

Unit 1 Millow Street Manchester

Acoustic Planning Report
1204/APR1

26 February 2024

For:

Sports and Lounge Ltd



2nd Floor 3 Hardman Square
Spinningfields Manchester M3 3EB

☎ 0161 457 0515 ■ 07415 151 901
✉ Enquiry@LighthouseAcoustics.co.uk
🌐 www.LighthouseAcoustics.co.uk

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This report (including any enclosures and attachments) has been prepared by Lighthouse Acoustics with reasonable skill and care in accordance with generally accepted acoustic principles and the terms agreed between Lighthouse Acoustics and our Client. Any information provided by third parties and referred to herein may not have been checked or verified by Lighthouse Acoustics unless expressly stated otherwise. This document contains confidential information and no part of this report should be reproduced, distributed or communicated to any third party unless Lighthouse Acoustics provide express prior written consent. We do not accept any liability if this report is used for an alternative purpose from which it is intended, nor to any third party in respect of this report. Where a sound survey has been undertaken, this report is based on the sound climate at the site at the time of the survey and no warranty is given as to the possibility of changes at differing times.

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Registered Office: 2nd Floor 3 Hardman Square Spinningfields Manchester M3 3EB
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1.0 Introduction

Lighthouse Acoustics has been appointed by Sports and Lounge Ltd to undertake an environmental sound survey at the proposed site situated at Unit 1 Millow Street, Manchester and to undertake impact assessments of typical sound levels from the proposed snooker hall.

The survey methodology, results and assessments are presented in this report.

2.0 Objectives

To establish the Local Authority's acoustic requirements for the proposed snooker hall.

To visit site to undertake a detailed environmental sound survey in order to establish existing environmental sound levels at the proposed site.

To undertake an assessment of operational sound breakout from the proposed snooker hall to the nearest noise sensitive receptors and to propose mitigation measures if required in order to achieve the requirements of the Local Authority.

To propose atmospheric plant sound emission limits at the nearest noise sensitive receptors for subsequent use in designing building services proposals in order to achieve the requirements of the Local Authority.

3.0 Site Description

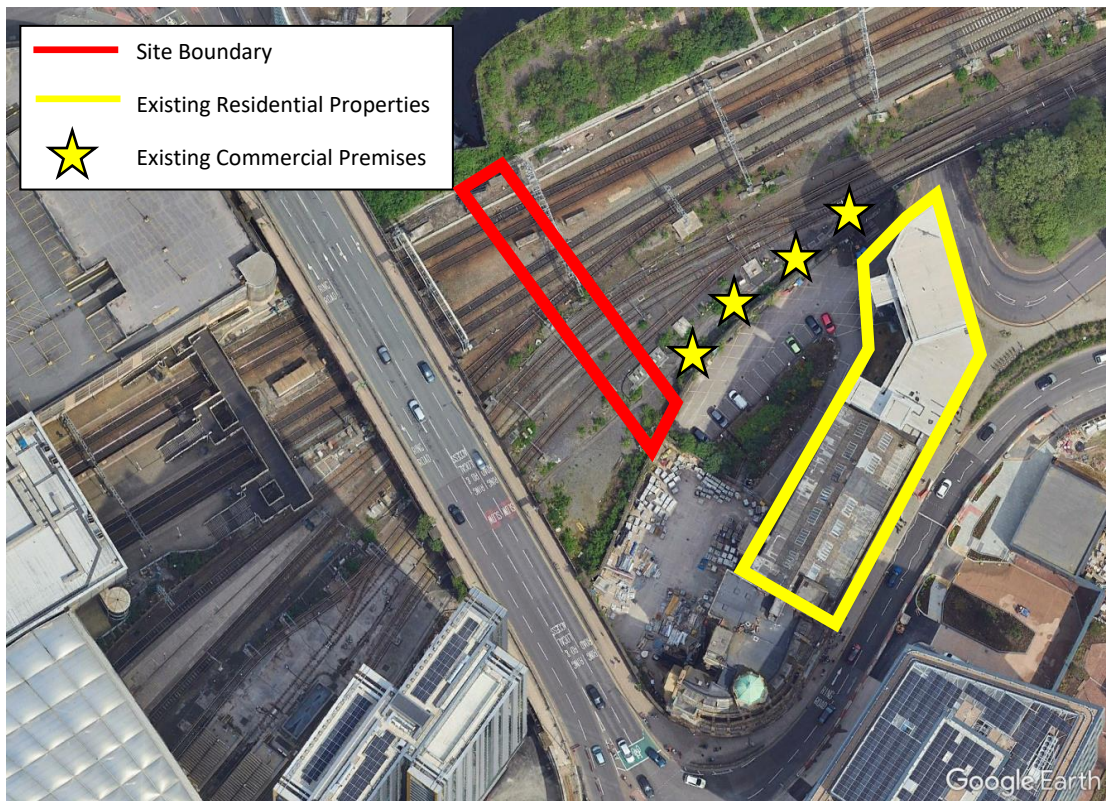
The proposed site is situated at Unit 1 Millow Street, Manchester and comprises a vacant railway arch unit. The site is bound by River Irk to the north, adjoining commercial unit to the east, car park to the south and adjoining commercial unit to the adjoining commercial unit to the west.

