



LUX LOUNGE

**380 BARLOW MOOR ROAD
CHORLTON-CUM-HARDY
MANCHESTER**

NOISE ASSESSMENT FOR PLANNING PURPOSES

07 June 2022

AEC REPORT: P4583/R1b/DMT

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1.0 INTRODUCTION

1.1 Acoustic & Engineering Consultants Limited (AEC) has been instructed by the Lux Lounge management to undertake a noise assessment in relation to the proposed extended opening hours of the existing restaurant at 380 Barlow Moor Road, Chorlton-cum-Hardy, Manchester.

1.2 This noise assessment report details the following:

- Background and Site Description
- Assessment Criteria
- Baseline Noise Measurements
- Noise Assessment

1.3 The proposals are to extend normal operating hours from:

Mon: 12:00 – 11:00 pm
Tue: 12:00 – 11:00 pm
Wed: 12:00 – 11:00 pm
Thu: 12:00 – 11:00 pm
Fri: 12:00 – 11:00 pm
Sat: 12:00 – 11:00 pm
Sun: 12:00 – 11:00 pm

To:

Mon: 12:00 – **11:30 pm**
Tue: 12:00 – **11:30 pm**
Wed: 12:00 – **11:30 pm**
Thu: 12:00 – **11:30 pm**
Fri: 12:00 – 00:30 am
Sat: 12:00 – 00:30 am
Sun: 12:00 – **11:30 pm**

(There may be minor changes to the above - subject to final details of application)

1.4 To inform this assessment a baseline noise measurement survey has been undertaken with the Lux Lounge operating normally (inside and outside) and for a period after it was closed (outside only).

1.5 Sound insulation measurements have also been undertaken on the separating floor between the ground floor Lux Lounge and the residential flat above, which is currently owned and occupied by Lux Lounge staff.

1.6 This assessment considers noise egress from the Lux Lounge building, during the extended opening hours, and how it potentially affects existing nearby residential receptors. The internal noise transfer to the residential flat above the Lux Lounge has also been considered.

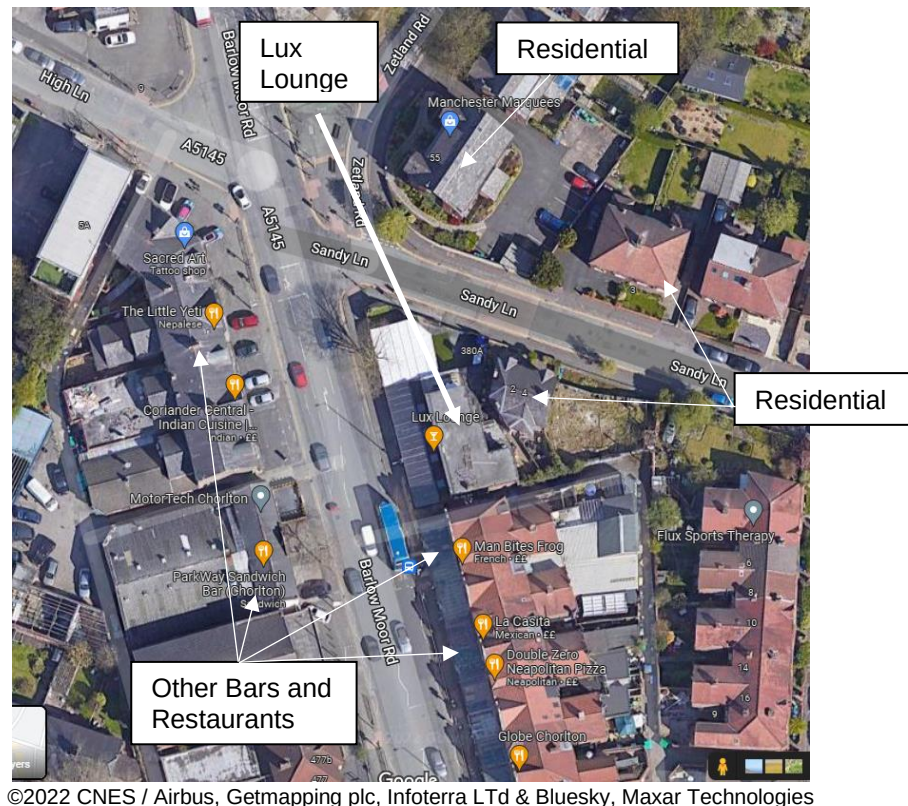
1.7 The assessment is based on meeting the requirements of Manchester City Council (MCC).

