

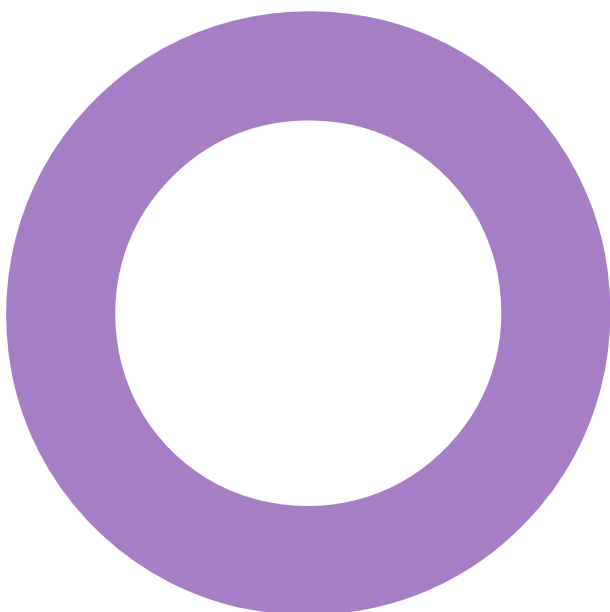
Project Taverna. Manchester.

Manchester City Football Club.

ACOUSTICS

ENVIRONMENTAL NOISE REPORT

REVISION P03 – 24 FEBRUARY 2026



Audit sheet.

Rev.	Date	Description of change / purpose of issue	Prepared	Reviewed	Authorised
P01	12/02/26	First Issue	PM	AP	PM
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P03	24/02/26	Minor updates following comment	PM	AP	PM

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Executive summary

Hoare Lea has been appointed by Manchester City Football Club to provide acoustic advice for the proposed new immersive events space located on Alan Turing Way in Manchester.

An environmental noise survey has been carried out on Thursday 20th November and between 27 November and 2 December 2025 and a noise break-out assessment undertaken in accordance with the requirements of Manchester City Council (MCC).

Based on the results of the noise survey, the typical existing background noise levels experienced at the worst affected sensitive receptor is as follows:

- Serenity Stays UK Residential premises located at 2b The Waterfront, M11 4DB:
 - Daytime (07:00 - 19:00) - $L_{A90,5min}$ 56 dB
 - Evening (19:00 - 23:00) - $L_{A90,5min}$ 54 dB
 - Night-time (23:00 - 07:00) - $L_{A90,5min}$ 45 dB

Based on MCC's requirements, all plant, equipment and machinery associated with the development shall be controlled to ensure that the overall sound pressure levels at 1m from the façade of the nearest noise sensitive premises do not exceed 5 dB (L_{Aeq}) below the background noise levels stated above. If the plant contains any tonal or attention catching characteristics, a further correction will be required. In-duct attenuation is understood to be proposed to ventilation routes and selection of low noise equipment / acoustic housing if required.

In addition to plant noise, MCC requires that entertainment noise is controlled to at least 5 dB below the typical background noise level (L_{A90}) in each octave band at the nearest noise sensitive premises. Based on the proposed maximum amplified music operating noise limits within immersive events space, acoustic modelling has been undertaken to determine the sound insulation performance requirements of the building envelope to control noise emissions.

1. Introduction.

Hoare Lea has been appointed by Manchester City Football Club to provide acoustic advice for a proposed immersive events space located on Alan Turing Way at the Etihad Campus. The site is located within the jurisdiction of Manchester City Council (MCC).

The proposed development comprises of the construction of a new immersive events space for a live entertainment show with amplified music and will include food / beverage facilities, staff amenities, kitchens and a reception.

An environmental noise survey has been carried out over six days from the 27th November 2025. The aim of the survey was to determine the existing sound levels around the site, with the purpose of establishing the prevalent background, ambient, and maximum sound levels across the site. From this, appropriate noise egress limits for plant and entertainment noise associated with the development have been determined.

This report presents the findings of the noise survey and presents an assessment of maximum permissible entertainment noise / minimum sound insulation performance requirements for the building envelope and plant noise limits in accordance with MCC requirements.

2. Site and development details.

2.1 Proposal

A new build entertainment venue is proposed and requires the provision for internal amplified music during the daytime and night-time hours. An initial ground floor plan is provided below, with the following uses proposed:

- Taverna (Main Central Space) - Large hall space for immersive event show. The space will include seating, stage area and perimeter balconies for additional seating.
- Back of house – Kitchens, amenities for catering staff / performers and roof plant.
- Front of House – Reception, WCs, offices and roof plant.

