific 7052E	54143		
	Preamp Svantek 2v12L	41508		
	Svantek External windshield	-	-	-
Noise Kit 8	Svantek Type 958A Class 1 Sound Level Meter	59559	26/09/2019	14012947
	MTG MK250 Free-field microphone	10904		
	Preamp Svantek SV12L	33619		
	Svantek External windshield	-	-	-
Larson Davis CAL200 Class 1 Calibrator		17148	07/02/2020	04615/1

Table 2.2 Measurement instrumentation

3.0 SOUND INSULATION INVESTIGATION

In order to assess noise breakout from the studio to the residential residential properties to the north of the site, a sound insulation investigation was undertaken as described below.

3.1 Procedure

High volume pink noise was generated from a loudspeaker within the Ground Floor studio, positioned to obtain a diffuse sound field. A spatial average of the resulting one-third octave band noise levels between 100 Hz and 3150 Hz was obtained by using a moving microphone technique over a minimum period of 15 seconds at each of two positions.

The noise levels with the speaker in operation were then measured at various external positions outside of the studio. It was not possible to gain access to garden directly North of the North-Eastern façade, and consequently noise measurements 1m outside the North-East façade windows were not taken. As such measurements have been carried out at the closest accessible location, 2 metres from these ground floor windows, in the 64 Rochester Place rear garden.

The ground floor studio does not extend to the front facade nor is there any glazing at ground floor level, however noise levels have been recorded 2 metres from the centre of the South-East façade at ground floor level, in order to gain an indicative picture of the noise breakout on this side of the property.

The same measurement procedure was used for the existing first floor studio. It should be noted that as it was not possible to undertake measurements at first floor level externally, the same external measurement locations have been adopted as for the ground floor.

It should be noted that direct noise transfer to 64 and 68 Rochester Place has not been considered as these are understood to be commercial properties, unoccupied on Sundays.

The results of the tests were rated in accordance with BS EN ISO 717-1: 1997 '*Rating of sound insulation in buildings and of building elements. Part 1 Airborne sound insulation*'.

3.2 Equipment

The instrumentation used during the sound insulation investigation is shown in Table 3.1 below.

Instrument	Manufacturer and Type	Serial Number
Precision integrating sound level meter & analyser	NTi Audio, XL2-TA Calibration No: 04485/1-3 Calibration Dates 30/10/2019	A2A-09207-E0
LS2 Active Loudspeaker	RCF ART 310A	NCFA00717
Pink Noise Source	NTi Audio Minirator MR-PRO	G2P-RACDR-G0
Calibrator 4	Larson Davis CAL200 Calibration No: 04624/2 Calibration Date 11/02/2020	8932

Table 3.1 Instrumentation used during testing

4.0 RESULTS

4.1 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 22426.TH1-2.

Measured noise levels on 21/03/2021 are representative of noise exposure levels expected to be experienced by all facades of the proposed development on Sundays, and are shown in

Table 4.1. The minimum L_{A90} parameter refer to the lowest measured value for the noise level exceeded 90% of the time in a 5 minute window respectively.

Time Period	Noise Measurement Position 1 (Measured Noise level – dBA)	Noise Measurement Position 2 (Measured Noise level – dBA)
Daytime $L_{Aeq,16hour}$	50	44
Daytime Minimum L_{A90}	37	32
Night-time $L_{Aeq,8hour}$	46	40
Night-time Minimum L_{A90}	35	30

Table 4.1 Site average noise levels for daytime and night time

4.2 Sound Insulation Investigation

The main parameter used throughout this document to express airborne sound insulation of separating constructions is D_w. All specifications in this report will therefore be given with respect to this descriptor. Summarised results of the airborne tests are shown in Table 4.2.

Test Element	Source	Receiver	D_w Performance dB
Wall	Ground Floor Studio	2m from South-West facade	D_w 49dB
Wall	Ground Floor Studio	2m from Ground Floor North-East façade window	D_w 46dB
Wall	First Floor Studio	2m from South-West façade	D_w 33dB
Wall	First Floor Studio	4m from 1st Floor North-East façade window	D_w 49dB

Table 4.2 Noise Breakout test results

It should be noted that the performance values presented in Table 4.2 have taken into account the distance between the building façade and measurement location in each case, corresponding to a distance correction reducing the calculated the D_W performance.

