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57 Camden Road London

Noise Impact Assessment Report
Report 24174.NIA.01

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KP Acoustics Ltd. 2022

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List of Attachments

1.0 INTRODUCTION

KP Acoustics Ltd has been commissioned by Dawit Nigussie, 57 Camden Road, London, NW1 9EU, to assess the suitability of the existing 'Kis Bar' located at Basement level, 57 Camden Road, London, NW1 9EU, 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 undertaken in order to measure prevailing background noise levels and outlines any necessary mitigation measures.

2.0 SITE SURVEYS

2.1 Site Description

The site is bounded by a mix of residential and commercial buildings to the north and to the west, Royal College Street and an elevated train railway to the south, and Camden Road to the east. Entrance to the site is located on a pedestrian path facing Camden Road. At the time of the survey, the background noise climate was dominated by road traffic noise from Camden Road.

2.2 Environmental Noise Survey Procedure

Noise surveys were undertaken on the proposed site as shown in Figure 2.1. The locations were chosen in order to collect data representative of the worst-case levels expected on the site due to all nearby sources.

Continuous automated monitoring was undertaken for the duration of the surveys between 12:55 on 08/03/2022 and 11:15 on 09/03/2022.

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.

Icon	Descriptor	Location Description
(red circle)	Noise Measurement Position 1	The microphone was installed on a window on the 1st floor of the East elevation's façade. A correction of 3dB has been applied to account for non-free field conditions
(green circle)	Noise Measurement Position 2	The microphone was installed on a window on the 1st floor of the South elevation's façade. A correction of 3dB has been applied to account for non-free field conditions

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 13	Svantek Type 958 Class 1 Sound Level Meter	36552	05/07/2021	1500548-3
	Free-field microphone PCB 377B02	168726		
	Preamp PCB 426M07	127258		
	PCB External Windshield	-	-	-
Noise Kit 2	Svantek Type 977C Sound Level Meter	97502	18/02/2021	Factory Calibrated
	Microtech type MK255	20569		
	Preamp Svantek SV12L	106973		
	Svantek External Microphone Shroud	-	-	-
Larson Davis CAL200 Class 1 Calibrator		17148	27/04/2021	05223/1

Table 2.2 Measurement instrumentation

3.0 SOUND INSULATION INVESTIGATION

In order to assess direct noise transfer from the Kis Bar to the existing residential units above, as well as noise breakout from the building, a sound insulation investigation was undertaken as described below.

3.1 Procedure

High volume pink noise was generated from one loudspeaker within the Basement bar, 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 same measurement procedure was used in the existing function room directly above the Basement bar, as well as at the noise breakout position i.e. entrance door to the bar, at 1m from the façade of the Basement bar.

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
SLM3 Precision integrating sound level meter & analyser	Nti Audio, XL2-TA Calibration No: UCRT20/2031-2 and UCRT20/2034 Calibration Date 26th October 2020 Calibration Due: 25/10/2022	A2A-09034-E0
LS2 Active Loudspeaker	RCF ART 310A	NCFA00717
CAL2 Calibrator 2	B&K Type 4231 Calibration No: 05223/2 Calibration Date: 26/04/2021 Calibration Due: 25/04/2022	2147411
LM3 Laser Meter	Dmiotech UA40A	-

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 24174.TH1-2.

Measured noise levels are representative of noise exposure levels expected to be experienced by all facades of the existing development, and are shown in Table 4.1.

Time Period	Noise Measurement Position 1 (Measured Noise level – dBA)	Noise Measurement Position 2 (Measured level – dBA)
Daytime Level $L_{Aeq, (07:00-23:00)}$	72	65
Night-time $L_{Aeq, (23:00-07:00)}$	70	62

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)
Floor	Basement Bar	First Floor Lounge	73
Floor		First Floor Bedroom	72
Floor		2nd Floor Master Bedroom	75
Floor		2nd Floor Second Bedroom	70
Entrance Door		1m from façade outside	36

Table 4.2 Airborne test results

5.0 NOISE ASSESSMENT GUIDANCE

5.1 Noise Policy Statement For England 2021

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 174 of NPPF 2021 states that planning policies and decisions should aim to:

- preventing 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 185 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.

6.0 NOISE TRANSFER AND BREAKOUT PREDICTIONS

6.1 Noise Source and Noise Assessment Criteria

It is understood that the existing Kis bar has a capacity of 30 people, and that amplified music will be played in the bar. It is also understood that no live music of DJ events will be held within the venue.

