New Century Hall Manchester

Condition 3 Discharge Report

32956/NIA

9 October 2026

For:
New Century Hall Ltd

Hann Tucker Associates
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Hann Tucker Associates

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Document Control

Rev	Date	Comment	Prepared by	Reviewed by	Approved by
0	09/10/2026		[redacted] Jake Howarth Senior Associate BEng(Hons), MIOA		

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Contents

		Page
1.0	Introduction	1
2.0	Objectives	1
3.0	Acoustic Terminology	1
4.0	Site Description	1
5.0	Proposed Development	3
6.0	Planning Policies, Standards & Guidance	3
7.0	Baseline Noise Survey	8
8.0	Façade Sound Insulation Testing	13
9.0	Façade Breakout Assessment for Entertainment Noise	13
10.0	Plant Noise Emission Limits	20
11.0	Conclusion	20

Attachments

Appendix A – Acoustic Terminology

1.0 Introduction

Planning permission has been granted for the change of use of part of the ground floor from a food hall (Class E) to a live music venue (Sui Generis) at New Century Hall, Manchester. The approved development is referenced under planning application PLA-2026-000952, with the associated Decision Notice setting out a number of conditions that must be satisfied as part of the development.

This report has been prepared in response to Condition 3 of the planning consent. The purpose of the assessment is to establish the methodology adopted for evaluating music noise break-out from the proposed venue, present the results of the acoustic modelling and assessment, and demonstrate compliance with the relevant planning requirements.

2.0 Acoustic Terminology

For an explanation of the acoustic terminology used in this report please refer to Appendix A enclosed.

3.0 Site Description

3.1 Location

The site is located in central Manchester. The location is shown in Figure 1.

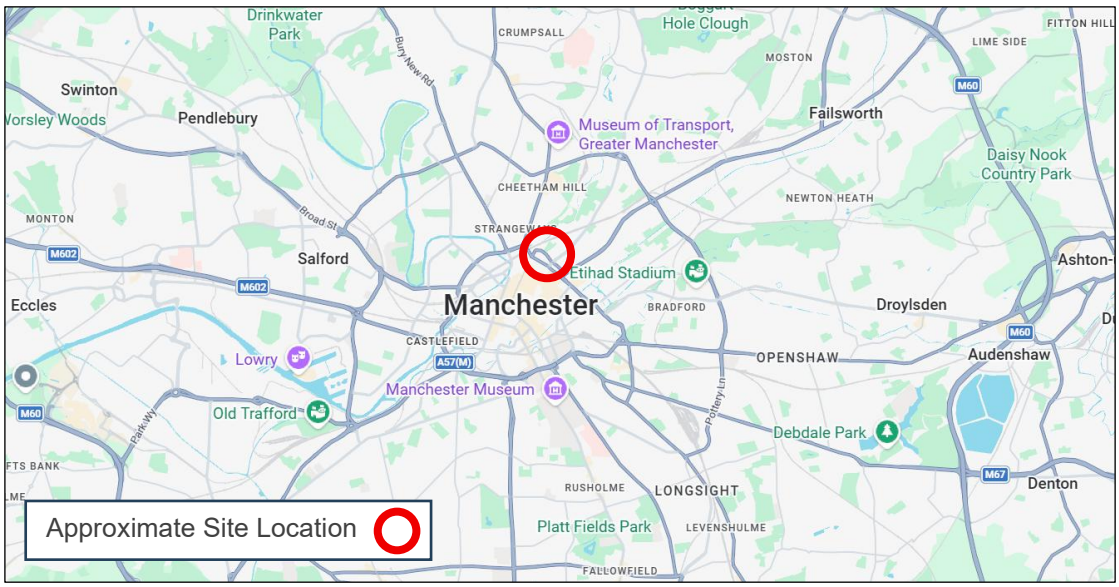


Figure 1 Map Location (Imagery ©2026 , Map data ©2026 Google)

The site falls within the jurisdiction of Manchester City Council.

3.2 Description

The site is the New Century Hall located in central Manchester and is surrounded primarily by commercial, office and mixed-use buildings.

The site is bounded by several significant road links, including the city centre Ring Road (A665), Hanover Street and Dantzic Street. Road traffic noise is therefore expected to be the dominant source of the prevailing noise climate, with additional contribution from general activity associated with activity on Saddlers Yard.

The nearest residential receptors have been identified as 86 Miller Street Apartments and The Linx Bldg located to the east of the development site, the nearest being New Vic approximately 75m West. The Redfern Building, located to the immediate south of the site is understood to be used as offices and is therefore considered noise sensitive during daytime hours only.

The site in relation to its surroundings is shown in Figure 2.