The nearest noise sensitive receptors are existing residential properties situated to the south east of the site opposite the car park.

There are a number of existing commercial premises in the adjoining railway arch units including a bar, gym and tool hire centre.

Cheetham Hill Road (A665) is situated approximately 30m to the west of the site whilst the railway lines above the unit lead to Manchester Victoria train station which is situated approximately 100m to the west of the site.

The site plan below indicates the site boundary and the surrounding environment.



Site plan indicating the site boundary and the surrounding environment

4.0 Local Authority Requirements

4.1 Entertainment Sound

With regard to entertainment venues, Section 3.7.1.2 of the Planning & Noise Technical Guidance document (dated October 2022) produced by Manchester City Council states the following:

"Therefore a criterion that would achieve a condition of 'inaudible' / 'virtually inaudible' which is applicable for new residential developments that are structurally connected to entertainment venues (or vice versa) would be:

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

This criterion may also be applicable for new residential developments that are structurally separate from an existing entertainment venue.

A planning application for a new entertainment venue that is structurally detached from other building uses should demonstrate that music noise from the proposal will not be 'audible' in nearby residential properties, assuming that the

residential properties in question have their windows open. The criterion here is:

'Entertainment noise ($L_{Aeq,5min}$) should be controlled to 5dB below the typical background noise level (L_{A90}) in each octave band at the nearest noise sensitive location'.

Depending on the circumstances it could be that both the above criteria are applicable for the same development (new entertainment venue). In order to control music noise levels so as not to exceed any agreed maximum permissible operating levels, as a last resort, a suitable noise limiting device may be necessary to install, in addition to structural acoustic treatments such as uprated lobby systems and size, location and fixing of loudspeakers."

4.2 Building Services Sound

With regard to noise and vibration from fixed plant/equipment, Section 3.7.1.5 of the Planning & Noise Technical Guidance document (dated October 2022) produced by Manchester City Council states the following:

"The noise assessment should be based on BS 4142: 2014 and any application for fixed plant, equipment or machinery must demonstrate 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."

5.0 Environmental Sound Survey

5.1 Measurements

Automated environmental sound measurements were undertaken from 11:00 hours on Friday 16 February 2024 to 11:00 hours on Monday 19 February 2024. During this period the L_{Amax} , L_{Aeq} and L_{A90} sound pressure levels were measured continuously over 15 minute periods along with the corresponding octave band sound pressure levels.

5.2 Weather Conditions

At the start of the survey period there was a gentle westerly breeze (<5m/s) and the sky was overcast. There was no rainfall and road surfaces were dry. The temperature was approximately 10°C.

At the end of the survey period there was a gentle westerly breeze (<5m/s) and the sky was overcast. There was no rainfall and road surfaces were dry. The temperature was approximately 9°C.