Further to discussion with the Client, it is understood that the Kis bar opening hours are 17:00 - 23:00 Monday to Thursday, 15:00 - 00:00 Friday to Saturday and 16:00 - 22:30 Sunday. Therefore, it is expected that the noise levels within the Basement bar will be maintained during the existing operating hours (15:00 to 00:00).

Noise levels of amplified music were measured in the Kis Bar when the bar was not in operation. It was understood that the level at which the music was played during the measurements reflects the maximum level at which the music is usually played in the bar during working hours, reflecting the worst case scenario. The maximum levels recorded during the measurement, L_{Amax}, are presented in table 6.1.

Operational Use	Octave Frequency Band (Hz) L_{max}								Overall L_{Amax} (dB)
	63	125	250	500	1k	2k	4k	8k	
Kis Bar with amplified music	93	89	90	90	84	80	78	75	91

Table 6.1 Measured operational noise levels of Kis Bar

The on-site noise survey undertaken between 11:00 and 12:00 also revealed that the current internal background noise within the First Floor resting areas, when the Kis Bar is not operating, is 30 dB(A), and 33 dB(A) within the Second Floor resting areas. Such noise levels are expected to drop at night-time. Therefore, in order to present robust internal noise criteria to ensure the amenity of the residents would be protected, and that the existing background noise is not exceeded, we would propose the use of an absolute criterion using an appropriate Noise Rating Curve (NR Curve), considering L_{Aeq} acoustic descriptors. Noise Rating Curves (NR Curves) are commonly used by consultants and Local Authorities as they provide an absolute limit value in each single octave frequency band to ensure that a detailed analysis of sound transfer is considered.

The NR target for this assessment is as shown in Table 6.2.

NR Curve	Octave band centre frequency, dB								Overall dB(A)
	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	
NR15 L_{Aeq}	47	35	26	19	15	11	9	7	26

Table 6.2 NR noise rating curve

For reference, recommended internal noise levels for residential spaces are presented as L_{Aeq} levels in BS8233:2014 *'Sound insulation and noise reduction for buildings',* shown in Table 6.3.

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 6.3 BS8233 recommended internal background noise levels

6.2 Direct Noise Transfer to First and Second Floor from Basement Bar

Using the source level of $L_{Aeq\ 30sec}$ 91dB(A), to represent a worst case source noise levels within the Basement bar, and taking into account the measured D_w rating of the separating floor, Table 6.3 shows predicted sound pressure levels within the existing First and Second Floor residential resting areas. Full calculations are shown in Appendix B1.

Receiver	BS8233:2014 Requirement During Night-time Hours (23:00-07:00)	Predicted Noise Levels Within Proposed First and Second Floor Resting Areas
1st Floor Lounge	30 dB(A)	19 dB(A)
1st Floor Bedroom		12 dB(A)
2nd Floor Master Bedroom		10 dB(A)
2nd Floor Second Bedroom		15 dB(A)

Table 6.4 Predicted noise levels due to the Basement bar operation within first and second floor resting areas

As shown in Table 6.4 and Appendix B1, the direct noise transfer through the separating floors with the existing construction would meet the criterion stipulated in BS8233. Therefore, based on daytime noise transfer measurements, any direct sound transfer would not cause noise nuisance to the existing residential occupiers above.

6.3 Noise Breakout to First Floor Windows from Basement Floor Bar

Using a measured source level of 91dB(A) to represent a worst case the Basement bar, and taking into account the measured D_w rating of the south and east façades, Table 6.5 shows the predicted sound pressure level at 1m from the residential bedroom windows directly above the Basement bar. This has been compared with the measured minimum background noise level during the bar operating hours. Detailed calculations are shown in Appendix B2.

Receiver	Minimum Background Noise L_{A90}	Noise Level at Receiver (1m from window)
Nearest Noise Sensitive Window	47 dB(A)	33 dB(A)

Table 6.5 Predicted noise level at 1m from the closest noise sensitive resting area's window

As shown in Table 6.5, noise breakout from the south façade of the Basement bar is below the measured minimum background noise level. Therefore, the buildings in its current state would be sufficient in controlling noise breakout to the windows above.

Furthermore, the value of 33dB(A) is to be considered outside of the building. Windows may be closed or partially closed leading to further attenuation, as follows.

Further calculations have been undertaken to assess whether noise breakout from the bar 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 30dB(A) as recommended internal resting/sleeping conditions during night-time hours.