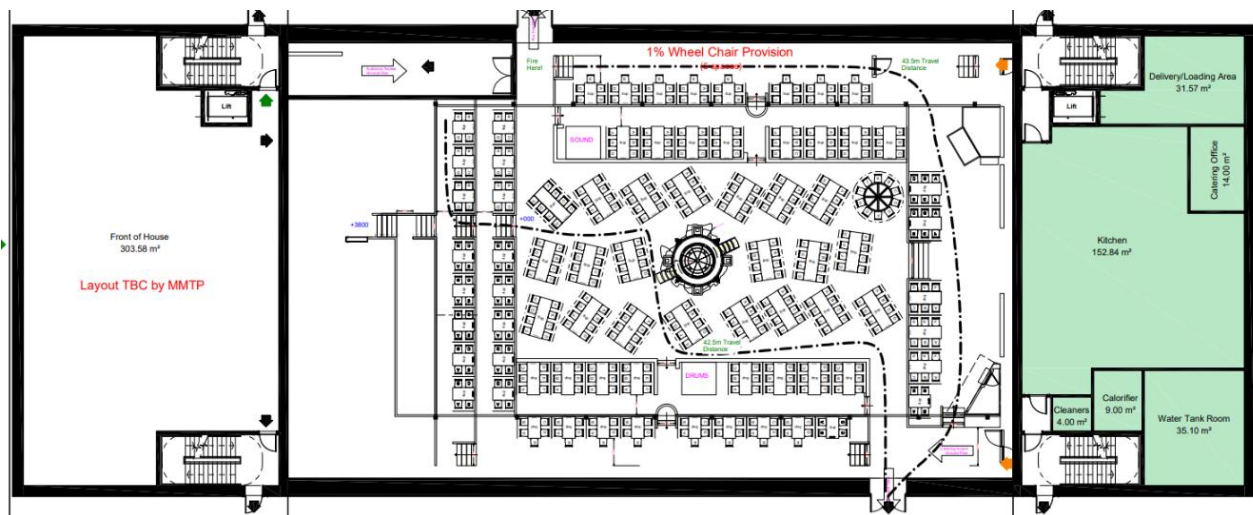


Figure 1 Initial proposed ground floor GA plan

2.2 Site location and proposal.

The site in relation to its surroundings is shown in Figure 2. This shows the worst affected nearby residential receptors which is the Serenity Stays residential tower on Alan Turing Way directly opposite the site. In addition, the new Stadium Hotel is currently under construction directly located to the west of the proposed development.