5.0 NOISE ASSESSMENT GUIDANCE

5.1 Noise Policy Statement For England 2019

The National Planning Policy Framework (NPPF) has superseded and replaces Planning Policy Guidance Note 24 (PPG24), which previously covered issues relating to noise and planning in England. Paragraph 170 of the NPPF states that planning policies and decisions should aim to:

- prevent new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans

In addition, Paragraph 180 of the NPPF states that '*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':*

- 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 tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason

The Noise Policy Statement for England (NPSE) was developed by DEFRA and published in March 2010 with the aim to 'Promote good health and good quality of life through the effective management of noise within the context of Government policy on sustainable development.'

Noise Policy Statement England (NPSE) noise policy aims are 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*

The Noise Policy Statement England (NPSE) outlines observed effect levels relating to the above, as follows:

- NOEL – No Observed Effect Level

    - This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.

- LOAEL – Lowest Observed 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.

As stated in The Noise Policy Statement England (NPSE), it is not currently possible to have a single objective based measure that defines SOAEL that is applicable to all sources of noise in all situations. Specific noise levels are not stated within the guidance for this reason, and allow flexibility in the policy until further guidance is available.

5.2 The London Plan: Policy D12 Agent of Change

The London Plan states the following with regards to existing noise generating sources and new residential developments:

A. *The Agent of Change principle places the responsibility for mitigating impacts from existing noise-generating activities or uses on the proposed new noise-sensitive development.*

B. *Boroughs should ensure that planning decisions reflect the Agent of Change principle and take account of existing noise-generating uses in a sensitive manner when new development, particularly residential, is proposed nearby.*

C. *Development proposals should manage noise and other potential nuisances by:*

    - *Ensuring good acoustic design to mitigate and minimise existing and potential impacts of noise generated by existing uses located in the area*
    - *Exploring mitigation measures early in the design stage, with necessary and appropriate provisions secured through planning obligations*
    - *Separating new noise-sensitive development where possible from existing noise-generating businesses through distance, screening, internal layout, sound-proofing and insulation, and other acoustic design measures.*

D. *Development should be designed to ensure that established noise-generating venues remain viable and can continue or grow without unreasonable restrictions being placed on them.*

E. *New noise-generating development, such as industrial uses, music venues, pubs, rail infrastructure, schools and sporting venues proposed close to residential and other noise-sensitive development should put in place measures such as soundproofing to mitigate and manage any noise impacts for neighbouring residents and businesses.*

F. *Boroughs should refuse development proposals that have not clearly demonstrated how noise impacts will be mitigated and managed.'*

5.3 BS8233:2014

BS8233:2014 *'Sound insulation and noise reduction for buildings'* describes recommended internal noise levels for residential spaces. These levels are shown in Table 4.1.

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living Rooms	35 dB(A)	-
Dining	Dining Room/area	40 dB(A)	-
Sleeping (daytime resting)	Bedrooms	35 dB(A)	30 dB(A)

Table 5.1 BS8233 recommended internal background noise levels

The external building fabric would need to be carefully designed to achieve these recommended internal levels.

6.0 NOISE BREAKOUT PREDICTIONS

6.1 Noise Breakout from Studio

Using concurrent source levels of 90dB(A) to represent a worst case scenario within the ground and first floor studio, and taking into account the calculated D_W rating for each facade, Table 7.2 shows the predicted sound pressure levels at 1m from the residential bedroom windows at 238 Royal College Street and 20 Rochester Terrace. This has been compared with the measured daytime minimum background noise level at both representative noise measurement positions on Sunday, 21/03/21 . Detailed calculations are shown in Appendices B1 and B2.

Receiver	Minimum Background Noise L_{A90}	Noise Level at Receiver (1m from window)
Rear residential windows of 238 Royal College Street	37 dB(A)	31 dB(A)
Rear residential windows of 20 Rochester Terrace	32 dB(A)	23 dB(A)

Table 6.1 Predicted noise level at 1m from the closest noise sensitive residential windows

As shown in Table 7.2, noise breakout from both façades of the dance studio is below the measured minimum background noise level. Therefore, the building in its current state would be sufficient in controlling noise breakout from proposed use of the studio on Sundays.