1.8 Acoustic terminology is discussed in brief in Appendix A.

2.0 BACKGROUND AND SITE DESCRIPTION

- 2.1 Lux Lounge is located at the junction of Barlow Moor Road and Sandy Lane. There are residential properties on Sandy Lane to the north and east, and existing commercials properties (mostly restaurants and bars) to the south and west. See Figure 2.1 below.

Figure 2.1 – Site Location Plan



- 2.2 During the site visit, on Saturday 2nd April 2022, it was noted that after Lux Lounge closed at 11pm, there were a number of other premises still operating to at least midnight, with outdoor seating and amplified music outside. These included 'Park Way', directly opposite Lux Lounge, and 'Strange Brew' on Barlow Moor Road. 'Man Bites Frog' was also trading until at least midnight but there was no external music or patrons using the outside area on Barlow Moor Road.
- 2.3 The proposed extension of Lux Lounge operating times does not include any physical changes to the building or any other operational changes. AEC has been advised that the openable windows/doors at the front of Lux Lounge is always closed by around 10:30-11pm, representing no change to current operations. This will form good practice noise management should the extended opening hours be granted approval.
- 2.4 There are three condenser units providing air conditioning on the side of Lux Lounge (south elevation), in the alleyway opposite 'Man Eats Frog'. These units only operate when Lux Lounge is open and they were barely audible when stood directly below.

3.0 ASSESSMENT CRITERIA

- 3.1 Based on AEC's experience of restaurant in Manchester, the following will need to be considered when assessing the potential noise impacts of extending the opening hours.
- (1) Noise breakout via the external envelope from patrons and background music
 - (2) Internal noise transfer via separating floor to flat above
 - (3) Noise emitted from the external building services plant
- 3.2 MCC has produced 'Planning & Noise – Technical Guidance (P&NTG)' (2015) to outline their requirements for noise assessments to accompany planning applications. PNTG and other appropriate guidance documents have been considered to determine suitable limits for each noise source identified above and these are discussed separately, below.

(1) Noise Breakout External Envelope

- 3.3 In relation to nearby residential properties that are not structurally connected to the Lux Lounge, PNTG states that:

"Entertainment noise (L_{Aeq}) should be controlled to 10dB below the background noise level (L_{A90}) without the entertainment noise present, in each octave band at the nearest noise sensitive location".

(2) Internal Noise Transfer to Flat Above

- 3.4 In instances where venues are structurally connected to a residential property, PNTG states that:

"Music noise levels in the 63Hz and 125Hz octave centre frequency bands (L_{eq}) should be controlled so as to not exceed (in habitable rooms) 47dB and 41dB (L_{eq}), respectively".

- 3.5 Based on the above, we would propose that noise levels inside Lux Lounge are controlled such that the above criteria are met. In all other frequency bands, we would propose that NR20 (L_{eq}) is not exceeded.

(3) Externally Mounted Building Services Plant

- 3.6 In relation to controlling noise from building services plant PNTG states that:

"Externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location."

4.0 BASELINE NOISE MEASUREMENTS

Baseline Noise Survey

- 4.1 Baseline external noise measurements were undertaken on Saturday 2nd April 2022 at three locations around the Lux Lounge, identified as A to C on Figure 1 below. All measurements were free-field (>3m away from buildings) and undertaken with a calibrated Class 1 integrating sound level meter, in general accordance with BS 7445-1 “*Description and measurement of environmental noise*”.
- 4.2 The ambient and background noise levels were dominated by road traffic noise, with entertainment and patron noise from Park Way and Strange Brew affecting the noise climate on Barlow Moor Road.
- 4.3 The external measurements are summarised in Table 4.1 below:

Table 4.1 – Measured Noise Levels

Measurement Location	Measurement Times	Noise Level, dB			Comments
		Ambient L _{Aeq,10mins}	Maximum L _{Amax,F}	Background L _{A90,10mins}	
A	2237-2247h	61	71	55	Kitchen extract fan. Road Traffic Noise (RTN)
	2254-2304h	60	71	54	Kitchen extract fan. RTN
	2336-2346h	58	72	48	RTN
B	2244-2254h	64	85	47	RTN
	2306-2316h	59	86	44	RTN
	2352-0002h	52	66	43	RTN
	0011-0021h	58	74	47	RTN
C	2324-2334h	65	76	57	RTN and music/patron noise from Park Way and Strange Brew
	0003-0013h	64	77	53	