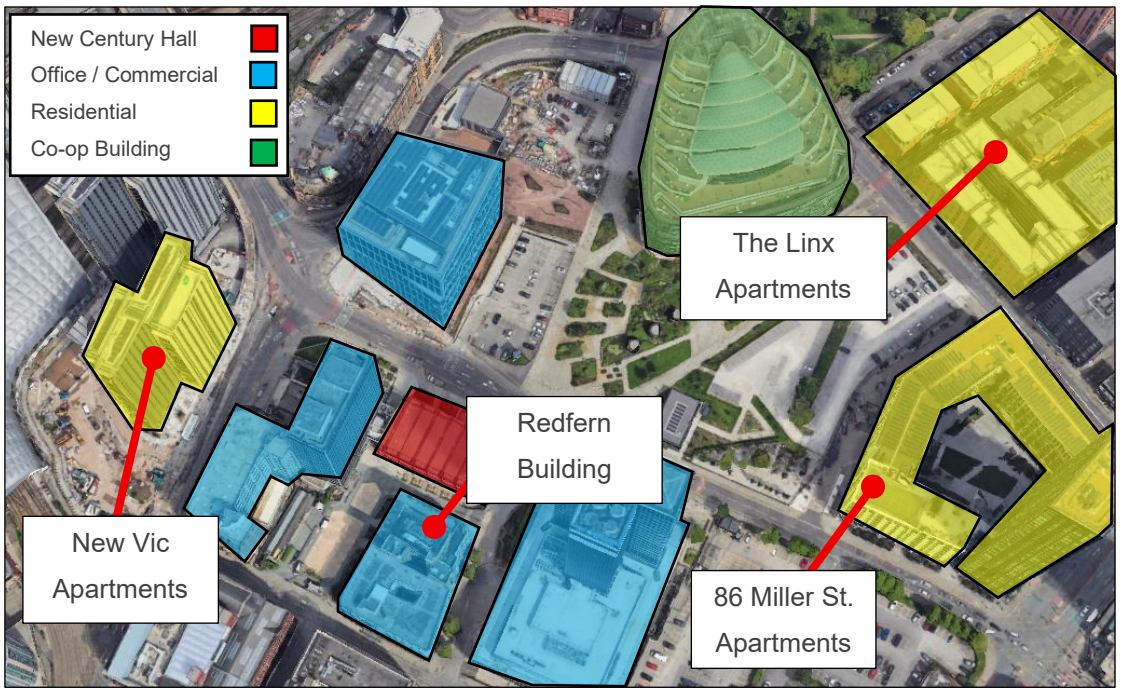


Figure 2 Imagery ©2026 Google, Map data ©2026

4.0 Proposed Development

It is proposed to split the existing ground floor space at New Century Hall into two sections, one to function as a bar area (as per the existing use), and another to host live music events. It is understood that no alterations to the existing façade is currently proposed as part of the development.

The proposals are highlighted in Figure 3 below.

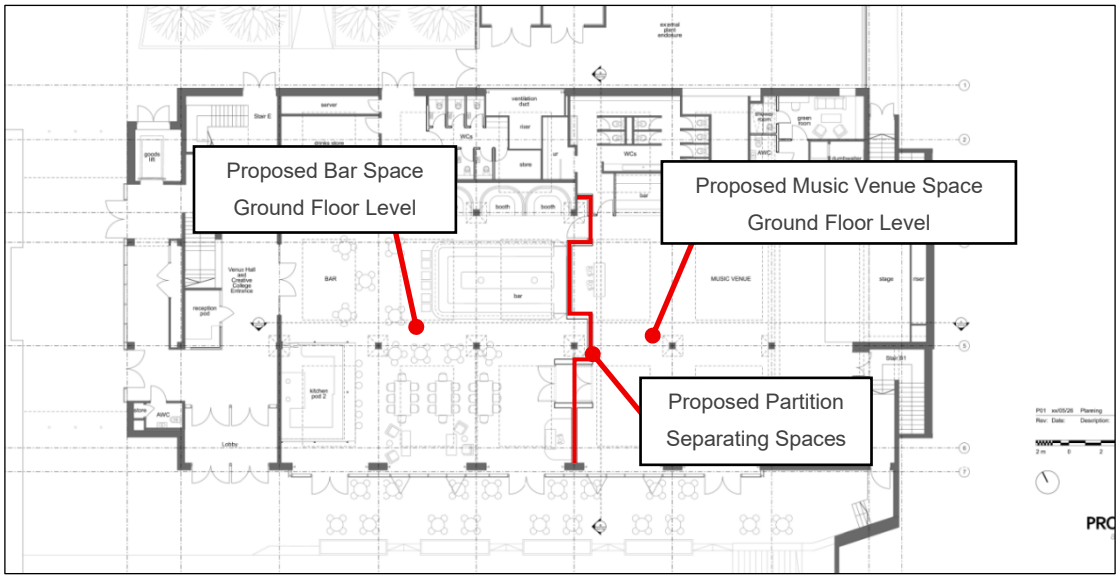


Figure 3 Proposed Development Plans (Drawing No. 0886-P3A-XX-00-DR-A-05001)

5.0 Planning Condition 3

The wording of planning condition 3 is presented below:

"*3) a) The premises shall be acoustically insulated and treated to limit the break out of noise in accordance with the following documentation:*

- *Environmental Noise Survey and Noise Impact Assessment Report (Prepared by Hann Tucker Associates; Report reference 32956/NIA; Dated 07/07/2026; Received 20/07/2026)*
- *Operational Management Plan v3 (Prepared by New Century; Dated September 2026; Received 07/09/2026)*
- *Email correspondence RE Noise Limiter Use (Prepared by Euan Kellie; Dated and received 25/08/2026)*

Where entertainment noise is proposed the LAeq (entertainment noise) shall be controlled to 5dB below the LA90 (without entertainment noise) in each octave band at the facade of the nearest noise sensitive location, and internal noise levels at structurally adjoined residential properties in the 63 Hz and 125 Hz octave frequency bands shall be controlled so as not to exceed (in habitable rooms) 47dB and 41dB (Leq,5min), respectively.

b) Prior to the first occupation of the music venue use hereby approved, a verification report shall be required to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved acoustic consultant's report. The report shall also undertake post completion testing to confirm that acceptable criteria have been met. Any instances of non-conformity with the recommendations in the verification report shall be detailed along with any measures required to be undertaken prior to occupation of the development to ensure compliance with the internal noise criteria."

6.0 Entertainment Noise Egress Limits

The noise egress limits are presented below.

Table 1 Proposed Entertainment Noise Egress Limits

Position	Period	Entertainment Noise Egress Limits ($L_{eq,5min}$) at Octave Band Frequencies (Hz)								L_{Aeq}
		63	125	250	500	1000	2000	4000	8000	
1	Daytime (07:00 – 19:00)	57	52	50	47	47	43	35	24	51
	Evening (19:00 – 23:00)	52	48	46	45	45	40	31	19	49
	Nighttime (23:00 – 07:00)	47*	41*	37	35	34	30	21	13	38
2	Daytime (07:00 – 19:00)	53	49	48	46	47	42	32	21	50
	Evening (19:00 – 23:00)	47*	43	43	41	43	38	26	14	46
	Nighttime (23:00 – 07:00)	47*	41*	37	34	33	30	23	14	38

*As noted in Hann Tucker Report "*32956-RP-NIA-R1-EE Noise Impact Assessment"* the noise limits provided in the aforementioned document above are below the criteria for music noise for new build residential developments (i.e below 47dB at 63 Hz and 41 dB at 125Hz Leq 5min in habitable rooms). Therefore, some relaxation may be possible and These limits are based upon the MCC criterion for entertainment noise intrusion to bedrooms, which itself is based upon the threshold of audibility at low frequencies. It is expected, therefore, that relaxing the limits in this way will have no effect on the impact to nearby sensitive receptors.