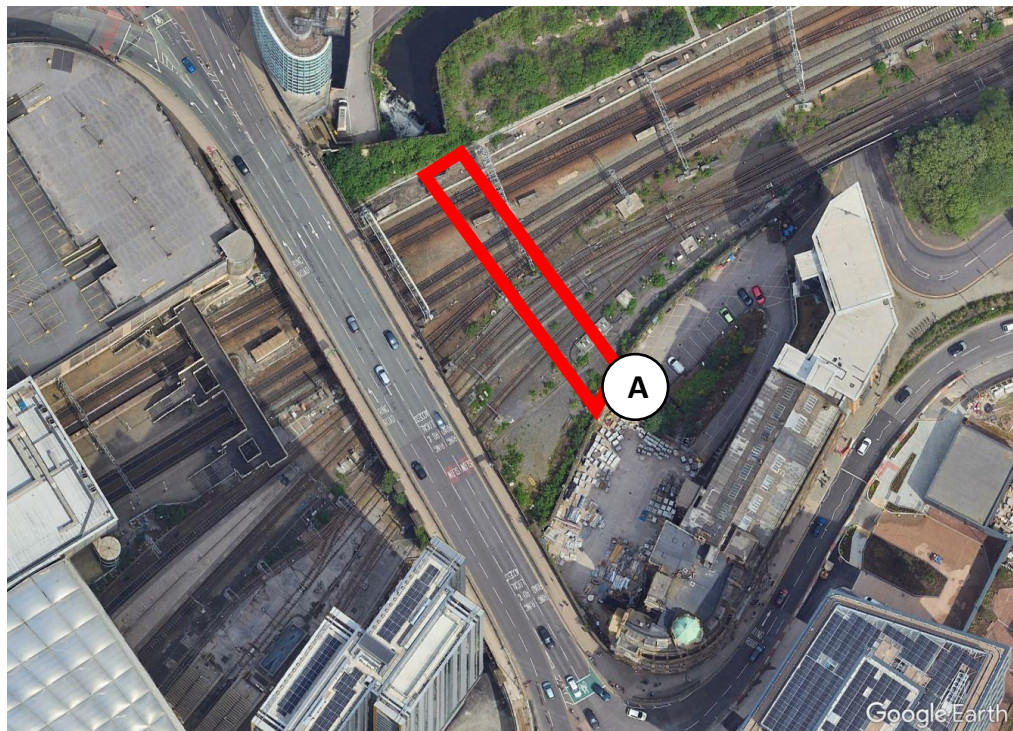
Based on publicly available weather data for the survey period it is understood that there were periods of rainfall between 16:00 and 18:00 hours on Saturday 17 February and between 03:00 and 07:00 hours on Sunday 18 February. The weather conditions for the remaining survey period are considered to be suitable for undertaking measurements of sound levels.

5.3 Measurement Position

Environmental sound levels were measured at a single position on-site as described in the table below.

Position	Description
A	Microphone situated on the south east façade of the unit at 3m above ground level looking towards the existing residential properties to the south east.

The measurement position and site boundary are shown on the site plan below.



Site plan showing measurement position and site boundary

Measurement Position A was selected in order to assess typical environmental sound levels representative of those at the nearest existing residential properties to the south east of the site.

5.4 Equipment

The following equipment was used to undertake the environmental sound survey.

Equipment	Manufacturer	Model	Serial No.	Calibration Date
Class 1 Sound Level Meter	Casella	633C	5262813	25/07/2023
Preamplifier	Casella	495	003391	25/07/2023
Microphone	Casella	251	1031	25/07/2023
Class 1 Sound Calibrator	Casella	120/1	3864878	01/11/2023
Environmental Noise Kit	Casella	6847	-	-
Microphone Extension Cable	Casella	C6717/5	-	-
Weather Protection System	Casella	6737	-	-

Field calibration checks were performed on the sound level meter prior to and on completion of the survey and were found to be within acceptable tolerance limits.

5.5 Results

5.5.1 Time History Graph

The results of the environmental sound survey are presented on Time History Graph 1204/THG1 enclosed at the rear of the report. The presented results for Position A have been corrected for reflections from the façade by subtracting 3dB from the measured sound levels in order to obtain free field sound levels.

