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843 UXBRIDGE ROAD, HAYES, MIDDLESEX

NOISE IMPACT ASSESSMENT REPORT

Report 16971.NIA.01

For:

843 Uxbridge Road

Hayes End

London UB4 8HZ

Site Address	Report Date	Revision History
843 Uxbridge Road, Hayes, Middlesex	09/02/2018	-

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1.0 INTRODUCTION

KP Acoustics Ltd, 1 Galena Road, London W6 0LT, has been commissioned by Mr. Omran Nader of 843 Uxbridge Road, Hayes End, London, UB4 8HZ to undertake an environmental noise survey at 843 Uxbridge Road, Hayes End, London, UB4 8HZ.

This report will examine the feasibility of a proposed Shisha Lounge, and outline any potential mitigation measures where necessary. The proposed operating hours of the Shisha Lounge are to be from 12:00-24:00, 7 days a week with a maximum number of 40 patrons permitted in the external smoking area at one given time.

This report presents the overall methodology and results from the environmental noise survey followed by calculations to demonstrate the feasibility of the external smoking area to satisfy the emissions criterion at the closest noise-sensitive receiver and outline any mitigation measures as appropriate.

2.0 ENVIRONMENTAL NOISE SURVEY AND EQUIPMENT

2.1 Procedure

Automated noise monitoring was undertaken at the position shown in Site Plan 16971.SP1. The choice of this position was based both on accessibility and on collecting representative noise data in relation to the nearest noise sensitive receiver relative to the premises. The duration of the survey was between 12:36 on 01/02/2018 and 12:36 on 02/02/2018.

Initial inspection of the site revealed that the background noise profile at the monitoring location was typical of an urban residential area.

The weather during the course of the survey was generally dry with wind speeds within acceptable tolerances and therefore suitable for the measurement of environmental noise. The measurement procedure complied with BS7445:1991 *"Description and measurement of environmental noise, Part 2- Acquisition of data pertinent to land use"*.

2.2 Equipment

The equipment calibration was verified before and after the survey and no calibration irregularities were observed.

The equipment used was as follows:

- 1 no. Svantek Type 957 Class 1 Sound Level Meter
- 1 no. Svantek Windshield
- B&K Type 4231 Class 1 Calibrator

3.0 RESULTS

The results from the continuous noise monitoring are shown as a time history of L_{Aeq}, L_{Amax}, L_{A10} and L_{A90} averaged over 5 minute sample periods in Figure 16971.TH1.

Minimum background noise levels are shown in Table 3.1.

	Minimum background noise level $L_{A90,\ 5min}$ dB(A)
Daytime (07:00-23:00)	45
Night-time (23:00-07:00)	35

Table 3.1: Minimum measured background noise levels

4.0 NOISE CRITERIA

In order to demonstrate that noise emissions from the external smoking area of the Shisa Lounge will not have any negative impact on the amenity of the nearest noise sensitive receivers; this report will aim at demonstrating inaudibility at the nearest noise sensitive receiver.

In order to demonstrate inaudibility at the nearest noise sensitive receiver, noise emissions from new applications should not exceed 10dB below the measured background noise level.

We therefore propose to set the noise criteria as shown in Table 4.1 in order to comply with the above requirement.

	Proposed Operating Hours (12:00 to 24:00)
Noise criterion at nearest residential receiver (minimum L_{A90})	25 dB(A)

Table 4.1: Proposed Noise Emissions Criteria

5.0 DISCUSSION

The nearest noise sensitive receiver to the external area of the restaurant would be the South facing windows of the 1st floor flats directly above the site, at a minimum distance of 6m.

Although there would be a level of attenuation due to the screening from the building envelope, in the interest of ensuring that no noise nuisance is caused to the nearby residents and avoiding noise complaints, it is advised that attendees are made aware of the importance to limit conversation and excessive noise while arriving and departing the premises. We would therefore suggest the

installation of clear signs to remind attendees of the potential noise nuisance that could occur from raised voices and by conversing outside the premises.

5.1 Exterior Smoking Area Construction

Current proposals for the construction of the smoking area entail the following elements:

External Walls

- 300mm cavity brickwork wall with 1x12.5mm plasterboard layer on dabs to form the internal wall lining
- 50mm mineral wool insulation within the void

Roof Construction

- 3 layer felt topping installed on 12.5mm hardwood
- 225mm timber joists roofing system with 100mm mineral wool insulation within the void
- 1x12.5mm layer to form the new underside soffit

The roof would be considered the weakest element with regards to mitigating noise between the proposed smoking area and the closest residential receiver. The constructions performance has been simulated in proprietary acoustic simulation software (Insul). An anticipated R_w value has been calculated, and shall be used in forming the main noise mitigation barrier between the proposed external smoking area and nearby residential receivers.