7.0 Façade Breakout Testing

7.1 Overview

It was anticipated that due to noise impacts from the local road network, the distances to each noise sensitive receptor and the general nature of the city centre, measuring music noise break-out may have been difficult to establish suitble results. As such, the decision was made to undertake a series of localised noise break-out measurements using a pink noise source playing though the venue's sound system.

The results of these measurements could be then used to update the 3D model of the site and establish the music noise egress levels at different internal noise levels. The results of the model could then be used to subsequently set the internal noise limits for the venue.

7.2 Procedure

Fully attended noise breakout measurements were undertaken by Jake Howarth, BEng(Hons), MIOA and Will Robertson, BSc(Hons) AMIOA from 21:45 to 00:47 on Wednesday 23 September 2026.

Using the installed and commissioned sound system pink noise was played within the venue and the resultant noise levels were measured both internally and externally to the building façade so that the octave band level difference across the façade could be established.

The measurements were carried out in the locations described in Table 2 and indicated on Figure 4.

Table 2 Measurement Locations for Façade Breakout Testing

Position	Type	Description
INT	Attended	Measurement position located within the event space at New Century Hall. The measurement position was in the centre of the room and was time synchronised with measurement positions A, B, C, D and E. Microphone attached to a tripod at an approximate height of 1.5m above ground level.
P1	Attended	Measurement position located 3m from the Mayes Street façade of New Century Hall. The measurement position was located between the two buildings (New Century Hall and Redfern) so included local reflections. Microphone attached to a tripod at an approximate height of 1.5m above ground level.
P2	Attended	Measurement position located 3m from the Dantzic Street façade of New Century Hall. The measurement position was located between the two buildings (New Century Hall and CIS Tower) so may have included local reflections. Microphone attached to a tripod at an approximate height of 1.5m above ground level.

Position	Type	Description
P3	Attended	Measurement position located 3m from the corner of New Century Hall on the corner of Ring Road and Dantzic Street. The measurement position more at 10m from any other building façade in free-field. Microphone attached to a tripod at an approximate height of 1.5m above ground level.
P4	Attended	Measurement position located directly outside Redfern Building office development approximately 1m from the building façade. The measurement position was located between the two buildings (New Century Hall and Redfern) so included local reflections. Microphone attached to a tripod at an approximate height of 1.5m above ground level.

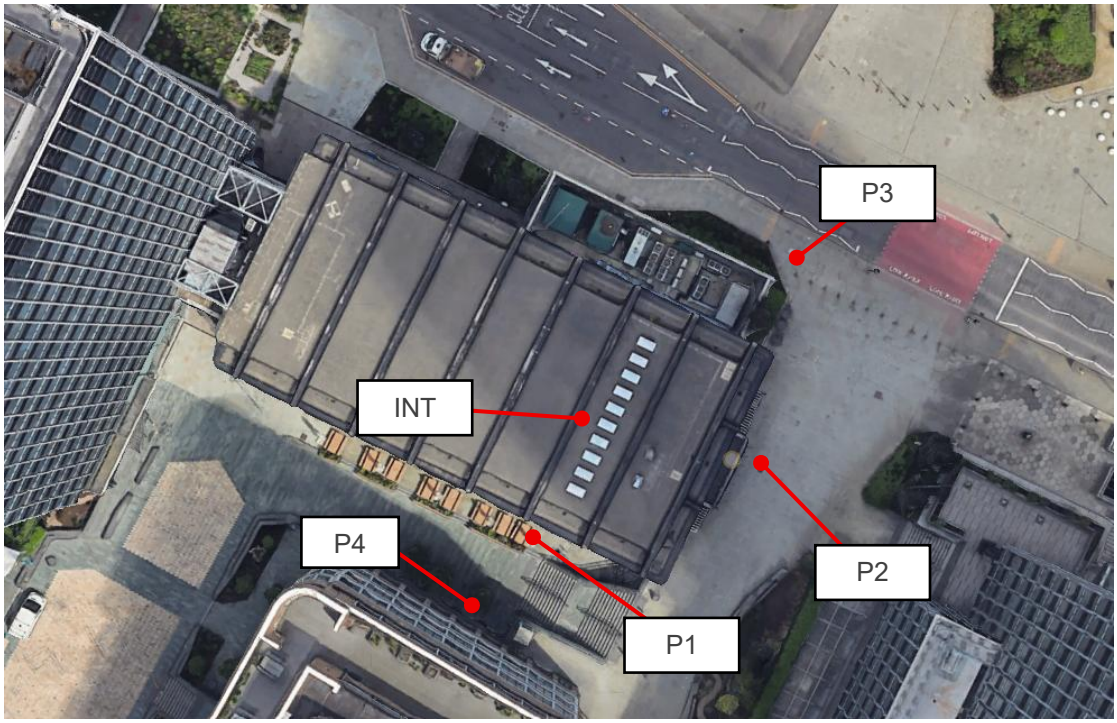


Figure 4 Measurement Locations for Façade Breakout Testing

7.3 Instrumentation

The instrumentation used during the façade testing is presented in Table 3.

Table 3 Façade Testing Instrumentation

Position	Manufacturer	Unit Type	Model	Serial No	Calibrated
INT	Larson Davis	Sound Level Meter	LxT	4569	05/01/2026
P1, P2, P3 & P4	Larson Davis	Sound Level Meter	LxT	5104	28/04/2026
All	Larson Davis	Calibrator	Cal200	3083	04/03/2026

Each sound level meter, including the extension cable, was calibrated prior to and on completion of the surveys. No significant changes were found to have occurred (no more than 0.3 dB). Each microphone was fitted with a windshield.

