SANDY BROWN
ACOUSTICS

Memo:	M011-A	**Date:**	2 October 2026
Project:	026008	**Pages:**	13
From:	SC	**Reviewer:**	MH

Bank of New York, 4 Angel Square, Manchester

Planning Condition 40 part b – Entertainment noise egress verification

This memo presents the results and an assessment of the entertainment noise egress verification measurements undertaken for the gym, fitness suite and cafe for 4 Angel Square, supporting the discharge of Planning Condition 40 part b for planning application 123437/FO/2019.

In summary:

- Measurements of amplified noise were undertaken internally in the gym, fitness suite and cafe based on the worst-case proposed operation. The measured noise levels were compared to the internal entertainment noise limits set in accordance with Planning Condition 40 part a. No significant exceedances of the internal entertainment noise limits were measured.
- Measurements were undertaken at 2 m from the facade of the gym, fitness suite and cafe at fixed positions with the amplified sound systems on and off.
  No significant increases in ambient noise levels were measured between the on and off measurements. Subjectively, amplified noise breakout was not audible at any of the measurement positions.
- Measurements were undertaken at the facades (or nearest available position) of the closest noise sensitive receptors with the amplified sound systems on and off. No significant increases in ambient noise levels were measured between the on and off measurements. Subjectively, entertainment noise breakout was not audible at any of the measurement positions.
- The measurement results are a positive indication that entertainment noise breakout and egress is compliant with the external limits set for Planning Condition 40 Part a. As such, Planning Condition 40 part b should be discharged.

SANDY BROWN
ACOUSTICS

Planning Condition 40 part b

Planning Condition 40 part B (123437/FO/2019) states the following:

> *"The approved scheme shall be implemented and prior to the first use of each of the commercial units, a verification report will be required to validate that the work undertaken conforms to the recommendations and requirements approved as part of part (a) of this planning condition.*
>
> *The verification report shall include post completion testing to confirm the noise criteria has been met. In instances of non conformity, these shall be detailed along with mitigation measures required to ensure compliance with the noise criteria.*
>
> *Any mitigation measures shall be implemented in accordance with a timescale to be agreed with the City Council, as Local Planning Authority, and thereafter retained and maintained in situ."*

Nearby noise sensitive receptors

The site in location to its surroundings is shown in Figure 1 outlined in red. The proposed site is bounded by Miller Street to the south, Corporation Street to the west and north, and Euro Car Park and Co-op Garden to the east.