5.5.2 $L_{A90,T}$ Background Sound Levels

The lowest representative daytime and night-time $L_{A90,15min}$ background sound levels measured at each position during the survey period are detailed in the table below.

Position	Lowest Representative $L_{A90,15min}$ Background Sound Levels (dB)	
	Daytime (07:00–23:00)	Night-time (23:00–07:00)
A	49	45

The presented results for Position A have been corrected for reflections from the façade by subtracting 3dB from the measured sound levels in order to obtain free field sound levels.

The corresponding $L_{90,15min}$ octave band sound levels at each measurement position are presented in the table below.

Position	Period	Lowest Representative $L_{90,15min}$ Background Sound Levels (dB) at Octave Band Centre Frequency (Hz)								dBA
		63	125	250	500	1k	2k	4k	8k	
A	Daytime	55	50	48	46	46	41	32	19	49
	Night-time	48	48	45	43	43	37	27	14	45

The presented results for Position A have been corrected for reflections from the façade by subtracting 3dB from the measured sound levels in order to obtain free field sound levels.

5.6 Discussion of Sound Climate

At the start and end of the survey period the dominant sound source at Position A was noted to be road traffic along Cheetham Hill Road and frequent train passby's along the railway lines above. During lulls in road traffic along Cheetham Hill Road, road traffic from the surrounding road network contributed towards the measured sound climate.

Whilst we are unable to comment on dominant sound sources or individual sound events during the survey period, based on the surrounding environment it is likely that transportation remained the dominant sound source.

6.0 Operational Sound Breakout Assessment

6.1 Operating Hours

It is understood that the proposed operating hours of the snooker hall are 10:00 to 03:00 hours Monday to Sunday. Operational sound breakout is therefore assessed against the lowest representative $L_{90,15min}$ octave band background sound levels measured at each position during the proposed operating hours of between 10:00 to 03:00 hours.

6.2 $L_{90,T}$ Octave Band Background Sound Levels

The lowest representative $L_{90,15min}$ octave band background sound levels measured at each position during the proposed operating hours of the snooker hall (10:00 to 03:00 hours) are detailed in Section 5.5.2.

6.3 Drawings

The layout of the proposed snooker hall has been taken from the following drawing.

Author	Drawing No.	Revision	Date
Muse Architects	-	-	-

The proposals include the change of use of the vacant railway arch unit to a snooker hall along with entrance lobby, preparation kitchen, toilets and storage areas.

6.4 Building Facade Attenuation

The existing façade of the railway arch unit comprises masonry walls with metal roller shutter door and timber/metal door. A sound insulation test of the existing façade was undertaken whilst on site and the results are presented in the table below.

Existing Façade Level Difference D (dB) at Octave Band Centre Frequency (Hz)								D _w
63	125	250	500	1k	2k	4k	8k	
14	17	17	19	19	22	20	21	21

The above is considered to be a low level of sound insulation performance and is primarily due to the metal roller shutter door.

It is understood that the existing metal roller shutter door is to be replaced with a pair of timber/metal doors. All timber/metal doors to the façade should achieve a minimum sound insulation performance of R_w 30dB.

6.5 Nearest Noise Sensitive Receptors

The nearest noise sensitive receptors to the proposed snooker hall are existing residential properties situated to the south east of the site.

The table below details the approximate distance between the building facade and windows of the nearest noise sensitive receptors.

Façade	Nearest Noise Sensitive Receptor	Approximate Distance (m)
South East	Existing residential properties situated to the south east of the site	30

6.6 Calculation

The indicative operational sound limits within the snooker hall that are required in order to achieve the lowest representative background sound levels at the nearest noise sensitive receptors have been calculated using the following formula:

$$L_{prev} = L_p - 10 \log S + SRI + 20 \log R + 14$$

Where:

L_{prev} is the reverberant indicative operational sound limit in the space, dB;

L_p is the lowest representative background sound level measured at the receiver, dB;

S is the total surface area of the radiating area of the space, m²;

SRI is the composite Sound Reduction Index of the radiating façade of the space, dB;

R is the distance in meters between the radiating area of the space and the receiver, m.