7.4 Façade Breakout Results

Table 4 shows presents the measured internal and external noise levels in each position. Please note, that the measurements undertaken in P2 and P3 were impacted by a traffic passing along Ring Road. As such, the measured noise levels at middle and high frequencies are expected to be higher than they would have otherwise been if noise breakout was the only source. However, it is expected that the low frequency noise levels would be largely unaffected by the traffic and low frequencies are likely to be the key considerations.

Table 4 Measured Noise Levels – Noise Breakout Measurements

Location	Source	Measured Sound Pressure Level (dB) at each Octave Band Centre Frequency (Hz)						
		63	125	250	500	1000	2000	4000
INT	On	114	103	98	98	97	98	96
P1	On	88	78	61	60	59	56	48
P1	Off	54	48	45	45	43	40	31
P2	On	74	59	54	52	53	46	37
P2	Off	60	56	56	54	59	56	47
P3	On	70	62	62	60	64	59	47
P3	Off	66	62	61	59	62	57	45
P4	On	79	74	57	56	52	49	41
P4	Off	52	47	44	40	40	37	28

7.5 Specific Pink Noise Egress Levels

Based on the measured noise levels, the specific levels of pink noise egress at each measurement position have been established through logarithmic subtraction of the measured results. The results are presented below. Please note that the mid and high frequency noise levels for P2 and P3 were adversely impacted by extraneous noise (ie the measured noise levels were the same or louder in the absence of the pink noise being played than they were with it being played) so it was not possible to accurately establish the specific noise egress levels.

Table 5 Specific Levels of Pink Noise Egress

Location	Measured Sound Pressure Level (dB) at each Octave Band Centre Frequency (Hz)						
	63	125	250	500	1000	2000	4000
P1	88	78	61	60	59	56	48

Location	Measured Sound Pressure Level (dB) at each Octave Band Centre Frequency (Hz)						
	63	125	250	500	1000	2000	4000
P2	74	56	54	52	53	46	37
P3	68	52				-	-
P4	79	74	57	56	52	49	41

7.6 Façade Level Differences

Based on the measured internal noise levels presented in Table 4 and the established specific façade noise egress levels presented in Table 6 the “inside to outside” level difference across the façade has been established and presented below.

Table 6 Façade Level Differences

Location	Measured Sound Pressure Level (dB) at each Octave Band Centre Frequency (Hz)						
	63	125	250	500	1000	2000	4000
P1	26	25	37	38	38	42	48
P2	40	47	44	46	44	52	59
P3	46	51	-	-	-	-	-
P4	35	29	41	42	45	49	55

8.0 Commissioning Music Noise Survey

8.1 Procedure

Fully attended commissioning noise measurements were undertaken by Jake Howarth, BEng(Hons), MIOA and Will Robertson, BSc(Hons) AMIOA from 22:05 to 23:16 on Monday 05 October 2026.

This period and day of the week was selected to undertake these measurements to avoid the potential impact/interference associated with traffic noise along the adjacent road network. However, there were still multiple cars, busses and HVGs passing throughout the duration of the survey which caused challenges particularly where noise egress levels were low and inaudible over the existing noise climate.

Noise measurements were carried out internally, with the installed and commissioned sound system playing a repetitive dance track: ***Glue by Bicep***. This was selected due to the repeatable heavy bassline with a view to ensuring that even shortened measurements captured the bass peaks of the track. This was deemed necessary given the influence traffic noise had on the external measurements.

External measurements, synchronised to the internal measurements, were undertaken at the locations included in Table 8 and shown in Figure 5.

The measurements were undertaken for a suitble duration to capture to music noise egress (where possible) at 1 second logging intervals with the track being turned on and off at internals of no less than 90 seconds.

Based on discussions with the audio engineer at New Century the noise level limit at 63 Hz will dictate the spectrum shape/EQ of the music and it is likely that this octave band also dictate the overall level of the music.

Given the external noise climate (ie impacted by traffic) it was considered appropriate to undertake noise measurements with the sound system at maximum possible volume. This resulted in a noise level at 63 Hz of 117 Hz as noted below.

Table 7 Internal Noise Levels use for Commissioning Measurements

Internal Noise Level at 63 Hz	Reason
117	To push the sound system to a very high level in an attempt to make the music noise breakout audible in the measurement locations. This was considered appropriate so that the level difference between the internal and external measurement positions could be established with a view to setting final internal noise limits for the noise limiter.

8.2 Measurement Positions

The noise level measurements were undertaken at 4No. positions as described in Table 8 and indicated in Figure 5.

Table 8 Measurement Location Descriptions

Position	Type	Description
A	Attended	Measurement position located directly outside the Moda Angel Gardens development approximately 4.5m from the building façade in free-field. Microphone attached to a tripod at an approximate height of 1.5m above ground level.
B	Attended	Measurement position located directly outside the residential development on Angel Street approximately 18.5m from the building façade in free-field. Microphone attached to a tripod at an approximate height of 1.5m above ground level.
C	Attended	Measurement position located directly outside New Victoria residential development approximately 6m from the building façade in free-field. Microphone attached to a tripod at an approximate height of 1.5m above ground level.