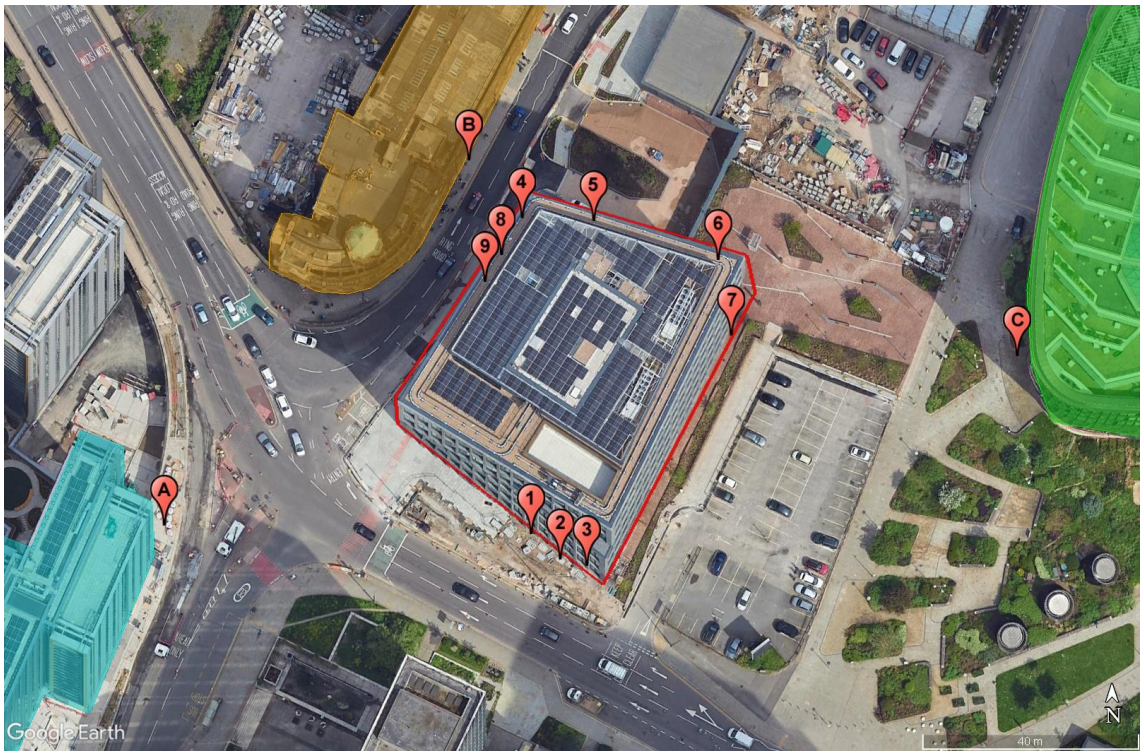


Figure 1 The site and its surroundings (courtesy of Google Earth Pro)

The closest noise sensitive premises to the site are:

- Residential premises on Miller Street shown in blue
- Residential premises on Corporation Street shown in orange
- Commercial receptors at the Co-op Building shown in green.

The residential receptors have been considered as noise sensitive during both the day (07:00-23:00) and night (23:00-07:00). Commercial receptors have been considered as noise sensitive during the day (07:00-23:00) only.

Entertainment noise limits

Internal and external entertainment noise limits have been set for the gym, fitness suite and cafe based on the results of the environmental noise survey carried out on 9 September 2026 and the requirements of Planning Condition 40 part a.

Details of the noise survey, including methodology, results and basis of the entertainment noise limits are provided in Sandy Brown memo 026008-M010-A *Planning condition 40 part a – Entertainment noise egress assessment*.

Internal entertainment noise limits

Internal entertainment noise limits for amplified noise have been set for day and night for the fitness suite, gym and cafe. These limits are shown in Table 1. These limits were set based on comply with the external entertainment noise egress criteria and the expected facade sound insulation performances.

Table 1 Internal noise limits for amplified noise

Space and time period	Internal amplified noise limit, L_{Aeq} (dB) Octave-band centre frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
Day (07:00-23:00)								
Fitness suite	81	72	79	82	84	77	81	69
Gym	76	67	77	80	83	77	76	67
Cafe	76	67	77	80	83	77	76	67
Night (23:00-07:00)								
Fitness suite	74	67	71	73	73	66	68	56
Gym	69	62	70	72	72	66	65	55
Cafe	69	62	70	72	72	66	65	55

Maximum internal sound pressure levels (L_{Fmax}) shall be limited to values 10 dB above those set out in Table 1.

These limits are to control noise egress. Internal noise limits to control noise transfer within the development itself have been set separately.

External entertainment noise egress limits

Based on the environmental noise survey results presented in M010-A and the requirements of Planning Condition 40, entertainment noise should not exceed the limits set out below in Table 2. These limits apply at 1 m from the facade of the closest noise sensitive receptors.

Table 2 Entertainment noise egress limits

Receptor	Entertainment noise egress limit, L_{Aeq} (dB) Octave-band centre frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
Day (07:00-23:00)								
Miller St	54	48	48	45	46	42	34	23
Corporation St	50	44	42	41	41	37	29	18
Co-op Building [1]	51	49	44	40	41	36	26	14
Night (23:00-07:00)								
Miller St	43	36	35	34	34	29	20	9
Corporation St	42	38	35	32	31	26	16	5

[1] These limits have been corrected relative to the measured free-field sound levels by the addition of 3 dB (as per the guidance provided in BS 8233:2014 Section G.2.1)

Verification measurements

Attended noise measurements were undertaken by Sandy Brown on 24 September 2026 between 18:00 and 21:00 (out of hours) to provide a quiet external noise climate as a worst-case scenario. The purposes of the measurements were to verify that entertainment noise breakout and egress does not exceed the external limits set in accordance with Planning Condition 40 Part a. These measurements were undertaken in accordance with ISO 16283-3 (2016).