It should also be highlighted that the worst-case internal noise level of 90dB(A) used for this noise assessment, has been considered to protect nearby residents from any eventuality, and given the existing sound system used within the studio, it is thought to be highly unlikely that this level would ever be reached.

Furthermore, the value of 30dB(A) is to be considered outside of the building. Windows may be closed or partially closed leading to further attenuation, as follows.

Calculations have been undertaken to assess whether noise breakout from the dance studio would be expected to meet the recognised British Standard recommendations, in order to further ensure the amenity of nearby noise sensitive receivers.

British Standard 8233:2014 'Guidance on sound insulation and noise reduction for buildings – Code of Practice', gives recommendations for acceptable internal noise levels in residential properties. Assuming worst case conditions, of the closest window being for a bedroom, BS8233:2014 recommends 35dB(A) as recommended internal resting/sleeping conditions during daytime hours.

With a calculated external level of 30dB(A), the residential window itself would not need to provide any additional attenuation in order for the recommended internal levels to be achieved. According to BS8233:2014, even a partially open window offers 10-15dB attenuation, thus leading to a further reduced interior noise level.

Receiver	Design Range – *For resting/sleeping conditions in a bedroom, in BS8233:2014*	Noise Level at Receiver (due to breakout noise)
Rear residential windows of 238 Royal College Street	35dB(A)	16-21dB(A)
Rear residential windows of 20 Rochester Terrace	35dB(A)	8-13dB(A)

Table 6.2 Noise levels and criteria inside nearest residential spaces due to breakout noise

Predicted levels are shown in Table 7.3. It can therefore be stated that noise breakout from the dance studio would be expected to comfortably meet the most stringent recommendations of the relevant British Standard.

7.0 NOISE MITIGATION PROPOSALS

Although noise levels as a result of the dance studio's use on a Sunday would be expected to have no adverse effect on nearby residents, the following general advice has been provided to reduce noise breakout from the property as much as possible.

Distributed Sound System

A loudspeaker system employing relatively few speakers requires each unit to generate high noise levels to maintain a given noise level in the space.

A distributed system with numerous speakers allows each speaker to operate at a lower volume. This ensures that localised noise levels are lower, which reduces the noise directly incident on the structure.

The specifications of the speakers will be dependent on the use of each zone or focus area but should allow sufficient capacity for them to operate at optimum efficiency.

Loudspeaker Mounting

In the case of mounted loudspeakers, rigid mounting systems are entirely inadequate for the control of transmitted sound. To ensure efficient control of noise it is recommended that a proprietary frame support is used for each speaker.

This must incorporate suitable anti-vibration mounting between support and speaker enclosure, with no rigid connections permitted to short-circuit the isolation

The use of neoprene mounts or hangers is recommended. These are expected to provide a static deflection of approximately 3-5mm (i.e. under the load of the speaker). High stiffness neoprene / rubber and metal springs should be avoided in general. The use of neoprene mounts or hangers in fully-enclosed metal casings is not advisable as if these are angled the casings can short circuit. Any mount / hanger must be capable of maintaining a 30 degree offset without any rigid components short-circuiting the mount. It must be noted, however, that vertical alignment is more effective.

Generally available speaker vibration mountings are not typically effective for isolation of this standard. Use of heavy duty, proprietary supports coupled with hangers / mounts will be far more effective.

Should the suspended installation of bass cabinets not be possible, we would recommend the use of a proprietary resilient pad on which the cabinets can rest. We would therefore recommend a product such as Regupol 6010BA which would isolate the speakers from generating any vibro-acoustic excitation of the structure.

8.0 CONCLUSION

An environmental noise survey has been undertaken at 66 Rochester Place, Camden, London, NW1 9JX, allowing the assessment of daytime and night-time background noise profile at nearby receivers.

Noise breakout measurements have also been carried out on-site to establish the existing sound insulation performance of the studio's external walls.

Calculations have been undertaken to predict noise transfer from the studio spaces to the closest residential receivers via external noise breakout, and these resultant levels have been compared with the minimum background noise levels measured during the survey.

It has been concluded that the extension of use of the dance studio to Sundays would have no adverse impact on the amenity of nearby residential receivers as a result of noise breakout from studio spaces.