6.7 Indicative Operational Sound Limits

Indicative operational sound limits within the snooker hall that are required in order to achieve the lowest representative background sound levels at the nearest noise sensitive receptors are presented in the table below.

Period	Leq Reverberant Indicative Operational Sound Limits (dB) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
10:00 – 03:00	90	90	85	85	85	80	70	60	90

For the snooker hall in-house loudspeaker system, amplified music levels should be limited by means of an electronic noise limiter/compressor. The device should be capable of limiting individual one third octave bands over the frequency range 20Hz to 20kHz and controlling the number of speakers/zones required.

In order to set the device to achieve the requirements of the Local Authority a commissioning visit will be required in conjunction with an acoustic consultant upon completion of the fit-out works and prior to the operation of the snooker hall. The device should be lockable once set to prevent tampering. Upon completion, a commissioning report should be issued to the Local Authority specifying details of the device installed and the limits that they have been set to.

7.0 Building Services Sound Limits

Plant selections have not been made at this stage of the development. As such, it is not possible to assess atmospheric building services sound to the nearest noise sensitive receptors.

Based on the requirements of Manchester City Council detailed in Section 4.2 and the lowest representative L_{A90} sound levels measured during the environmental sound survey detailed in Section 5.5.2, cumulative atmospheric plant sound emissions should be designed to achieve the following limits at the nearest noise sensitive receptors.

Nearest Noise Sensitive Receptor	L _{Aeq} Cumulative Atmospheric Plant Sound Emission Limits at Nearest Noise Sensitive Receptor (dB)	
	Daytime (07:00–23:00)	Night-time (23:00–07:00)
Existing residential properties situated to the south east of the site	44	40

Plant sound emissions should be assessed in accordance with BS 4142:2014.

8.0 Additional Guidance

In order to minimise sound emissions from the proposed development the following guidance should be incorporated.

- All staff should be trained on the noise management measures employed by the venue to minimise music, building services and external area sound emissions from the premises.
- External windows should be kept closed at all times during operational hours and may only be opened outside of operating hours in order to provide purge ventilation to internal spaces.
- During operational hours, internal spaces should be ventilated by mechanical means. The ventilation systems should be suitably attenuated to minimise sound breakout via the system itself.
- All external entrance/escape doors should be in a good state of repair with seals to the head and jambs and drop seal to the threshold.
- The main entrance doors should comprise a lobbied set of doors fitted with self-closing devices. Door supervisors should ensure that one door set is closed at all times in order to minimise sound emissions from the premises.
- Internal loudspeakers should face away from external doors and windows.
- Door supervisors or staff should regularly monitor and manage external areas to ensure that customers are not causing a disturbance to local residents. Rowdy behaviour from customers should not be tolerated and anyone behaving in an anti-social way should be asked to leave the premises.
- Deliveries, refuse collections and storage/disposal of waste/recyclables in external areas should be restricted to normal working hours between 08:00 and 18:00 hours Monday to Friday and 08:00 and 13:00 Saturdays.
- A contact telephone number should be made available to local residents which they can use to report noise disturbances to the venue should they occur.

9.0 Conclusions

The Local Authority's acoustic requirements for the proposed snooker hall have been established.

A detailed environmental sound survey has been undertaken in order to establish existing environmental sound levels at the proposed site.

An assessment of operational sound breakout from the proposed snooker hall to the nearest noise sensitive receptors has been undertaken. Indicative operational sound limits within the snooker hall that are required in order to achieve the requirements of the Local Authority have been proposed.

Atmospheric plant sound emission limits have been proposed at the nearest noise sensitive receptors for subsequent use in designing building services proposals in order to achieve the requirements of the Local Authority.

A handwritten signature in black ink, appearing to read 'Robin Wood', with a stylized flourish underneath.

Robin Wood
LIGHTHOUSE ACOUSTICS

Unit 1 Millow Street, Manchester
Time History Graph - Friday 16 February 2024 to Monday 19 February 2024
 $L_{Amax,15min}$, $L_{Aeq,15min}$ & $L_{A90,15min}$ Noise Levels at Position A