To optimise the above design, we would recommend the following upgrade proposals:

- The mineral wool insulation for both constructions used should have a minimum density if 45kg/m^3.
- The new underside soffit should be formed from 2x12.5mm layers of FireLine plasterboard.

After the implementation of the upgrade proposals, the roof construction would be anticipated to have a performance of 40-45 dB R_w.

Special attention should be given to workmanship regarding the proper sealing of junctions. Any gaps between the roof construction and the exterior walls should be made airtight using a non-setting acoustic mastic.

Internal Absorption

To further control the generation of unwanted levels of noise within the external smoking area, we would recommend that 40% of the interior walls be covered with Class 1 absorptive panels. Such products can be sourced from SoundSorba or EcoPhon. The above materials would need to be weatherproof, fire retardant; therefore final specification should be verified with the manufacturer.

5.2 Objective Overview

Taking all acoustic corrections into consideration, including distance and screening corrections, the noise levels expected at the closest residential windows would be as shown in Table 5.1. Detailed calculations are shown in Appendix B. The noise emitted from the proposed external smoking area has been calculated using typical noise levels produced by the maximum number of patrons permitted within the space at one given time.

Receiver - Nearest Noise Sensitive Window	**Criterion**	**Noise Level 1m from South facing window (Cumulative noise from external smoking area)**
Nearest Receiver	25 dB(A)	24 dB(A)

Table 5.1: Predicted noise levels and criterion at nearest noise sensitive location

As shown in Appendix B and Table 5.1, transmission of noise to the nearest noise sensitive residential windows due to the effects of human speech from the proposed external smoking area satisfies the criterion with current construction proposals.

5.2 BS8233 Assessment

Further calculations have been undertaken to assess whether the noise emissions from the proposed smoking area 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 *'Sound insulation and noise reduction for buildings – Code of Practise'* 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 30-35dB(A) for reasonable internal resting/sleeping conditions.

With calculated external levels of 24 dB(A), the residential window would need to provide no additional attenuation, in order for reasonable conditions to be achieved. According to BS8233:2014, even a partially open window offers 10-15dB attenuation, thus leading to an acceptable interior noise level that satisfies the criterion.

Receiver	Design Range – *For resting/sleeping conditions in a bedroom, in BS8233:2014*	Noise Level Within Noise Sensitive Premises
Inside Nearest Residential Space	30-35 dB(A)	Non-significant

Table 5.3: Noise levels and criteria inside nearest residential space

6.0 NOISE MANAGEMENT PLAN

In order to minimise the risk of any noise disturbance caused by patrons on site, it would be recommended that signage be installed outside the premises in to remind customers to leave the site in a quiet and respectful manner.

It would be expected that staff on site would be capable of reminding customers to observe signage and inform customers directly of the need to keep noise to a minimum when entering or exiting the site.

The licencing hours should be strictly abided by to minimise and potential complaints from nearby residents.

7.0 VENTILATION

Current construction proposals would need to be verified with a specialist with regards to the ventilation of the proposed space. Inherently, creating a robust and air tight structure to minimise noise breakout will limit the amount of fresh air that is provided to the space. Suitable ventilation proposals will need to be outlined.

8.0 CONCLUSION

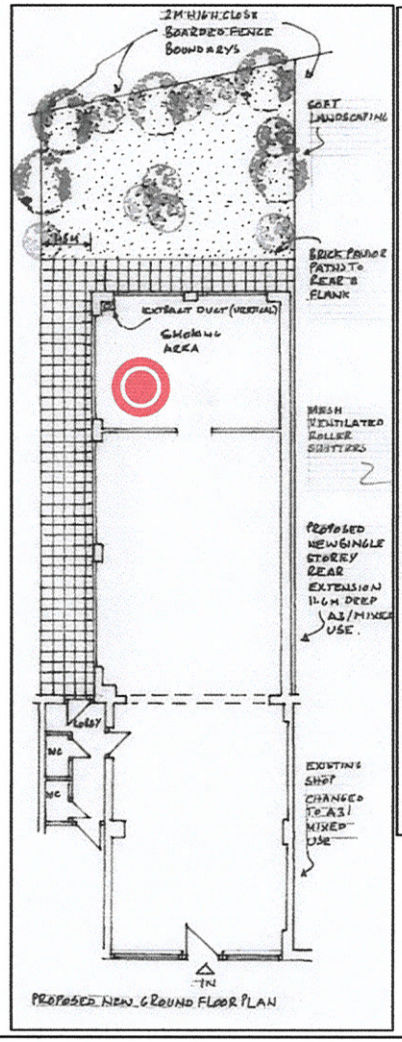
An environmental noise survey has been undertaken at 839 Uxbridge Road, Hayes End, London by KP Acoustics Ltd between 12:36 on 01/02/2018 and 12:36 on 02/02/2018.