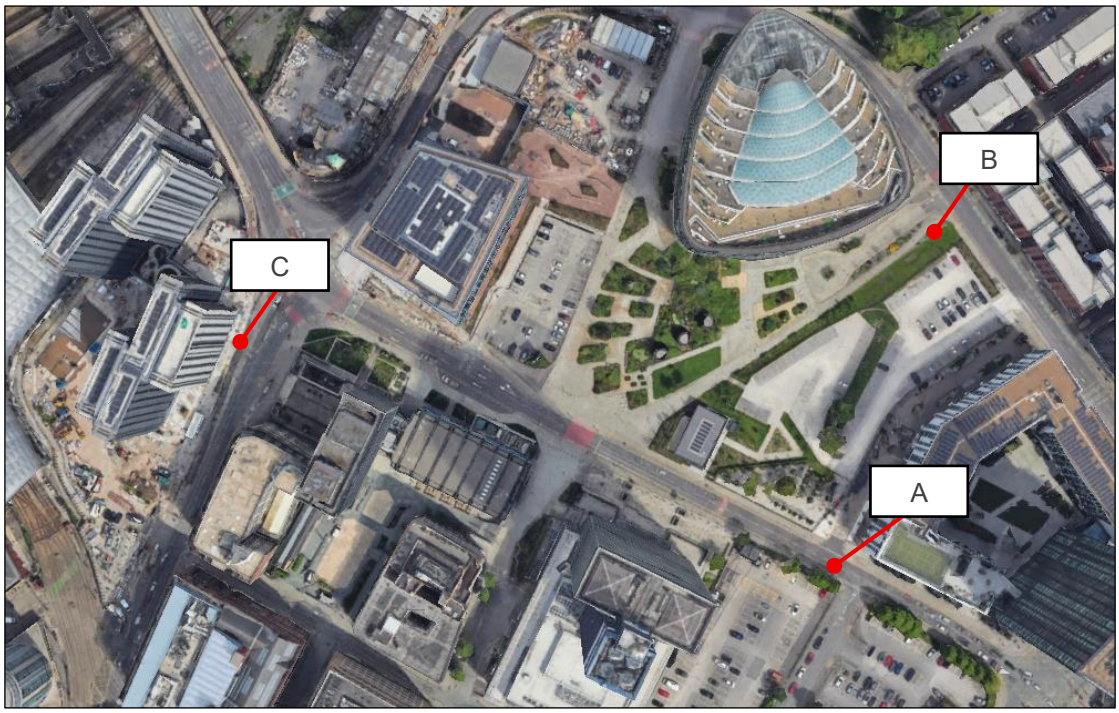


Figure 5 Measurement Positions (Imagery ©2026 Google, Map data ©2026)

8.3 Weather Conditions

Durning the commissioning measurements undertaken between 05 October 2026 roads were completely dry. Temperatures were in the region of 15°C and winds speeds were below 5m/s.

8.4 Instrumentation

The instrumentation used during the survey is presented in the table below.

Table 9 Calibration Information

Position	Manufacturer	Unit Type	Model	Serial No	Calibrated
A, B & C	Larson Davis	Sound Level Meter	LxT	5104	28/04/2026
All	Larson Davis	Calibrator	Cal200	3083	04/03/2026

Each sound level meter, including the extension cable, was calibrated prior to and on completion of the surveys. No significant changes were found to have occurred (no more than 0.3 dB). Each microphone was fitted with a windshield.

8.5 Results & Discussion

8.5.1 Internal Position

The spectrum measured internally was at the levels noted in Table 7 which resulted in the following spectrum:

Table 10 Typical Average 30s Spectrum for Internal Measurements

Level Descriptor	Internal Noise Level ($L_{eq,5min}$) at Octave Band Frequencies (Hz)						
	63	125	250	500	1000	2000	4000
"117 dB"	117	106	103	97	94	97	92

8.5.2 Position A

Based on the on-site observations, low frequency noise levels where just audible during short periods where there was no traffic in Position A. However, it was a strain to hear and it was not possible to establish the track being played or pick out any features of the song.

The periods in which the track was on and off have been averaged average over the whole measurement period of 15 minutes. The averaged noise levels are presented below:

Table 11 Measured External Noise Levels at Position A – Music on and off at 117 dB

Music on/off	Measured External Noise Level (L_{eq}) at Octave Band Frequencies (Hz)						
	63	125	250	500	1000	2000	4000
On	67	60	60	59	63	58	47
Off	67	63	62	62	66	61	50
On	63	60	59	61	64	59	48
Off	65	61	61	61	65	60	49
On	64	61	60	58	62	58	47

The noise levels measured during periods with the track playing and not playing were broadly similar, however, as noted above the music was faintly audible. Therefore, the levels of noise egress may have been around 50-53 dB at 63 Hz, however, with the impact of local traffic noise this could not accurately be established.

As such, the results of the acoustic model, calibrated to the pink noise egress level measurements have been used to establish the likely noise egress.

8.5.3 Position B

Based on the on-site observations, low frequency noise levels where just audible during short periods where there was no traffic in Position B. Perceptively the low frequency noise as more audible in in Position B than in Position A, however, it was still not clearly audible.

The periods in which the track was on and off have been averaged average over the whole measurement period and presented below.

Table 12 Measured External Noise Levels at Position B – Music on and off at 117 dB

Music on/off	Measured External Noise Level (L_{eq}) at Octave Band Frequencies (Hz)						
	63	125	250	500	1000	2000	4000
On	60	57	53	52	56	51	39
Off	56	54	49	46	47	42	32
On	58	52	49	46	49	44	33
Off	57	51	46	45	46	41	30
On	57	51	49	49	50	45	37
Off	57	50	46	44	45	40	30
On	60	53	52	50	52	47	37
Off	56	53	52	51	56	51	38

The noise levels measured during periods with the track playing and not playing were broadly similar with a slight increase in measured level for most of the “on” scenarios. However, this may be coincidental as we did measure a noise level of 57 dB at 63 Hz with the track playing with the same noise level measured both before and track played.

As the low frequency was faintly audible, it may be that the egress level was around 53 dB at 63 Hz, however, with the impact of local traffic noise this could not accurately be established (ie the noise levels with the music not playing were too similar to the noise levels measured with the music playing to establish the specific music noise egress levels in this location.

As such, the results of the acoustic model, calibrated to the pink noise egress level measurements have been used to establish the likely noise egress.

8.5.4 Position C

Based on the on-site observations, low frequency noise levels where not audible in Position C due to the increased traffic with included a bus route.

The periods in which the track was on and off have been averaged average over the whole measurement period and presented below.