66 Rochester Place, Camden
Environmental Noise Time History
From 21 March 2021 To 22 March 2021

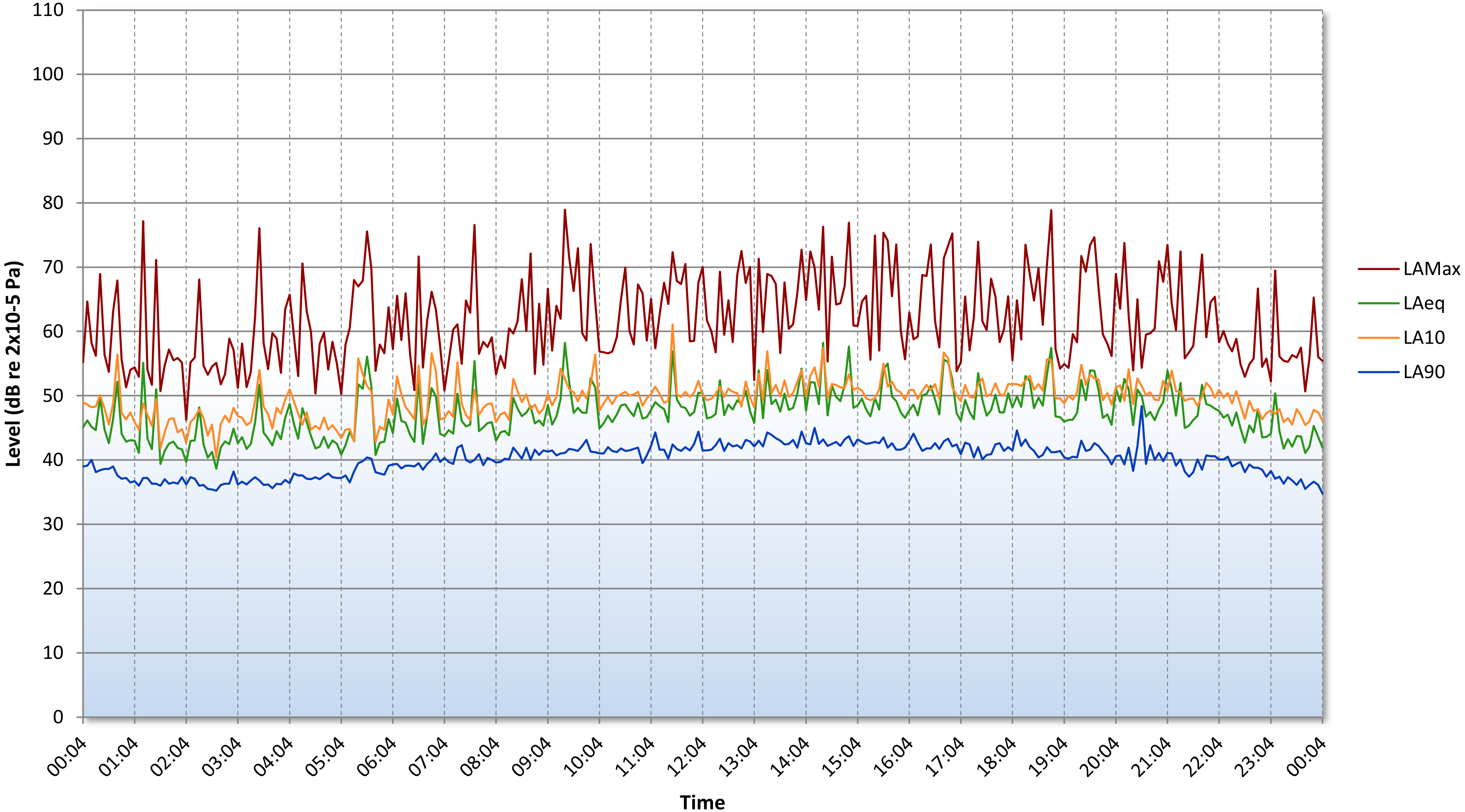

Figure 22426.TH1

66 Rochester Place, Camden