With a calculated external level of 33dB(A), the residential window itself would need to provide an additional 3dB 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)
Inside Nearest Residential Space	35dB(A)	18-23dB(A)

Table 6.5 Noise levels and criteria inside nearest residential space due to breakout noise

Predicted levels are shown in Table 6.5. It can therefore be stated that noise breakout from the Basement bar would be expected to comfortably meet the most stringent recommendations of the relevant British Standard.

However, as a precautionary measure to ensure that the level of 91dB(A) is maintained within the bar, we would recommend the following advice is adhered to, as outlined in Section 7.

7.0 NOISE MITIGATION PROPOSALS

7.1 Mitigation Measures for the Basement Bar

Installation of a Sound Limiter

In order to ensure that the source noise levels are controlled within the Basement bar, we would recommend that a sound limiter is installed by the existing bar occupier. The system designer should be able to advise on the type and standard of sound limiter suitable for the proposed installation.

The limiter should enable the separate control of the different zones and incorporate all elements of the sound system, including any additional filters or amplifiers. Programmable limiters are preferred as they permit more sophisticated control of frequency content and volume and are fully tamper-proof. Programmed limits should match those shown in Table 7.1.

Noise Limiter	Octave band center frequency SRI, dB								Overall dB(A)
	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	
Maximum permissible levels within the bar to meet the NR15 criteria	93	89	90	90	84	80	78	75	91

Table 7.1 Maximum permissible noise levels within the bar

On-going attention will need to be given by the bar to transmitted noise levels to ensure that the final operational conditions do not undermine the settings of the limiter. Different types of music and activities can result in varied subjective effects. It is strongly recommended that the management remain aware as the operation becomes established and reset the limiter, if necessary.

Noise Management Plan

In order to minimise the possibility of any complaints due to noise from the existing Basement bar operations and patrons entering and exiting the premises, we would highly recommend the adoption of a noise-management plan. The key considerations are shown below:

- It is understood that in regard to noise generated due to patrons entering and exiting the premises, most patrons would be accessing the bar in small groups i.e., 2-5 people, and therefore high levels of speech would not be prevalent. However, to minimize the impact on the amenity of the closest residents as much as is practically possible, it is recommended that the patrons should not gather outside of the bar entrance.
- In addition, in order minimise the risk of any noise disturbance caused by the patrons clear signage should be displayed in the area requesting all who use the space to respect local residents and use the premises in a quiet and respectful manner.
- Should signage not have the desired effect on customer behaviour, staff interaction would be necessary, requesting that patrons avoid unnecessary noise (such as shouting or uses of raised voices).
- Entrance doors shall be kept closed except for access and egress.

8.0 CONCLUSION

An environmental noise survey has been undertaken at 57 Camden Road, London, NW1 9EU allowing the assessment of daytime and night-time levels likely to be experienced by the residents within the First and Second Floor above the existing bar.

The direct noise transfer and noise breakout predictions shown that the activities from the Basement bar are unlikely to have an adverse impact on the existing nearby residents, as long as the mitigation measures described are section 7 are implemented.

No further mitigation measures should be required in order to protect the proposed residential units from external noise intrusion and internal noise intrusion from the Basement bar.

