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Ahmed Ali

LIGHTHOUSE ACOUSTICS

2nd Floor 3 Hardman Square
Spinningfields Manchester M3 3EB

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

By email to: a12ali3@gmail.com

Dear Ahmed

UNIT 1 MILLOW STREET, MANCHESTER
NOISE VERIFICATION REPORT

Further to our site visit on 7 October 2024 to undertake a commissioning visit to measure operational sound breakout from the building and atmospheric noise emissions from the installed items of building services we present the results and assessment as detailed below.

1.0 Introduction

The proposed snooker hall is nearing completion. Lighthouse Acoustics has been commissioned to undertake a commissioning visit to measure operational sound breakout from the building and atmospheric noise emissions from the installed items of building services in order to determine whether or not the requirements of the Local Authority are achieved. This report presents the methodology and results of our measurements.

2.0 Objectives

To undertake a commissioning visit to measure operational sound breakout from the building and atmospheric noise emissions from the installed items of building services.

To assess the measured noise levels and provide comments on the acceptability in terms of achieving the requirements of the Local Authority.

If required, to propose mitigation measures in order to achieve the requirements of the Local Authority.

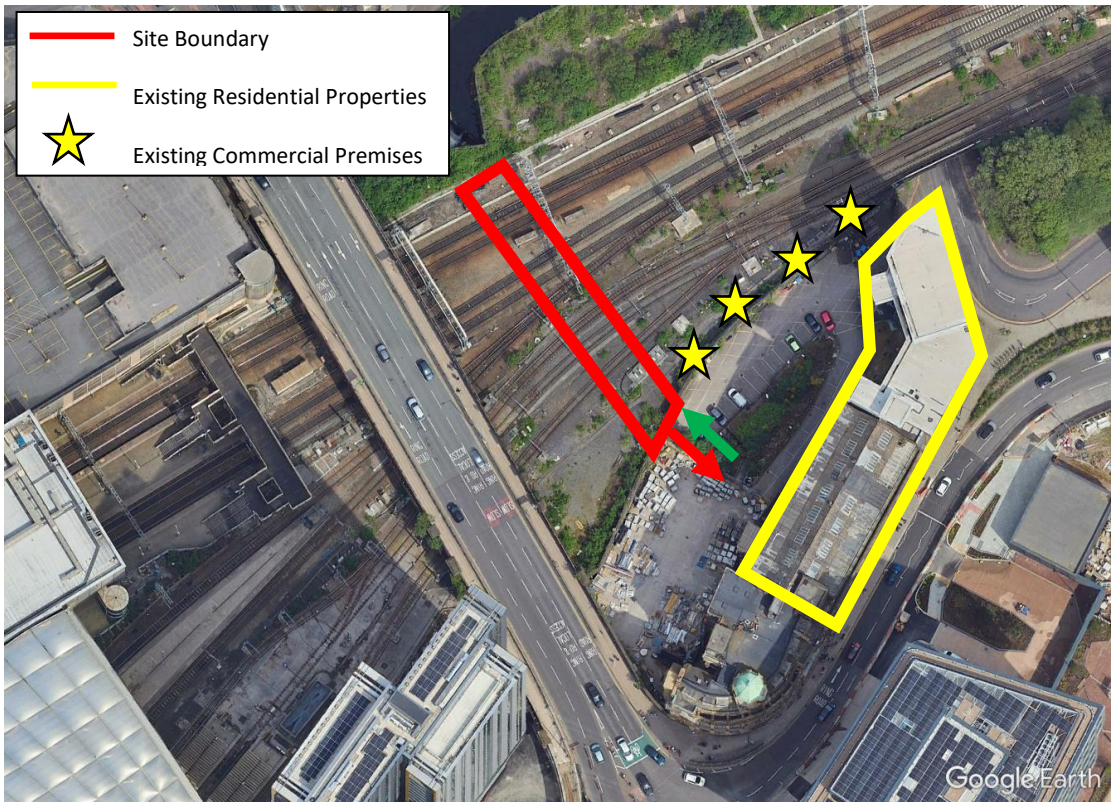
3.0 Site Description

The installed building services comprise a supply fan and an extract fan situated inside the unit which are ducted to intake and exhaust grilles in the southern façade of the building at high level.