Table 13 Measured External Noise Levels at Position C – Music on and off at 117 dB

Music on/off	Measured External Noise Level (L_{eq}) at Octave Band Frequencies (Hz)						
	63	125	250	500	1000	2000	4000
On	70	70	65	65	64	59	53
Off	66	61	61	59	60	56	46
On	65	63	61	59	59	54	45
Off	65	61	61	58	60	55	47
On	69	64	62	59	60	55	48
Off	68	64	64	62	64	59	50

The noise levels measured during periods with the track playing and not playing were broadly similar. Noise levels with the music playing where slightly elevated at 63 Hz with the music playing, however, the music noise was not audible so these levels are likely to have been impacted by other noise sources (ie cars and busses) passing along the adjacent road.

9.0 Updated Acoustic Model

9.1 Calibration using Façade Breakout Results

Based on the findings of the façade noise breakout measurements, the A 3D noise model of the site was updated and calibrated such that the external noise levels measured in P1, P2, P3 and P4 were achieved within the model.

The table below shows the measured and modelled noise levels in each position.

Table 14 Comparison of Modelled and Measured Noise Levels in P1, P2, P3 and P4

Location	Description	Sound Pressure Level (dB) at each Octave Band Centre Frequency (Hz)						
		63	125	250	500	1000	2000	4000
P1	Measured Specific Level	88	78	61	60	59	56	48
	Modelled	87	78	61	59	59	56	48

Location	Description	Sound Pressure Level (dB) at each Octave Band Centre Frequency (Hz)						
		63	125	250	500	1000	2000	4000
	Difference	-1	0	0	-1	0	0	0
P2	Measured Specific Level	74	56	54*	52*	53*	46*	37*
	Modelled	74	58	55	52	53	46	37
	Measured Specific Level	0	+2	+1	0	0	0	0
P3	Measured Specific Level l	68	52	-	-	-	-	-
	Modelled	68	52	-	-	-	-	-
	Difference	0	0	-	-	-	-	-
P4	Measured Specific Level	79	74	57	56	52	49	41
	Modelled	80	71	55	53	53	49	42
	Difference	+1	-3	-2	-3	+1	0	1+

Based on the above, the model is considered to show a good alignment with the measured noise levels in close proximity to the building façade, particularly at low frequencies. As such, the modelling will provide a better indication of the noise egress from the building to the receptors than the music noise egress measurements themselves.

9.2 Modelling Egress of “117 dB” Internal Noise Level

A model scenario was developed using the “117 dB” internal level measured during the music noise egress measurements and the noise egress calculated at each of the measurement location A, B and C. The results of the modelling for both 63 Hz and 125 Hz are presented below.

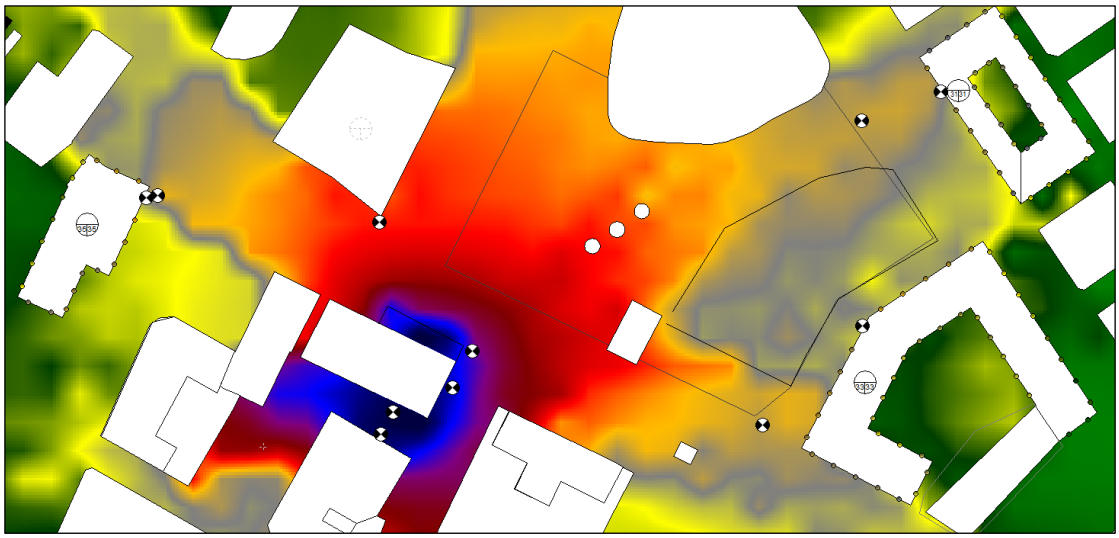


Figure 6 Calculated Noise Egress – 63Hz – Glue by Bicep at 117 dB at 63 Hz

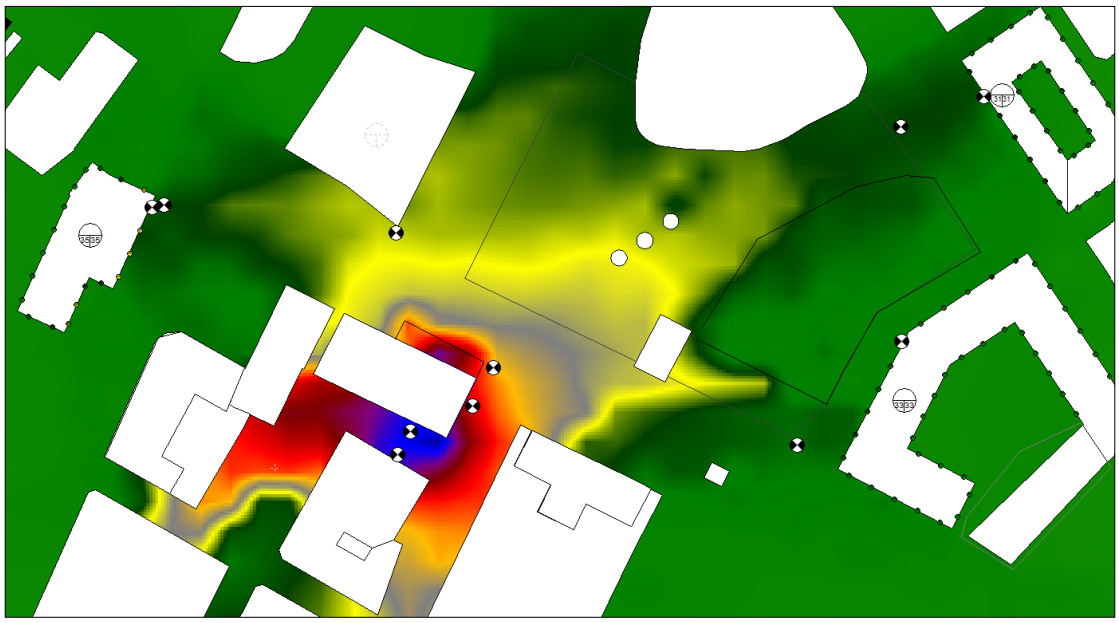


Figure 7 Calculated Noise Egress – 125Hz – Glue by Bicep at 117 dB at 63 Hz

The table below shows the low frequency results at each of the measurement positions A, B and C.