Environmental Noise Time History
From 21 March 2021 To 22 March 2021

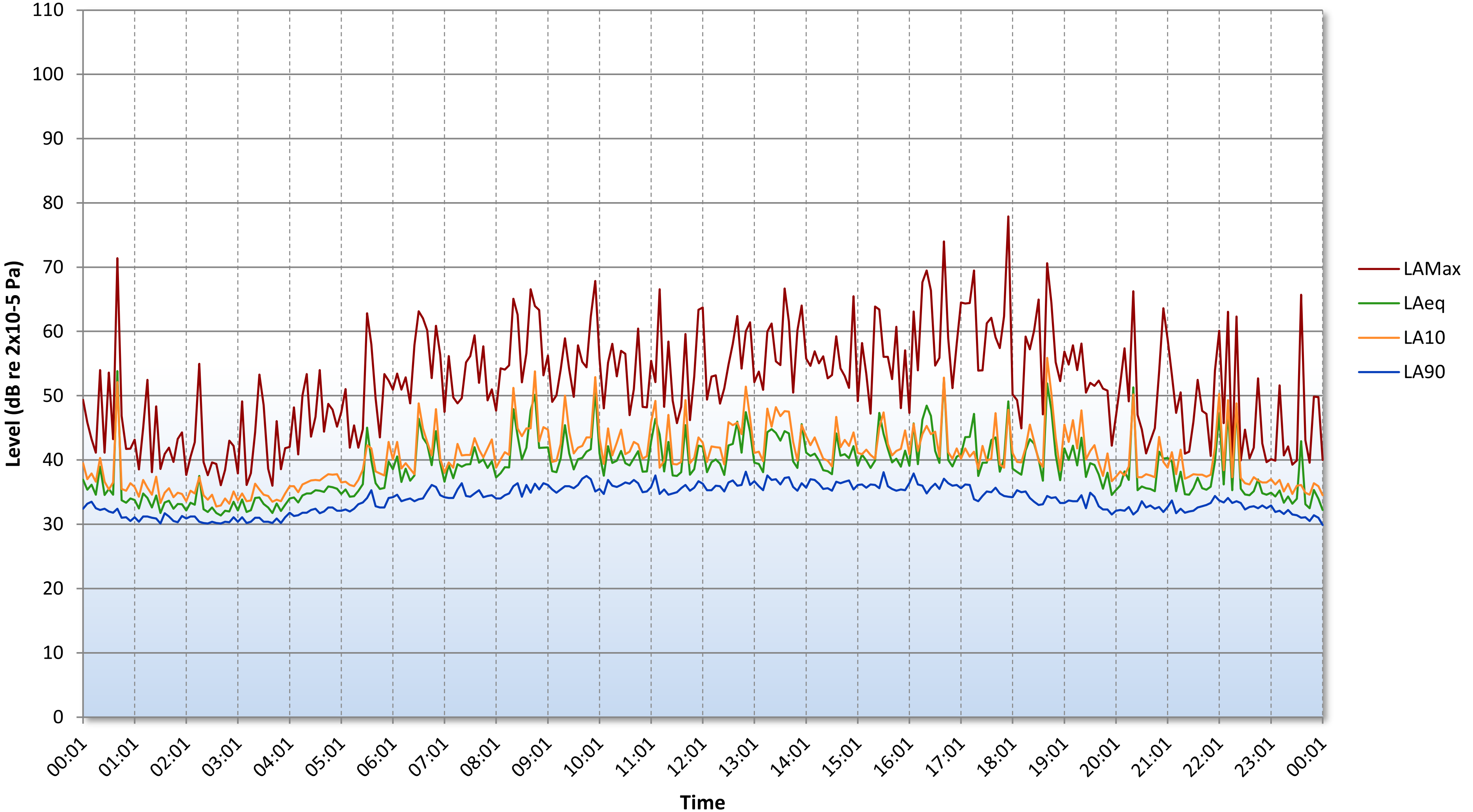

Figure 22426.TH2

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.