The installed amplified music system is limited to a large television screen within each of the snooker rooms and the entrance reception. The are no additional loudspeakers.

The nearest noise sensitive receptors to the proposed snooker hall are existing residential properties situated approximately 30m to the south east of the site.

The site plan below indicates the extent of the site (red line), location of the installed intake and exhaust grilles (green and red arrows), location of the nearest noise sensitive receptor (yellow line) and the surrounding environment.



Site plan indicating the extent of the site and the surrounding environment

4.0 Atmospheric Plant Noise Emissions

4.1 Measurements

Since access was not available to the façades of the residential properties situated approximately 30m to the south east of the site it was not possible to undertake measurements of atmospheric plant noise emission levels at the nearest noise sensitive receptor. Measurements were therefore undertaken at a distance of 1m from the intake and exhaust grilles in order to obtain the individual contributions.

This data will subsequently be used to calculate the cumulative atmospheric plant noise emission levels at the nearest noise sensitive receptor.

The measurements were undertaken between 11:00 and 12:00 hours on 7 October 2024. The supply and extract fans were understood to be operating at design duty for the duration of the measurements. The measurements were undertaken of the L_{Aeq} sound pressure levels over periods of 1 minute (due to steady noise). Atypical noises were excluded as far as reasonably possible.

4.2 Weather Conditions

During the survey period there was light southerly breeze (<3m/s) and the sky was overcast. There was no rainfall and road surfaces were dry. The temperature was approximately 15°C.

The weather conditions during the survey period is therefore considered to be suitable for undertaking measurements of sound levels.

4.3 Equipment

The following equipment was used to undertake the atmospheric plant noise emission level measurements.

Equipment	Manufacturer	Model	Serial No.	Calibration Date
Class 1 Sound Level Meter	Casella	633C	0721320	28/10/2022
Preamplifier	Casella	495	001414	28/10/2022
Microphone	Casella	251	1025	27/10/2022
Class 1 Sound Calibrator	Casella	120/1	3864878	01/11/2023

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.

4.4 Results

The results of the atmospheric plant noise emission level measurements are presented in the table below.

Plant Item	Location	Measured L_{Aeq} at 1m (dB)
Supply Fan Intake Grille	Ground Level	64
Extract Fan Exhaust Grille	Ground Level	58

A review of the one third octave band noise data for the above measurements indicates that they are unlikely to be considered to emit tonal noise.

4.5 Local Authority Requirements

It is understood that Manchester City Council require building services plant to be assessed in accordance with BS 4142 and to achieve a rating level of 5dB below the typical background level at the nearest noise sensitive location.

4.6 Atmospheric Plant Sound Emission Limits

Cumulative atmospheric plant sound emission limits are taken from Section 7.0 of the Acoustic Planning Report 1204/APR1 dated 26 February 2024 and are presented in the table below.

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

4.7 Assessment

The table below details the calculated L_{Ar} rating levels at the nearest noise sensitive receptor based on the measured L_{Aeq} levels at 1m along with the night-time L_{Aeq} cumulative atmospheric plant sound emission limit and the difference between them.

Nearest Noise Sensitive Receptor	**Rating Level $L_{Ar,1hour}$ at Receptor (dB)**	**L_{Aeq} Cumulative Atmospheric Plant Sound Emission Limit at Nearest Noise Sensitive Receptor (dB)**	**Difference (dB)**	**Local Authority's Requirements Achieved**
Existing residential properties situated to the south east of the site	38	40	-2	Yes

The assessment indicates that L_{Ar} rating levels are likely to achieve the proposed L_{Aeq} cumulative atmospheric plant sound emission limit at the nearest noise sensitive receptors. As such, atmospheric plant sound emissions from the installed supply fan and extract fan are likely to have a low impact at the nearest noise sensitive receptor and achieve the requirements of the Local Authority.

5.0 Operational Sound Breakout

5.1 Measurements

Since access was not available to the façades of the residential properties situated approximately 30m to the south east of the site it was not possible to undertake measurements of operational sound breakout levels at the nearest noise sensitive receptor. Measurements were therefore undertaken of the reverberant operational sound level within the snooker hall and the sound insulation performance of the facade. This data will subsequently be used to calculate the operational sound breakout levels at the nearest noise sensitive receptor.