Table 15 Calculated Low Frequency Noise Levels at Measurement Locations

Position	Calculated Noise Egress Level (dB)	
	63 Hz	125 Hz
Position A	51	36
Position B	52	40
Position C	52	40

The above levels are as expected given the measured levels and the subjective assessment of the music noise egress during the music noise egress measurements. As such, the model is considered to provide an accurate representation of the noise breakout from the venue.

9.3 Assessment of Internal Noise Limits

9.3.1 Daytime Limits

To assess the suitability of the daytime operational noise limits set out in Hann Tucker Report "*32956-RP-NIA-R1-EE Noise Impact Assessment"* the model does not need to be updated as the noise breakout measurement position P4 was directly outside the most affected office receptor (ie the Redfern Building).

As such, the suitability of the suggested limits can be assessed via the calculation carried out in the table below.

Table 16 Comparison of Internal Noise Level Limits and Noise Egress Limits

Period	Octave Band Centre Frequency (Hz)						
	63Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz
Daytime Internal Limit (dB)	86	87	92	90	89	88	81
P4 Level Difference (dB)	35	29	41	42	45	49	55
Façade Correction (dB)	-3	-3	-3	-3	-3	-3	-3
Resultant Incident Noise (dB)	48	55	48	45	41	36	23
Daytime Egress Limit (dB)	53	49	48	46	47	42	32
Difference (dB)	**-5**	**6**	**0**	**-1**	**-6**	**-6**	**-9**

Based on the above, as a result of the on-site testing operational noise limits for the daytime period should be revised to the following which is a marginal restriction at 125 Hz and a relaxation at all other octave bands.

Table 17 Final Day-time Internal Noise Limits

Period	Operational Noise Limit, Leq,5min (dB) at each Octave Band Centre Frequency (Hz)						
	63Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz
Daytime (07:00 – 19:00)	91	81	92	91	95	94	90

Please note the above are the theoretical limits and the actual noise limit will likely the shaped from 63 Hz and 125 Hz.

9.3.2 Evening Limits

Based on the assessment results, an internal noise level of 117 dB at 63 Hz produces a worst-case external noise egress level of 52 dB at 63 Hz, while an internal noise level of 106 dB at 125 Hz produces a worst-case external noise egress level of 40 dB at 125 Hz. Consequently, the previously proposed internal noise limits require revision before the modelling is undertaken.

Based on the above, the revised test internal noise levels for modelling purposes are shown below:

Table 18 Modelled Operational Noise Level Limits – Evening

Modelled Internal Operational Noise Limits at Each Octave Band Frequency (dB)								
Period	**63Hz**	**125 Hz**	**250 Hz**	**500 Hz**	**1000 Hz**	**2000 Hz**	**4000 Hz**	**8000 Hz**
Evening (19:00 – 23:00)	112	107	115	115	113	114	113	123

The above was incorporated into the model and the noise levels were calculated at the worst case locations of the nearest receptors to demonstrate compliance with the limits in Table 1. The following table presents a comparison of the noise egress limits and the modelled noise egress levels to demonstrate that the internal noise level limits are suitable.

Table 19 Comparison of Modelled Egress Levels and Noise Egress Limits

Description	**Sound Pressure Level (dB) at each Octave Band Centre Frequency (Hz)**						
	63Hz	**125 Hz**	**250 Hz**	**500 Hz**	**1000 Hz**	**2000 Hz**	**4000 Hz**
Receptor A							
Calculated Egress Level	47	41	44	41	40	33	21
Evening Egress Limits	47	43	43	41	43	38	26
Compliance	Yes	Yes	No (1 dB)	Yes	Yes	Yes	Yes
Receptor B							
Calculated Egress Level	47	40	43	40	40	32	20
Evening Egress Limits	47	43	43	41	43	38	26
Compliance	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Receptor C							
Calculated Egress Level	47	41	46	44	45	38	27
Evening Egress Limits	52	48	46	45	45	40	31
Compliance	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Based on the results of the modelling, the criteria has been achieved at all receptors with the exception of a 1 dB exceedance at 250Hz at Receptor A. As such, the final internal noise level limits are presented below:

Table 20 Final Internal Noise Level Limits – Evening

Final Internal Operational Noise Limits at Each Octave Band Frequency (dB)								
Period	**63Hz**	**125 Hz**	**250 Hz**	**500 Hz**	**1000 Hz**	**2000 Hz**	**4000 Hz**	**8000 Hz**
Evening (19:00 – 23:00)	112	107	114	115	113	114	113	123

Please note the above are the theoretical limits and the actual noise limit will likely the shaped from 63 Hz and 125 Hz.

9.3.3 Night-time Limits

Based on the assessment results, an internal noise level of 117 dB at 63 Hz produces a worst-case external noise egress level of 52 dB at 63 Hz, while an internal noise level of 106 dB at 125 Hz produces a worst-case external noise egress level of 40 dB at 125 Hz. Consequently, the previously proposed internal noise limits require revision before the modelling is undertaken.