SANDY BROWN
ACOUSTICS

Internal amplified sound measurements

Measurements were undertaken internally within the gym, fitness suite and cafe with the amplified sound systems operating simultaneously in all three spaces. The amplified sound systems were set to operate at a worst-case volume level, which was based on the daytime limits as per Table 1.

At each position, the sound level meter was positioned at least 1.5 m above the ground, and at least 2 m from any other reflective surface. The measurement position was chosen to be representative of the worst case position within the space (based on speaker positions and directivity). It was confirmed by an operator representative that the sound system levels were representative of a reasonable worst-case during normal operation.

The measurement results, as well as the applicable octave-band internal limits are presented in Table 3.

Table 3 Internal amplified sound measurement results

	Internal ambient noise level, $L_{Aeq,1min}$ (dB) Octave-band centre frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
Cafe – Measured	53	62	55	56	55	49	43	37
Cafe – Limits (daytime)	76	67	77	80	83	77	76	67
Cafe – Limits (night-time)	69	62	70	72	72	66	65	55
Gym – Measured	63	69	60	61	59	56	49	47
Gym – Limits (daytime)	76	67	77	80	83	77	76	67
Gym – Limits (night-time	69	62	70	72	72	66	65	55
Fitness suite – Measured	74	70	61	60	58	59	47	43
Fitness suite – Limits (daytime)	81	72	79	82	84	77	81	69
Fitness suite – Limits (night-time)	74	67	71	73	73	66	68	56

Based on the measurements presented in Table 3, the octave-band measurements within each space were within the agreed internal octave band noise limits (considering a 2 dB measurement tolerance).

Facade measurements

Measurements were undertaken at 2 m the facade of the gym, fitness suite and cafe at nine fixed positions (marked in Figure 1 as '1' to '9'). Measurements were 1 minute in duration and were measured simultaneously with internal noise measurements. All positions are considered free field.

Measurements were undertaken both with the amplified sound systems on and off to determine the existing ambient noise level in the absence of entertainment noise.

The measurements at each position are presented in Table 4.

Table 4 Summary of facade breakout measurements at 2 m from commercial unit facades

Pos	Condition	Measured ambient sound level, L_{eq} (dB) Octave-band centre frequency (Hz)							
		63	125	250	500	1000	2000	4000	8000
Cafe									
1	Sound system on	69	65	61	58	60	56	47	53
1	Sound system off	67	67	64	60	63	59	49	40
1	Internal measurement	52	55	57	54	52	49	42	37
2	Sound system on	71	63	59	57	58	54	45	35
2	Sound system off	67	65	61	58	59	56	49	40
2	Internal measurement	56	58	53	59	58	50	43	41
3	Sound system on	67	59	57	54	56	52	45	36
3	Sound system off	64	61	58	53	55	51	45	34
3	Internal measurement	55	58	56	55	55	48	41	39
Gym									
4	Sound system on	69	67	65	62	64	58	51	43
4	Sound system off	66	66	63	61	62	57	48	41

Pos	Condition	Measured ambient sound level, L_{eq} (dB) Octave-band centre frequency (Hz)							
		63	125	250	500	1000	2000	4000	8000
4	Internal measurement	63	69	64	59	58	55	52	48
5	Sound system on	63	60	57	55	56	52	43	32
5	Sound system off	63	60	58	55	56	52	44	35
5	Internal measurement	60	68	59	58	57	54	51	45
6	Sound system on	58	56	50	50	52	47	39	28
6	Sound system off	61	61	52	52	54	48	40	31
6	Internal measurement	58	62	60	59	59	52	49	42
7	Sound system on	60	57	54	52	52	46	40	34
7	Sound system off	59	53	49	49	50	46	39	35
7	Internal measurement	67	68	64	63	64	58	52	43
Fitness suite									
8	Sound system on	67	68	66	63	65	59	50	41
8	Sound system off	65	64	63	62	64	58	51	43
8	Internal measurement	74	75	64	62	57	54	43	42
9	Sound system on	68	66	64	61	63	57	48	42
9	Sound system off	65	65	61	59	60	56	49	40
9	Internal measurement	76	73	62	60	60	59	49	45

[2] Due to variation of music levels, this period exceeds the internal limits, however this is considered an outlier as on average, measured noise levels were within the daytime limits

A summary of the observations taken at each position is provided in Table 5.