- 4.4 Music noise levels were measured, at around 11pm, at approximately 5 metres from Strange Brew on Barlow Moor Road. Levels of around 68dBL_{Aeq,T} and 75dBL_{Amax} were measured.
- 4.5 Measurements of music noise levels were undertaken outside the Lux Lounge with the doors wide open and a level of around 63dBL_{Aeq,T} was measured, when corrections are made for traffic noise.
- 4.6 The Lux Lounge condenser noise levels were measured at around 11pm and, making some correction for the influence of road traffic noise, it is likely that noise levels are around 50dBA at 2 metres from all three condensers. This is a realistic level for such plant.

Internal Noise Levels in Lux Lounge

- 4.7 'Typical' internal ambient noise levels, due to patrons but mainly background music, was up to 72dBA at 10pm on a Saturday evening. The atmosphere was relaxed but not quiet and there was around 75% occupancy. It was possible to have a conversation without really needing to raise your voice.
- 4.8 AEC asked the Lux Lounge staff to increase the music noise levels to the highest they would be willing to without affecting the atmosphere. The internal level was increased to 75dBA and this was dominated by music noise.
- 4.9 This 'worst case' music noise spectrum is presented below:

Table 4.2 – Measured Noise Levels inside the Lux Lounge at 10pm Saturday

Noise Type	Overall Noise Level, dB(A)	Noise Levels, dB @ Octave Band Centre Frequency, Hz							
		63	125	250	500	1k	2k	4k	8k
Ambient, L_{eq}	75	75	78	72	70	69	65	65	<65
Maximum, L_{max}	81	82	85	80	77	76	72	72	<70

Measured Sound Insulation of Separating Floor

- 4.10 AEC measured the sound insulation from the Lux Lounge on the ground floor to the bedroom in the flat above. The following level difference was measured:

Table 4.3 – Measured Level Difference (D) to 1st floor flat

Noise Levels Difference (dBD) @ Octave Band Centre Frequency, Hz							
63	125	250	500	1k	2k	4k	8k
33	38	46	51	60	69	73	70

- 4.11 This is a reasonable to good sound insulation performance based on AEC's experience of similar developments.

5.0 ASSESSMENT OF THE PROPOSED DEVELOPMENT

- 5.1 As stated in Section 3.0, there are three main aspects which have been assessed in relation to noise from the proposed extended opening hours, and these are discussed separately below:

(1) Noise Breakout External Envelope

- 5.2 The noise breaking out of Lux Lounge is via the front of the building facing on to Barlow Moor Road. AEC stood around the rear of the premises and there was no audible patron or entertainment noise egress. This is because the rear of the building is buffered by the back of house areas.
- 5.3 With the front doors open, the noise egress from Lux Lounge was around 63dB_{L_{Aeq,T}} at 2 metres from the building (as per Para. 4.5 above). However, during the proposed extended opening hours from 11pm onwards, external windows and doors will remain closed. Therefore, a break-out calculation has been undertaken using: the lowest measured baseline background noise level of 43dB_{L_{A90}} measured around midnight; the highest internal noise level measured of 75dB_{L_{Aeq,T}}; a nominal sound insulation performance for standard double glazing (4-6mm / 20mm cavity / 4-6mm) and the approximate area of the glazed windows/doors.

Table 5.1 – Assessment of Noise Break-Out

Description	Overall Noise Level, dB(A)	Noise Levels, dB @ Octave Band Centre Frequency, Hz							
		63	125	250	500	1k	2k	4k	8k
Internal Level	75	75	78	73	70	69	65	65	<65
Glazing SRI	-	-20	-24	-21	-25	-35	-38	-35	-35
Other Corrections (screening, distance (6m), directivity, area, etc)	-	-24							
[A] External Level at nearest Receptor	23	31	30	27	22	10	3	6	6
Background	43	48	43	39	37	40	34	27	27
[B] Criteria (Background – 10dB)	33	38	33	29	28	30	24	18	18
[A-B] Assessment	0	-7	-3	-2	-6	-20	-21	-12	-12

- 5.4 The assessment demonstrates that even to the residential flat window directly above the Lux Lounge and/or the flat above Man Eats Frog (6m away from the front glazing), MCC's criteria, stated in Para 3.3, would be achieved. At receptors further away and on Barlow Moor Road and Sandy Lane, the break-out noise levels would be lower. *Please note:* the background noise level from Location B was used as a worst case. In reality, background noise levels are around 10dB higher on Barlow Moor Road.
- 5.5 Furthermore, AEC could not hear any noise break-out of the Lux Lounge at around 10:30pm on Saturday evening with windows/door closed. The windows and doors appeared well-sealed.