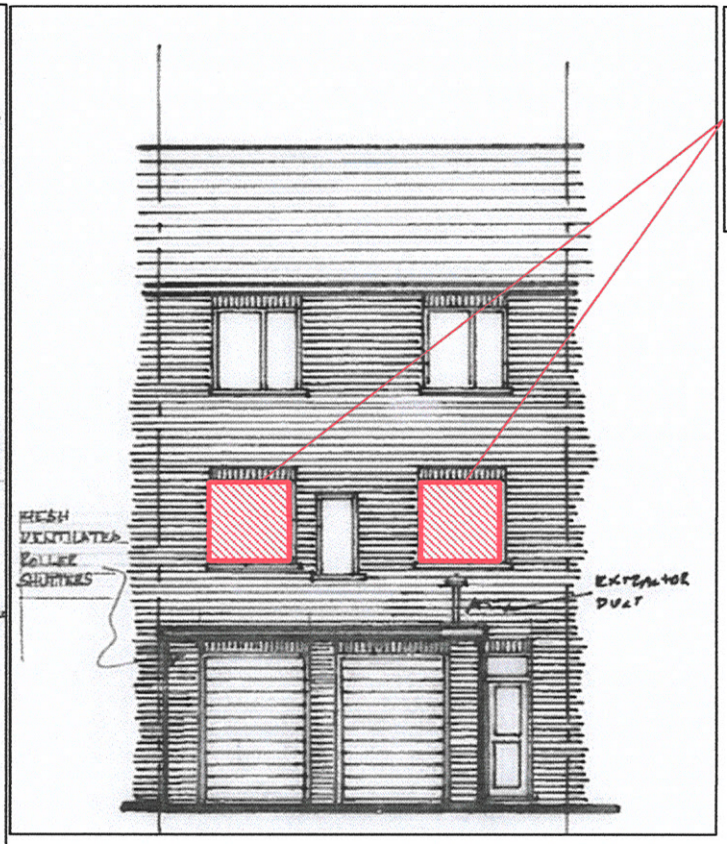
The results of the survey have enabled criteria to be set for noise emissions. Using existing and measured data, noise levels are predicted at the nearby noise sensitive receivers for compliance with current requirements. Calculations show that noise emissions from the proposed external smoking area would demonstrate inaudibility at the nearest noise sensitive receiver when compared with measured background noise levels on site.

Further calculations have been undertaken with regards to the relevant British Standard and it has been ensured that the amenity of nearby residential receivers will be protected.

Report by:
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The closest noise sensitive receiver to the proposed external smoking area would be a set of windows belonging to the residential dwellings located directly above No. 843 Uxbridge Road.

Noise Survey Monitoring Position

Closest noise-sensitive receiver

Title:

Indicative site plan showing noise monitoring position

(Image Source: Stuart A Greenberg)

Date: 13 February 2018

FIGURE 16971.SP1

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843 Uxbridge Road, Hayes, Middlesex
Environmental Noise Time History
1st February to 2nd February 2018