SANDY BROWN
ACOUSTICS

Table 5 Summary of observations made during noise measurements

Position	Comments
Cafe	
1	Measured 2 m from facade Subjectively, amplified noise breakout was not audible at position.
2	Measured 2 m from facade. Subjectively, amplified noise breakout was not audible at position.
3	Measured 2 m from external door. Subjectively, amplified noise breakout was not audible at position.
Gym	
4	Measured 1.5 m from ground level (approximately 3 m below facade level) Subjectively, amplified noise breakout was not audible at position. Variation in noise levels due to changes in road traffic noise at measurement position.
5	Measured 1.5 m from ground level (approximately 3 m below facade level) Subjectively, amplified noise breakout was not audible at position.
6	Measured 2 m from external door. Subjectively, amplified noise breakout was not audible at position.
7	Measured 2 m from facade. Subjectively, amplified noise breakout was not audible at position.
8	Measured 1.5 m from ground level (approximately 3 m below facade level) Subjectively, amplified noise breakout was not audible at position.
9	Measured 1.5 m from ground level (approximately 3 m below facade level) Subjectively, amplified noise breakout was not audible at position. Variation in noise levels due to changes in road traffic noise at measurement position.

Based on the measurement results, at all positions there was no significant increase in the ambient noise levels with the amplified sound systems on when compared to off. Additionally, subjectively amplified noise breakout was not audible at any of the positions.

It is noted that a 13 dB difference between the two conditions was measured at position 1. Based on observations made on site, this was due to changes in the surrounding noise climate (ie, variation in traffic) rather than breakout from the cafe. No high frequency music breakout from the cafe was perceived subjectively.

Noise sensitive receptor measurements

Measurements were undertaken at the facades (or nearest available position) to the three noise sensitive receptors marked in Figure 1. The measurement positions are indicated as positions 'A', 'B' and 'C' in Figure 1.

At each position, 3 x 1 minute measurements were taken with the amplified sound systems on and off to determine the existing ambient noise level in the absence of entertainment noise.

The volume levels that the amplified sound systems were operating at was unchanged from the previous measurements in Table 3.

The measurements at position 'A' were taken as free-field measurements and have been corrected by 3 dB for comparison against the limits set out in Table 2.

Measurements at positions 'B' and 'C' are presented as facade levels measured at 1 m from the facade of the receptor.

The results of the noise sensitive receptor measurements are presented in Table 6. The measurements presented are a logarithmic average of 3 x 1 minute measurements.

Table 6 Noise sensitive receptor measurement results

	Measured ambient noise level at 1 m from the facade, $L_{eq,3x1min}$ (dB) Octave-band centre frequency (Hz)							
Position	63	125	250	500	1000	2000	4000	8000
A (sound system on)[1]	74	67	66	63	65	60	55	56
A (sound system off) [1]	74	67	65	64	64	60	55	48
B (sound system on)	70	62	63	62	64	58	50	43
B (sound system off)	72	67	67	64	66	60	52	44
C (sound system on)	63	59	54	50	53	48	37	26
C (sound system off)	66	57	50	49	52	47	36	28

[1] Measurements have been corrected by 3 dB to account for facade reflections

At all three positions, the measured ambient noise levels vary by up to 2 dB with the amplified sound systems on and off. Subjectively, amplified noise was not audible at any of

the measurement positions. The variation in noise levels is considered to be due to other noise sources such as traffic.