(2) Internal Noise Transfer to Flat Above

- 5.6 Based on the measured noise level in the ground floor of Lux Lounge (Table 4.2), and the measured sound insulation performance of the separating floor (Table 4.3), the calculated noise levels in the bedroom (during the extended opening hours) are compared to the MCC criteria in Table 5.2, below.

Table 5.2 – Comparison of Calculated Noise Level in the Main Bedroom with the Criteria

Noise Element	Noise Level, dB @ Octave Band Centre Frequency, Hz						
	63	125	250	500	1k	2k	4k
Noise Level in Ground Floor (L_{eq})	75	78	72	70	69	65	65
Measured Level Difference of Floor	33	38	46	51	60	69	73
[A] Resultant Noise Level in Second Floor Bedroom	42	40	26	19	9	0	0
[B] Criteria MCC and NR20	47	41	31	24	20	17	14
[A-B] Exceedance over Criteria	-5	-1	-5	-5	-11	-17	-14

- 5.15 The above results table demonstrate that the MCC criteria, in the 63Hz and 125Hz bands, and the AEC suggested criteria of NR20 in other bands, would be achieved. This is based on existing worst-case internal noise levels and the existing measured performance of the separating floor.
- 5.16 The above demonstrate there is no specific need for noise mitigation. However, noise levels should be limited to not typically exceed the levels measured by AEC of 72 to 75dBL_{Aeq,T}.

(3) Externally Mounted Building Services Plant

- 5.17 There is a kitchen extract on the north elevation. Noise levels from this source were measured at Location A (approximately 53-55dBA) until around 11pm when Lux Lounge closed. This extract fan will continue to be switched off at 11pm should the extended opening hours be granted. Therefore, there is no change in terms of the noise impacts.
- 5.18 The three condenser units on the south elevation are approximately 50dBA at 2 metres directly below. There are no residential receptors with direct line of sight to these items of plant. The nearest residential receptors are the 1st floor flats above Lux Lounge and Man Eats Frog. Both properties are around 4 metres from the plant items and have at least 10dB screening due to the edge of buildings.
- 5.19 The background noise levels on Saturday, just after midnight, were around 53dBL_{A90}.
- 5.20 Allowing 6dB for distance attenuation and 10dB for screening, plant noise levels are predicted to be around 34dBL_{Aeq,T}. Applying a +3dB acoustic character correction for potential intermittent operation (switching on/off), gives a rating level of 37dBL_{Ar,Tr}.

- 5.21 This is -16dB below the baseline background noise level of 53dBL_{A90} and therefore meets MCC's requirement, as stated in Para. 3.6.
- 5.22 There is no new external building services plant proposed.
- 5.23 This assessment demonstrates that, in addition to meeting MCC's requirements, the continued use of the condenser units during the proposed extended opening hours would not be likely to cause any adverse effects.

Summary of Assessment

- 5.24 The front elevation (openable windows and doors) will continue to be closed up by 1030pm-11pm each evening, representing no operational change, and the above assessment demonstrates noise break-out will be controlled to meet MCC requirements.
- 5.25 The separating floor has a reasonable to good sound insulation performance and will control noise transfer to meet MCC's requirements in the flat above.
- 5.26 Internal noise levels are currently due to background music and patron noise. This is currently around 72 to 75dBL_{Aeq,T} (dominated by music noise). This is in keeping with Lux Lounge's commercial offering and would not increase significantly in the future.
- 5.27 There is no new external building services plant proposed and the use of the existing condenser units, over the proposed extended operating hours, will meet MCC's limits and will not cause any adverse effects.
- 5.28 Based on the above assessment, noise should not be considered a determining factor in relation to the proposed extension of opening times.
- 5.29 Further to the above, it is understood that alternate opening times i.e. until 00.30am daily, may also be considered at a later date. These noise assessment findings could equally be applied to up to 00.30am daily, if required.