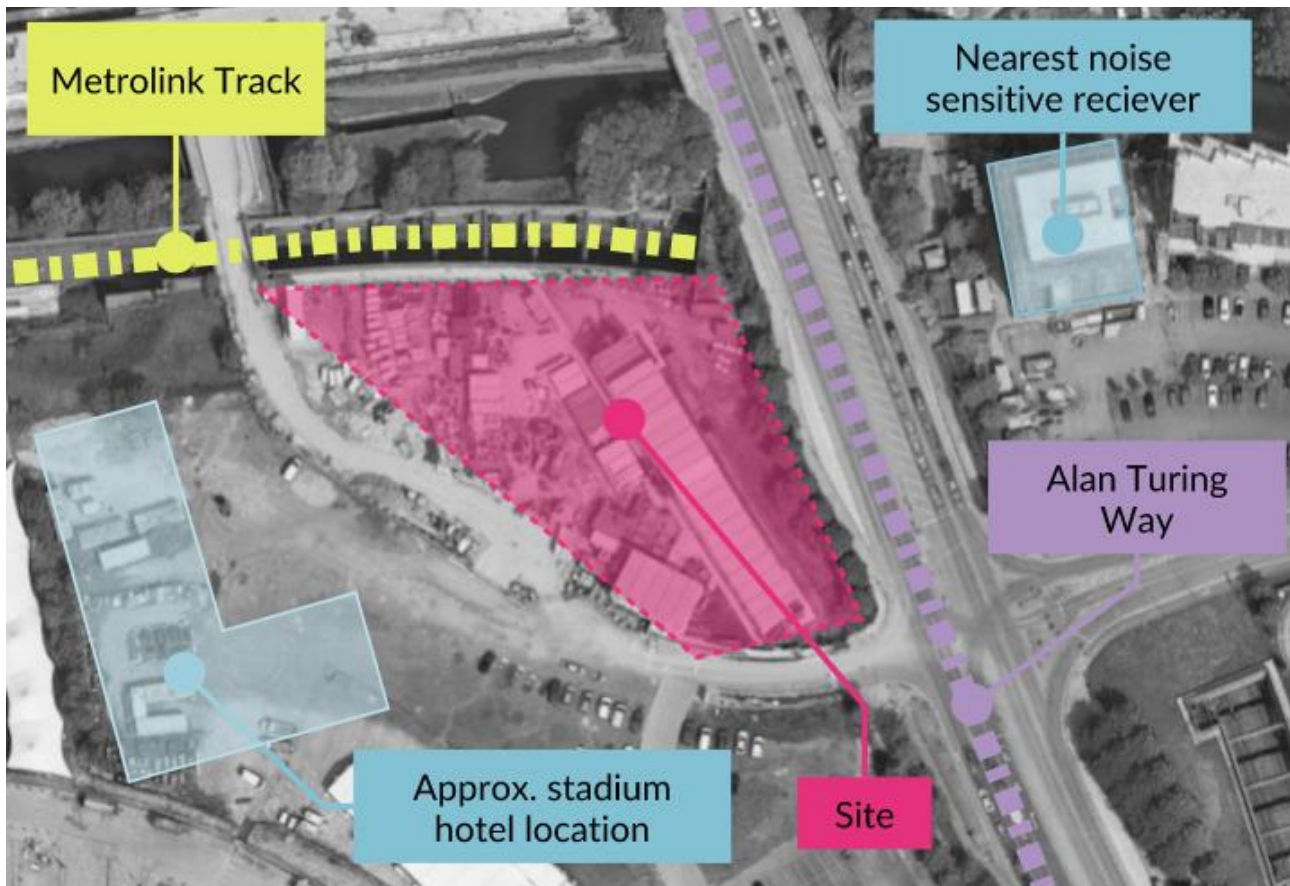


Figure 2 Aerial photograph showing development location and context.

2.3 Local noise climate.

The existing local noise climate is currently dominated by road traffic noise from the roads around the site. Fairly constant traffic noise is audible from Alan Turing Way. Occasional tram noise was audible but given the position of the tram lines (i.e. within a cutting) noise levels from tram movement was not dominant.

Other noise sources included increased traffic movement and crowd noise during match days at the Etihad Stadium and concerts at Co-op Live Arena.

3. Local Authority planning requirements.

Criteria for plant noise egress and entertainment noise transfer is provided in the Manchester City Council (MCC) "Planning & Noise Technical Guidance (October 2022)" document. This is referenced in the subsequent sections.

3.1 Plant noise egress.

With regards to noise from fixed plant/equipment, MCC refers to BS 4142:2014 and also states the following:

"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."

3.1.1 BS 4142:2014.

The MCC "Planning & Noise Technical Guidance (October 2022)" document refers to BS 4142:2014 'Method for Rating Industrial Noise Affecting Mixed Residential and Industrial Areas'. The general principle of the BS 4142 assessment criteria is that noise nuisance can be avoided provided there is no significant change in the prevailing background noise conditions at any surrounding noise sensitive premises once the new equipment is operational.

Where the assessment indicates that the noise rating level of new plant would be 10 dB or greater above the background noise level, the standard judges that sound to be of significant adverse impact. A difference of 5dB is considered to result in adverse impact. Where the rating noise level of the plant is equal to or below background noise, there is likely to be low impact.

Further corrections should be applied if the plant noise contains tonal, intermittent and/or impulsive characteristics. The magnitude of these corrections is dependent upon the subjective perceptibility of the tones/impulses present.

3.2 Entertainment noise egress.

Manchester City Council (MCC) stipulate the following with regards to the control of noise emissions from amplified music/entertainment sound:

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

In addition, the technical guidance stipulates the following with regards to internal noise levels within habitable rooms.

2. *'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 41 dB($L_{eq,5min}$), respectively'*

3.3 MCC EHO correspondence.

Based on discussion / email correspondence with MCC Environmental Health Officer, Laura Miller, on 2nd, 3rd and 6th February 2026 it was agreed that the nearest noise sensitive premises are the apartments located at Serenity Stays to the East of the site and the external entertainment noise limits (Point 1 of Section 3.2) would be achieved at this location. Although not strictly considered a noise sensitive premises, we also agreed that we would demonstrate compliance with the internal noise limits (Point 2 of Section 3.2) at the new Manchester City Football Club Stadium hotel located to the West of the development.

4. Environmental noise survey.

4.1 Site Measurements.

The environmental noise survey was carried out on site over the following periods:

- Thursday 27th November to Tuesday 2nd December 2025 (six days) – Position L1
- Thursday 20th November attended measurements – Position P1

During this time, a series of long-term unattended measurements and attended measurements were carried out across the development site.

Full details of the method and equipment used, as well as weather information are provided in Appendix A.