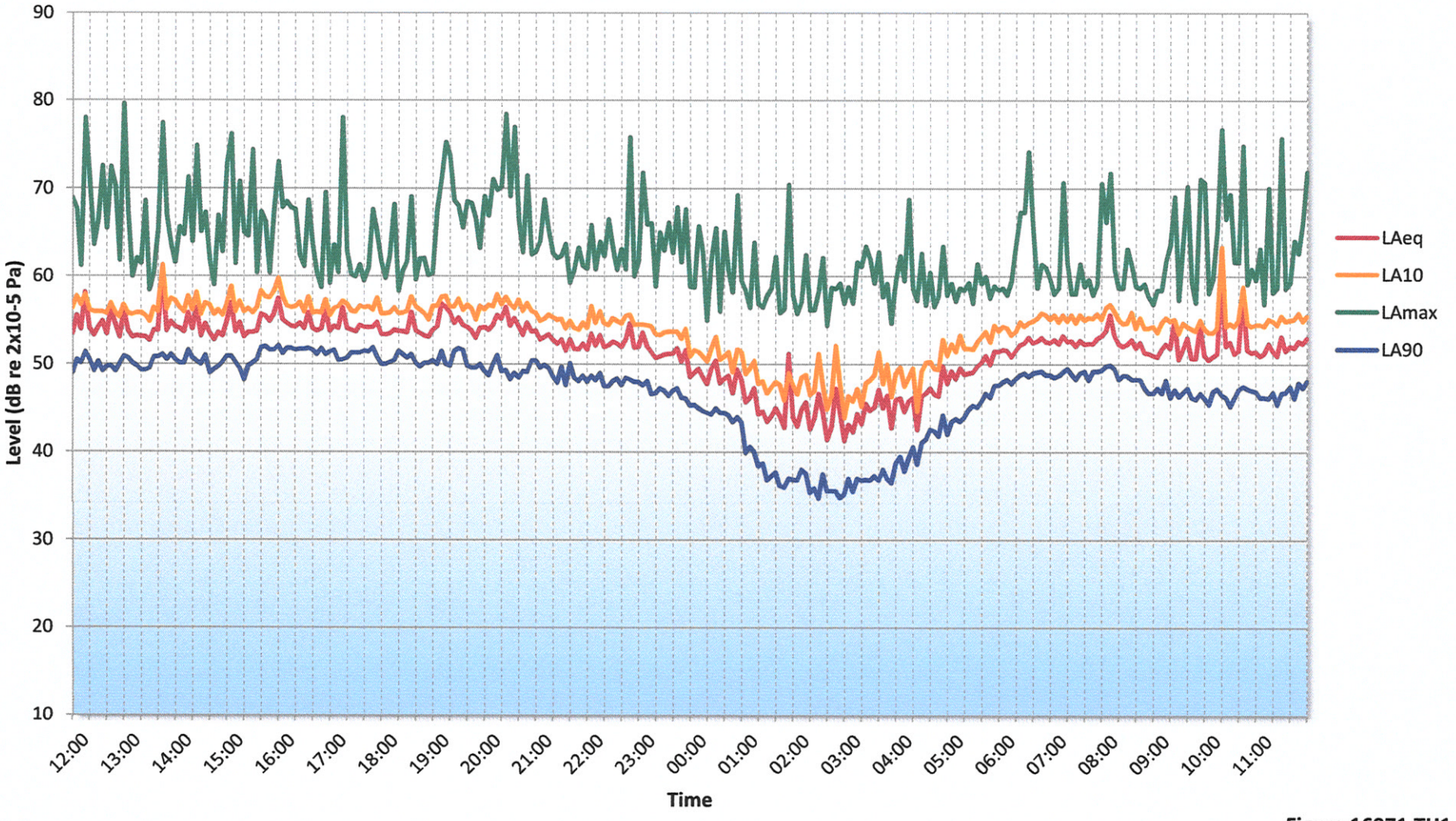


Figure 16971.TH1

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.

APPENDIX B

843 Uxbridge Road, Hayes, London

PROPOSED EXTERNAL NOISE AREA CALCULATIONS

APPENDIX B1: Noise Assessment for Receiver (Closest Residential Window)

Source: Patron Noise/Proposed external smoking area

	Frequency, Hz								
	63	***125***	***250***	***500***	***1k***	***2k***	***4k***	***8k***	***dB(A)***
Typical Sound Pressure Levels (at 1m)									
Human Speech (Male)	50	54	59	61	59	55	46	32	
Correction for number of patrons (40)	15	15	15	15	15	15	15	15	
Attenuation due to distance (6m), dB	-16	-16	-16	-16	-16	-16	-16	-16	
Attenuation provided by proposed external smoking area construction	-11	-20	-36	-38	-42	-42	-42	-44	
***External Walls** : 300mm cavity brickwork wall with 1x12.5mm plasterboard layer on dabs to form the interal wall lining*									
***Roof Construction** : Three layer felt topping installed on 1x12.5mm hardwood layer. 225 timber josts roofing system with mineral wool insulation within the void 1x12.5mm layer of plasterboard layer to form the new underside soffit*									
Sound pressure level 1m from nearest residential receiver	**39**	**34**	**23**	**23**	**17**	**13**	**0**	**0**	**24**

Design Criterion	**25**