APPENDIX B1

66 Rochester Place, Camden, London

NOISE BREAKOUT CALCULATIONS

Source: Worst-case Scenario Noise Levels in Dance Studio Receiver: Rear Residential Receiver of 238 Royal College Street	*63*	*125*	*250*	*500*	*1k*	*2k*	*4k*	*8k*	*dB(A)*
	Frequency, Hz								
Sound Pressure level within ground floor studio space	**80**	**90**	**90**	**75**	**75**	**75**	**85**	**85**	**90**
Approximate area (S) of the façade overlooking receiver location (18m²)	18	18	18	18	18	18	18	18	
Correction for area (S), dB	**13**	**13**	**13**	**13**	**13**	**13**	**13**	**13**	
On site composite SRI of façade, dB	**-32**	**-37**	**-46**	**-49**	**-51**	**-47**	**-50**	**-51**	
Correction for distance (23m), dB	**-27**	**-27**	**-27**	**-27**	**-27**	**-27**	**-27**	**-27**	
Correction due to no reverberant field externally + propagation effect of the wall surface, dB	**-14**	**-14**	**-14**	**-14**	**-14**	**-14**	**-14**	**-14**	
Sound pressure level at receiver from ground floor space noise breakout, dB	**20**	**24**	**15**	**-3**	**-5**	**0**	**6**	**5**	**13**
Sound Pressure level within first floor studio space	**80**	**90**	**90**	**75**	**75**	**75**	**85**	**85**	90
Approximate area (S) of the façade overlooking receiver location (23m²)	23	23	23	23	23	23	23	23	
Correction for area (S), dB	**14**	**14**	**14**	**14**	**14**	**14**	**14**	**14**	
On site composite SRI of façade, dB	**-18**	**-29**	**-28**	**-31**	**-34**	**-33**	**-31**	**-34**	
Correction for distance (23m), dB	**-27**	**-27**	**-27**	**-27**	**-27**	**-27**	**-27**	**-27**	
Correction due to no reverberant field externally + propagation effect of the wall surface, dB	**-14**	**-14**	**-14**	**-14**	**-14**	**-14**	**-14**	**-14**	
Sound pressure level at receiver from ground floor space noise breakout, dB	**34**	**33**	**34**	**16**	**13**	**14**	**26**	**23**	**31**
Total Sound Pressure Level at 1m from Receiving Façade	**35**	**34**	**34**	**16**	**14**	**15**	**26**	**24**	**31**

Breakout Noise Criterion	37

APPENDIX B2

66 Rochester Place, Camden, London

NOISE BREAKOUT CALCULATIONS

Source: Worst-case Scenario Noise Levels in Dance Studio Receiver: Rear Residential Receiver at 20 Rochester Terrace	Frequency, Hz 63	125	250	500	1k	2k	4k	8k	dB(A)
Sound Pressure level within ground floor studio space	**80**	**90**	**90**	**75**	**75**	**75**	**85**	**85**	**90**
Approximate area (S) of the façade overlooking receiver location (18m²)	18	18	18	18	18	18	18	18	
Correction for area (S), dB	**13**	**13**	**13**	**13**	**13**	**13**	**13**	**13**	
On site composite SRI of façade, dB	**-33**	**-38**	**-34**	**-43**	**-50**	**-47**	**-47**	**-60**	
Correction for distance (18m), dB	**-25**	**-25**	**-25**	**-25**	**-25**	**-25**	**-25**	**-25**	
Correction due to no reverberant field externally + propagation effect of the wall surface, dB	**-14**	**-14**	**-14**	**-14**	**-14**	**-14**	**-14**	**-14**	
Sound pressure level at receiver from ground floor space noise breakout, dB	**20**	**25**	**29**	**5**	**-2**	**1**	**11**	**-2**	**22**
Sound Pressure level within first floor studio space	**80**	**90**	**90**	**75**	**75**	**75**	**85**	**85**	90
Approximate area (S) of the façade overlooking receiver location (23m²)	23	23	23	23	23	23	23	23	
Correction for area (S), dB	**14**	**14**	**14**	**14**	**14**	**14**	**14**	**14**	
On site composite SRI of façade, dB	**-22**	**-40**	**-44**	**-48**	**-49**	**-49**	**-50**	**-50**	
Correction for distance (18m), dB	**-25**	**-25**	**-25**	**-25**	**-25**	**-25**	**-25**	**-25**	
Correction due to no reverberant field externally + propagation effect of the wall surface, dB	**-14**	**-14**	**-14**	**-14**	**-14**	**-14**	**-14**	**-14**	
Sound pressure level at receiver from ground floor space noise breakout, dB	**33**	**25**	**21**	**2**	**1**	**1**	**10**	**10**	**17**
Total Sound Pressure Level at 1m from Receiving Façade	**33**	**28**	**30**	**7**	**3**	**4**	**14**	**10**	**23**

Breakout Noise Criterion	32