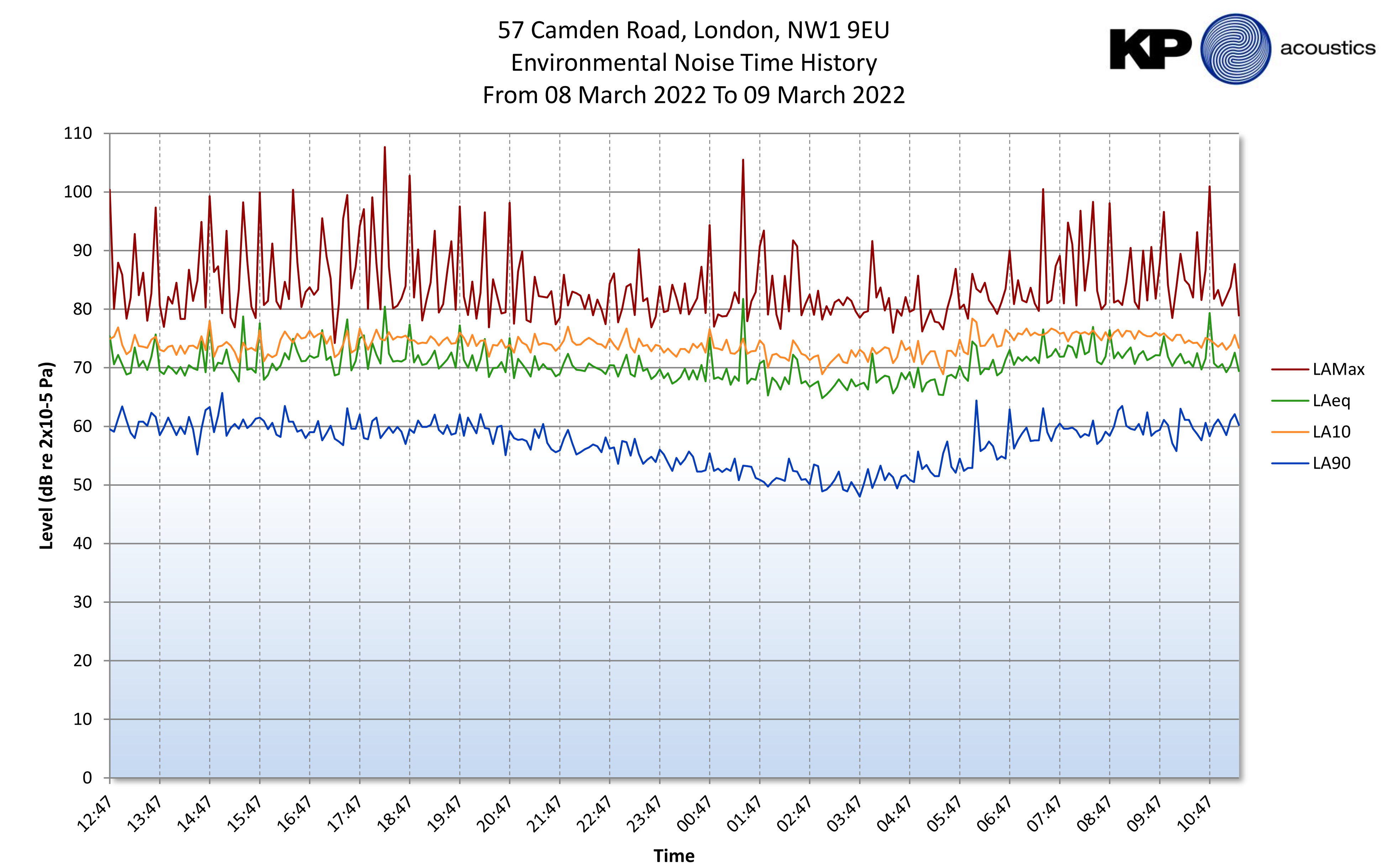

Figure 24174.TH1

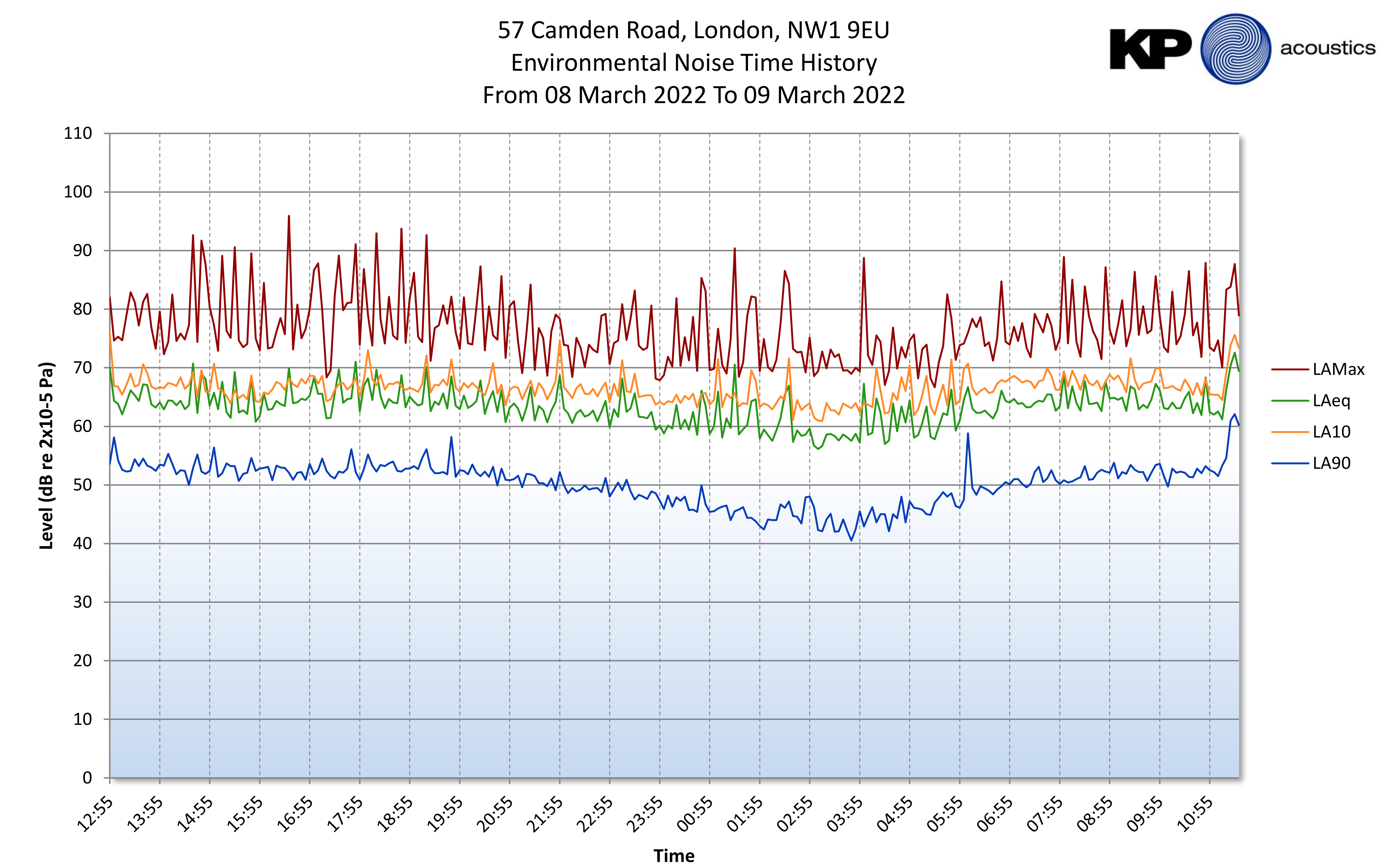

Figure 24174.TH2

APPENDIX B1

57 Camden Road, London, NW1 9EU

DIRECT NOISE TRANSFER CALCULATIONS

Source: Music from Basement Bar Receiver: First Floor Lounge	63	125	250	500	1k	2k	4k	8k	dB(A)
				Frequency, Hz					
Sound Pressure level of worst case activity within Basement Bar	**93**	**89**	**90**	**90**	**84**	**80**	**78**	**75**	**91**
On site SRI of separating floor, dB	**-56**	**-62**	**-70**	**-76**	**-80**	**-80**	**-76**	**-79**	
Approximate area (S) of the separating floor (12m²)	12	12	12	12	12	12	12	12	
Correction for area (S), dB	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	
Volume of receiving room ($36m^3$)	36	36	36	36	36	36	36	36	
Measured reverberation time of receiver space	0.5	1.3	0.5	0.3	0.3	0.3	0.3	0.3	
Correction for absorption in receiver space [-10*log(A)], dB	**-11**	**-6**	**-11**	**-13**	**-13**	**-13**	**-13**	**-13**	
Sound Pressure Level at Within Receiver Space	37	31	20	12	2	-1	-1	-6	19