FIGURE 1 – Site Location Plan Identifying Monitoring Locations



Map data © 2022 Google United Kingdom

APPENDIX A – Acoustic Terminology in Brief

Sound Description

Sound is produced by mechanical vibration of a surface, which sets up rapid pressure fluctuations in the surrounding air. The rate at which the pressure fluctuations occur determines the pitch or *frequency* of the sound. The frequency is expressed in Hertz (*Hz*), that is, cycles per second. The human ear is sensitive to sounds from about 20 Hertz to 20,000 Hertz. Although sound can be of one discrete frequency - a 'pure tone' - most sound is made up of many different frequencies.

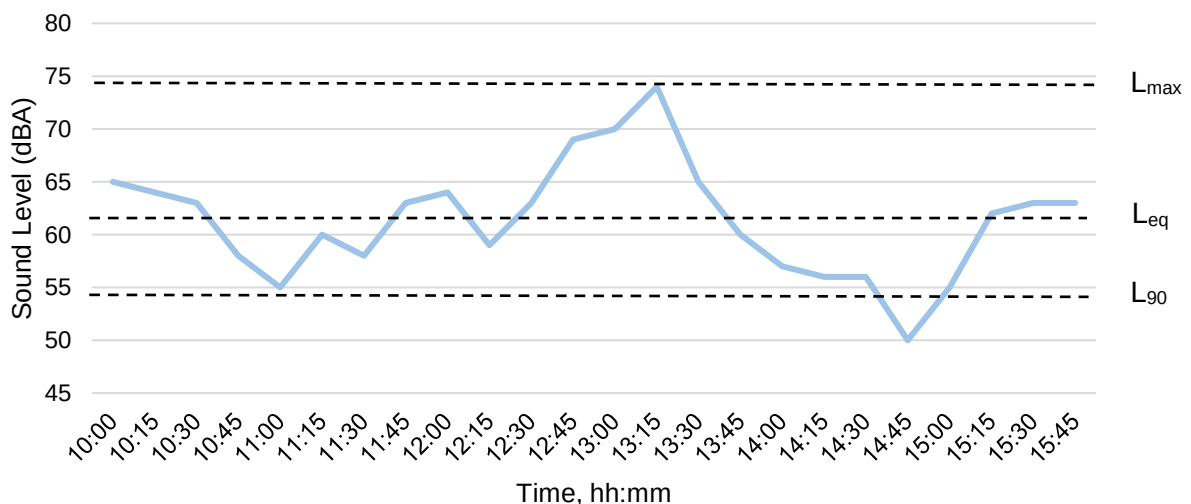
The human ear is more sensitive to some frequencies than others, and modern instruments can measure sound in the same subjective way. This is the basis of the A-weighted sound pressure level *dBA*, normally used to assess the effect of noise on people. The *dBA* weighting emphasises or reduces the importance of certain frequencies within the audible range.

Sound Units

In order to assess environmental noise, measurements are carried out by sampling over specific periods of time, such as fifteen minutes or one hour, the statistically determined results being used to quantify various aspects of the sound.

The figure below shows an example of sound level varying with time. Because of this time variation, the same period of sound can be described by several different levels. The most common of these are described below. It should be noted that in many instances in the main body of text, the unit will be preceded by a dB descriptor in the report e.g. $L_{Aeq,T}$ could be written $dBL_{Aeq,T}$.

Example of Sound Varying with Time



Unit Type	Acoustic Unit	Description
Ambient Sound Level	$L_{Aeq, T}$	The equivalent continuous (A-weighted) sound level. It may be thought of as the “average” sound level over a given time, T. It is used for assessing noise from various sources: industrial and commercial premises, construction sites, railways and other intermittent noises and can be considered as the “ambient” noise level.
Background Sound Level	L_{A90}	The (A-weighted) sound level exceeded for 90% of a measurement period. It is the value often used to describe background noise.
Sound reduction index	R_w	Single number rating used to describe the <u>laboratory</u> airborne sound insulation properties of a material or building element over a range of frequencies, typically 100-3150Hz.
Weighted Level Difference	D_w	Single number rating used to describe the on-site airborne sound insulation properties of a material or building element over a range of frequencies, typically 100-3150Hz.
Rating Level	$L_{Ar, Tr}$	Specific sound level plus any adjustment for the characteristic features of the sound