Based on the above, the revised test internal noise levels for modelling purposes are shown below:

Table 21 Modelled Operational Noise Level Limits – Night

Modelled Internal Operational Noise Limits at Each Octave Band Frequency (dB)								
Period	**63Hz**	**125 Hz**	**250 Hz**	**500 Hz**	**1000 Hz**	**2000 Hz**	**4000 Hz**	**8000 Hz**
Night (23:00 - 07:00)	112	107	106	105	102	104	103	101

The above was incorporated into the model and the noise levels were calculated at the worst case locations of the nearest receptors to demonstrate compliance with the limits in Table 1. The following table presents a comparison of the noise egress limits and the modelled noise egress levels to demonstrate that the internal noise level limits are suitable.

Table 22 Comparison of Modelled Egress Levels and Noise Egress Limits

Description	Sound Pressure Level (dB) at each Octave Band Centre Frequency (Hz)						
	63Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz
Receptor A							
Calculated Egress Level	47	41	35	31	29	23	11
Night Egress Limits	47*	41*	37	35	34	30	21
Compliance	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Receptor B							
Calculated Egress Level	47	40	34	30	29	22	10
Night Egress Limits	47*	41*	37	35	34	30	21
Compliance	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Receptor C							
Calculated Egress Level	47	41	37	34	34	28	17
Night Egress Limits	47*	41*	37	34	33	30	23
Compliance	Yes	Yes	Yes	Yes	No (1 dB)	Yes	Yes

Based on the results of the modelling, the criteria has been achieved at all receptors with the exception of a 1 dB exceedance at 1000 Hz at Receptor C. As such, the final internal noise level limits are presented below:

Table 23 Final Internal Noise Level Limits – Night

Final Internal Operational Noise Limits at Each Octave Band Frequency (dB)								
Period	**63Hz**	**125 Hz**	**250 Hz**	**500 Hz**	**1000 Hz**	**2000 Hz**	**4000 Hz**	**8000 Hz**
Night (23:00 – 07:00)	112	107	106	105	101	104	103	101

Please note the above are the theoretical limits and the actual noise limit will likely the shaped from 63 Hz and 125 Hz.

10.0 Operational Noise Limit Summary

Based on the results of the assessment, the table below provides operational noise limits for the proposed music venue during daytime, evening and night-time hours to ensure noise egress to all identified noise sensitive receptors in the surrounding area complies with MCC guidance.

Table 24 Internal operational Noise Limits

Internal Operational Noise Limits at Each Octave Band Frequency (dB)								
Period	**63Hz**	**125 Hz**	**250 Hz**	**500 Hz**	**1000 Hz**	**2000 Hz**	**4000 Hz**	**8000 Hz**
Daytime (07:00 – 19:00)	91	81	92	91	95	94	90	91
Evening (19:00 – 23:00)	112	107	114	115	113	114	113	123
Night-time (23:00 – 07:00)	112	107	106	105	101	104	103	101

To show the expected noise egress based on the above limits being achieved, and have been produced. These present the night-time music noise egress levels at 63 Hz and 125Hz and show that with the above limits, low frequency noise egress from the site should comply with MCC requirements.

11.0 Conclusion

Planning permission has been granted for the change of use of part of the ground floor of New Century Hall from a food hall (Class E) to a live music venue (Sui Generis), subject to a number of planning conditions, including Condition 3 relating to the control of entertainment noise breakout. The purpose of this report has been to provide the verification information required to support the discharge of that condition.

Façade breakout measurements were undertaken using both pink noise and the installed venue sound system. The measured façade performance was subsequently used to calibrate a three-dimensional acoustic model of the building and surrounding area. Comparison of the measured and modelled sound levels demonstrated good agreement, particularly at low frequencies which represent the governing aspect of the assessment.

The calibrated acoustic model was used to assess entertainment noise breakout to the nearest noise-sensitive receptors and to establish suitable internal operational noise limits for the venue sound system. The assessment demonstrates that, when operated in accordance with the internal octave-band noise limits summarised in Table 24, entertainment noise breakout from the venue will comply with the noise egress criteria contained within Condition 3 and the requirements of Manchester City Council.

The recommended operational limits should be secured through the venue's sound system control measures and noise limiting equipment. Compliance with these limits will ensure that entertainment noise from the venue remains appropriately controlled and that the impact on surrounding residential and commercial receptors is acceptable.

On the basis of the assessment presented herein, it is concluded that the development accords with the acoustic requirements of Condition 3 and that the condition can therefore be discharged, subject to the venue continuing to operate within the internal noise limits specified in Table 24.

Appendix A

Acoustic Terminology

The acoustic terms used in this report are defined as follows:

dB — Decibel - Used as a measurement of sound level. Decibels are not an absolute unit of measurement but an expression of ratio between two quantities expressed in logarithmic form. The relationships between Decibel levels do not work in the same way that non-logarithmic (linear) numbers work (e.g. 30dB + 30dB = 33dB, not 60dB).

dBA — The human ear is more susceptible to mid-frequency noise than the high and low frequencies. The 'A'-weighting scale approximates this response and allows sound levels to be expressed as an overall single figure value in dBA. The $_A$ subscript is applied to an acoustical parameter to indicate the stated noise level is A-weighted

It should be noted that levels in dBA do not have a linear relationship to each other; for similar noises, a change in noise level of 10dBA represents a doubling or halving of subjective loudness. A change of 3dBA is just perceptible.

$L_{90,T}$ — L_{90} is the noise level exceeded for 90% of the period *T* (i.e. the quietest 10% of the measurement) and is often used to describe the background noise level.

$L_{eq,T}$ — $L_{eq,T}$ is the equivalent continuous sound pressure level. It is an average of the total sound energy measured over a specified time period, *T*.

L_{max} — L_{max} is the maximum sound pressure level recorded over the period stated. L_{max} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the L_{eq} noise level.

L_p — Sound Pressure Level (SPL) is the sound pressure relative to a standard reference pressure of 2×10^{-5} Pa. This level varies for a given source according to a number of factors (including but not limited to: distance from the source; positioning; screening and meteorological effects).

L_w Sound Power Level (SWL) is the total amount of sound energy inherent in a particular sound source, independent of its environment. It is a logarithmic measure of the sound power in comparison to a specified reference level (usually 10^{-12} W).