						Direct Transfer Noise Criterion			30

NR15 Criterion Curve	47	35	26	19	15	11	9	7
Sound Pressure Level difference below NR critierion	10	4	6	7	13	12	10	13

Source: Music from Basement Bar Receiver: First Floor Bedroom	63	125	250	500	1k	2k	4k	8k	dB(A)
				Frequency, Hz					
Sound Pressure level of worst case activity within Basement Bar	**93**	**89**	**90**	**90**	**84**	**80**	**78**	**75**	**91**
On site SRI of separating floor, dB	**-59**	**-67**	**-83**	**-87**	**-85**	**-87**	**-82**	**-84**	
Approximate area (S) of the separating floor (12m²)	9	9	9	9	9	9	9	9	
Correction for area (S), dB	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	
Volume of receiving room ($27m^3$)	27	27	27	27	27	27	27	27	
Measured reverberation time of receiver space	0.7	0.4	0.4	0.3	0.2	0.3	0.3	0.2	
Correction for absorption in receiver space [-10*log(A)], dB	**-8**	**-10**	**-10**	**-12**	**-13**	**-12**	**-12**	**-13**	
Sound Pressure Level at Within Receiver Space	36	22	6	1	-5	-9	-6	-13	12
						Direct Transfer Noise Criterion			30