The measurements were undertaken between 11:00 and 12:00 hours on 7 October 2024. The televisions were set to the maximum volume level for the duration of the measurements with a sports event being played (which will be typical viewing). The measurements were undertaken of the L_{Aeq} sound pressure levels over periods of 1 minute (due to steady noise). Atypical noises were excluded as far as reasonably possible.

5.2 Weather Conditions

During the survey period there was light southerly breeze (<3m/s) and the sky was overcast. There was no rainfall and road surfaces were dry. The temperature was approximately 15°C.

The weather conditions during the survey period is therefore considered to be suitable for undertaking measurements of sound levels.

5.3 Equipment

The following equipment was used to undertake the operational sound breakout level measurements.

Equipment	Manufacturer	Model	Serial No.	Calibration Date
Class 1 Sound Level Meter	Casella	633C	0721320	28/10/2022
Preamplifier	Casella	495	001414	28/10/2022
Microphone	Casella	251	1025	27/10/2022
Class 1 Sound Calibrator	Casella	120/1	3864878	01/11/2023
10" Active Loudspeaker with Vented Cabinet	Yamaha	DBR10	-	-

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.

5.4 Results

The results of the reverberant operational sound level measurements are presented in the table below.

Source	L_{eq} Reverberant Operational Sound Level (dB) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
Television	49	57	68	68	66	62	59	45	70

5.5 Building Facade Attenuation

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

Façade Level Difference D (dB) at Octave Band Centre Frequency (Hz)								D_w
63	125	250	500	1k	2k	4k	8k	
18	20	23	24	23	27	27	30	25

The above is an improvement over the previous metal roller shutter door.

5.6 Local Authority Requirements

It is understood that Manchester City Council require entertainment noise ($L_{Aeq,5min}$) to be controlled to 5dB below the typical background noise level (L_{A90}) in each octave band at the nearest noise sensitive location.

5.7 Operational Sound Breakout Limits

Operational sound breakout limits have been calculated based on the lowest representative $L_{90,15min}$ octave band daytime and night-time background sound levels taken from Section 5.5.2 of the Acoustic Planning Report 1204/APR1 dated 26 February 2024 and are presented in the table below.

Nearest Noise Sensitive Receptor	Period	$L_{eq,5min}$ Operational Sound Breakout Limits (dB) at Octave Band Centre Frequency (Hz)								dBA
		63	125	250	500	1k	2k	4k	8k	
Existing residential properties situated to the south east of the site	Daytime	50	45	43	41	41	36	27	14	44
	Night-time	43	43	40	38	38	32	22	9	40

5.8 Assessment

The table below details the calculated L_{eq} operational sound breakout levels at the nearest noise sensitive receptor based on the measured L_{eq} reverberant operational sound level within the snooker hall and the sound insulation performance of the façade along with the night-time L_{eq} operational sound breakout limits and the difference between them.

Parameter	L_{eq} Sound Pressure Level (dB) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
Calculated Operational Sound Breakout Level at Receptor (dB)	0	7	14	13	12	4	0	0	15
Operational Sound Breakout Limits (dB)	43	43	40	38	38	32	22	9	40
Difference (dB)	-43	-36	-26	-25	-26	-28	-22	-26	-25
Local Authority's Requirements Achieved	Yes								

The assessment indicates that L_{eq} operational sound breakout levels are likely to achieve the proposed L_{eq} operational sound breakout limits at the nearest noise sensitive receptor. As such, operational sound breakout levels from the snooker hall are likely to achieve the requirements of the Local Authority.

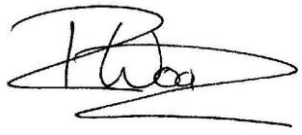
6.0 Conclusions

A commissioning visit has been undertaken to measure operational sound breakout from the building and atmospheric noise emissions from the installed items of building services.

The assessment indicates that atmospheric plant sound emissions from the installed supply fan and extract fan are likely to have a low impact at the nearest noise sensitive receptor and achieve the requirements of the Local Authority.

The assessment indicates that operational sound breakout levels from the snooker hall are likely to achieve the requirements of the Local Authority.

Yours sincerely
for LIGHTHOUSE ACOUSTICS



Robin Wood