It is noted that an 8 dB difference between the two conditions was measured at position A within the 8 kHz octave band. Based on observations made on site, this was due to changes in the background noise (ie, variation in traffic flow) rather than entertainment noise breakout. No high frequency music breakout was perceived subjectively.

Assessment

No notable increases in ambient noise levels were measured within the amplified sound systems on and off at the noise sensitive receptors. This is a positive indication that entertainment noise breakout and egress is compliant with the limits set in accordance with Planning Condition 40 part a. This is furthered by the fact that no changes in ambient noise levels were measured at the facades of the gym, fitness studio and cafe with the amplified sound systems on and off, and that amplified noise was not audible at any locations.

The ambient noise levels measured during the attended measurements were broadly similar to those measured during the night-time period during the initial survey (L_{Aeq} 55-63 dB). To present a worst-case scenario for noise breakout, the sound system was measured to the daytime limits, (excepting the cafe where the measured sound levels of the normally operating condition were within both the daytime and night-time limits).

When considering the reduction in internal noise limits between day (07:00-23:00) and night (23:00-07:00), it is expected that the night-time limits would also be complied with.

It is the responsibility of the operator to ensure that the amplified sound systems are controlled to meet the external noise limits. On the basis the internal amplified sound limits are adhered to, Planning Condition 40 part b can be discharged.

SANDY BROWN
ACOUSTICS

Appendix A

Measurement methodology and equipment

SANDY BROWN
ACOUSTICS

Reference standards

- BS 7445 Part 1: 2003 *Description and measurement of environmental noise, Part 1. Guide to quantities and procedures*
- BS 7445: Part 2: 1991 *Description and measurement of environmental noise, Part 2. Guide to the acquisition of data pertinent to land use*.
- ISO 16283-3:2016 *Acoustics – Field measurement of sound insulation in buildings and of building elements – Part 3: Facade sound insulation*

Equipment

The noise measurements were taken using a Rion NL-52 and Brüel & Kjær 2250 sound level meters.

Calibration details for the equipment used during the survey are provided in Table A1.

Table A1 Equipment calibration data

Equipment description	Type/serial number	Manufacturer	Calibration expiry	Calibration certification number
2250 (F)				
Sound level meter	2250/3011964	Brüel & Kjær	14 April 27	UCRT25/1609 UCRT25/1610
Microphone	4189/3100176	Brüel & Kjær	14 April 27	UCRT25/1609 UCRT25/1610
Pre-amp	ZC0032/26376	Brüel & Kjær	14 April 27	UCRT25/1609 UCRT25/1610
Calibrator	4231/3019123	Brüel & Kjær	14 April 27	UCRT25/1603
NL-52 C				
Sound level meter	NL-52/00932326	Rion	8 May 28	TCRT26/2310
Microphone	UC-59/09251	Rion	8 May 28	TCRT26/2310
Pre-amp	NH-25/32354	Rion	8 May 28	TCRT26/2310
Calibrator	NC-74/34536129	Rion	8 May 28	TCRT26/2309

Calibration of the meters used for the measurements is traceable to national standards. Calibration certificates for the sound level meters used in this survey are available upon request.

Calibration checks were carried out on the meters and their measurement chains at the beginning and end of the survey. No significant calibration deviation occurred.

Noise indices

Noise indices recorded included the following:

- $L_{Aeq,T}$ The A-weighted equivalent continuous sound pressure level over a period of time, T.
- $L_{AFmax,T}$ The A-weighted maximum sound pressure level that occurred during a given period, T, with a fast time weighting.
- $L_{A90,T}$ The A-weighted sound pressure level exceeded for 90% of the measurement period. Indicative of the background sound level.

Sound pressure level measurements are normally taken with an A-weighting (denoted by a subscript 'A', eg, L_{A90}) to approximate the frequency response of the human ear.

A more detailed explanation of these quantities can be found in BS 7445: Part 1: 2003 *Description and measurement of environmental noise, Part 1. Guide to quantities and procedures.*

Weather conditions

During the attended external noise measurements, the weather was generally clear and dry and no rain occurred. These weather conditions are considered suitable for obtaining representative measurements.