NR15 Criterion Curve	47	35	26	19	15	11	9	7
Sound Pressure Level difference below NR critierion	11	13	20	18	20	20	15	20

Source: Music from Basement Bar Receiver: Second Floor Master Bedroom	63	125	250	500	1k	2k	4k	8k	dB(A)
				Frequency, Hz					
Sound Pressure level of worst case activity within Basement Bar	**93**	**89**	**90**	**90**	**84**	**80**	**78**	**75**	
On site SRI of separating floor, dB	**-62**	**-75**	**-75**	**-93**	**-90**	**-82**	**-81**	**-85**	
Approximate area (S) of the separating floor (12m²)	12	12	12	12	12	12	12	12	
Correction for area (S), dB	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	
Volume of receiving room ($31m^3$)	31	31	31	31	31	31	31	31	
Measured reverberation time of receiver space	0.7	0.5	0.3	0.3	0.2	0.2	0.2	0.2	
Correction for absorption in receiver space [-10*log(A)], dB	**-9**	**-10**	**-12**	**-12**	**-14**	**-14**	**-14**	**-14**	
Sound Pressure Level at Within Receiver Space	33	15	13	-4	-9	-5	-6	-13	10
						Direct Transfer Noise Criterion			30

NR15 Criterion Curve	47	35	26	19	15	11	9	7
Sound Pressure Level difference below NR critierion	14	20	13	23	24	16	15	20

Source: Music from Basement Bar Receiver: Second Floor Bedroom	*63*	*125*	*250*	*500* (*Frequency, Hz*)	*1k*	*2k*	*4k*	*8k*	*dB(A)*
Sound Pressure level of worst case activity within Basement Bar	**93**	**89**	**90**	**90**	**84**	**80**	**78**	**75**	
On site SRI of separating floor, dB	**-62**	**-68**	**-71**	**-76**	**-80**	**-81**	**-81**	**-85**	
Approximate area (S) of the separating floor (12m²)	12	12	12	12	12	12	12	12	
Correction for area (S), dB	**11**	**11**	**11**	**11**	**11**	**11**	**11**	**11**	
Volume of receiving room (31m^3)	31	31	31	31	31	31	31	31	
Measured reverberation time of receiver space	0.6	0.4	0.4	0.4	0.4	0.4	0.4	0.3	
Correction for absorption in receiver space [-10*log(A)], dB	**-9**	**-11**	**-11**	**-11**	**-11**	**-11**	**-11**	**-12**	
Sound Pressure Level at Within Receiver Space	**33**	**21**	**18**	**14**	**4**	**-1**	**-3**	**-11**	**15**

Direct Transfer Noise Criterion	**30**

	63	125	250	500	1k	2k	4k	8k
NR15 Criterion Curve	**47**	**35**	**26**	**19**	**15**	**11**	**9**	**7**
Sound Pressure Level difference below NR critierion	**14**	**14**	**8**	**5**	**11**	**12**	**12**	**18**

APPENDIX B2

57 Camden Road, London, NW1 9EU

NOISE BREAKOUT CALCULATIONS

Source: Rooptop (first floor) bar area **Receiver: Nearby windows at building B5 on site**	*Frequency, Hz* *63*	*125*	*250*	*500*	*1k*	*2k*	*4k*	*8k*	*dB(A)*
Sound Pressure level within bar area	**93**	**89**	**90**	**90**	**84**	**80**	**78**	**75**	**91**
Approximate area (S) of the façade overlooking receiver location (30m²)	30	30	30	30	30	30	30	30	
Correction for area (S), dB	15	15	15	15	15	15	15	15	
On site composite SRI of façade, dB	**-32**	**-36**	**-44**	**-42**	**-44**	**-44**	**-48**	**-53**	
Correction for distance (6m), dB	**-16**	**-16**	**-16**	**-16**	**-16**	**-16**	**-16**	**-16**	
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 1m from Receiving Façade	**47**	**39**	**31**	**33**	**26**	**21**	**15**	**8**	**33**

Breakout Noise Criterion	**47**

The main model was designed around the following formula:
SPL2 = SPL1 - SRI + 10log(S) + 10log(r) - 14

where:
SPL2 is the sound pressure level at the receiver's facade
SPL1 is the sound pressure level within the source room
S is the area of the main wall
r is the distance correction
SRI is the sound reduction index of the break-out facade
The 14dB term occurs due to no reverberant sound field in the open (6dB) plus the propagation effect of the wall ($10\log(2/4\pi 1^2)$=8dB)