The survey measurement positions are presented in Figure 3.

4.2 Observations.

The prominent noise source was the road traffic noise from Alan Turing Way with some noise from the Metrolink to the north of the site however this was less significant. There was also some construction noise observed from the site to the south. The east of the site observed higher noise levels than the west side however the west of the site, located adjacent to the Etihad Stadium, experiences higher noise levels during matches at the Etihad and events at Co-op Live.

During the unattended survey period there was a football match at the Etihad Stadium on Saturday 29th November with kick off at 3pm and a concert (Bad Omens) at Co-op live in the evening on Friday 28th November.

4.3 Survey Measurement Results.

A summary of the results of each of the measurement positions are shown in Figure 3.



Figure 3: Summary of survey data.

Position L1 – Alan Turing Way.

The results of the unattended noise measurements at Position L1 are presented to follow. A graph showing the results from the unattended logging survey are provided in Appendix C.

Table 1 Ambient noise levels measured during unattended measurements at Position L1

Date	Ambient sound pressure levels measured (dB) at position L1	
	Daytime (07:00 - 23:00) L _{Aeq} , 16hr	Night (23:00 - 07:00) L _{Aeq} , 8hr
27/11/2025	67	62
28/11/2025	68	64
29/11/2025	68	65
30/11/2025	68	64
01/12/2025	69	63
02/12/2025	69	N/A ^[1]

[1] – Measurement not made over full period.

In line with MCC guidance for and for the purpose of analysis and establishing representative background noise levels during the periods of interest, the background noise levels have been quantified using analysis from the continuous logging measurements. These statistical results from these measurements are presented in Appendix B.

From the analysis carried out, the representative background noise levels measured during the survey were as follows:

- Daytime (07:00 - 19:00) - L_{A90,5min} 56 dB
- Evening (19:00 – 23:00) - L_{A90,5min} 54 dB
- Night-time (23:00 - 07:00) - L_{A90,5min} 45 dB

The octave band values for these levels are presented in Table 2.

Table 2 Position L1 - Octave band representative background noise level

Background Noise Levels, L ₉₀	Octave Band Centre Frequency (Hz)						
	63	125	250	500	1k	2k	4k
Daytime (07:00 - 19:00)	63	57	52	51	52	48	39
Evening (19:00 – 23:00)	59	54	50	48	51	46	36
Night (23:00 - 07:00)	52	48	43	41	41	36	27

Position P1 – Stadium Hotel.

The summary of the results measured at attended measurement Position P1 on 20 November 2025 are presented in Table 3.

Table 3 Summary of results from measurement position P1 (20/11/25)

Start time	Sound Pressure Level (dB)		
	L _{Aeq}	L _{A90}	L _{Amax}
12:25	59	53	72
12:30	58	54	69
12:35	58	53	67

5. Plant noise emissions.

5.1 Plant noise.

5.1.1 Plant noise limits.

Based on the MCC criterion set out in Section 3.1 and the survey results, the cumulative maximum sound pressure levels for fixed plant, equipment and machinery associated with the development shall not exceed the levels presented in Table 4 at 1m from the nearest noise sensitive premises.

Table 4 Maximum permissible sound pressure levels at 1m from the nearest noise sensitive premises from plant and equipment noise

Time of day	Maximum allowable sound pressure level at 1m from the nearest noise sensitive premises (L _A , dB) *
Daytime / evening (07:00 - 19:00)	51
Evening (19:00 – 23:00)	49
Night (23:00 - 07:00)	40

*If plant noise contains any tonal or impulsive characteristics, a further correction shall be applied to the levels set out above, see Section 3.1.1 for details.

5.1.2 Attenuation measures.

At this stage, the design is not sufficiently advanced to comment on specific attenuation measures and will need to be assessed in detail as the design progresses. However, all noise generating plant and equipment associated with the development will be designed to ensure that the noise egress limits specified above are achieved. The specific attenuation measures will depend on the type and location of the plant items but typical measures to be considered include in-duct attenuation, acoustic screening or enclosures, low noise equipment, acoustic lagging, and acoustically rated louvres.

6. Entertainment noise assessment.

6.1 Amplified sound noise limits.

Based on the results of the noise survey and MCC criteria, the following noise limits are to apply at the nearby residential receptors (Serenity Stays).

Table 5 Amplified sound noise limits at nearby residential receptors

Background Noise Levels, L ₉₀	Octave Band Centre Frequency (Hz)						
	63	125	250	500	1k	2k	4k
Daytime (07:00 - 19:00)	58	52	47	46	47	43	34
Evening (19:00 – 23:00)	54	49	45	43	46	41	31
Night (23:00 - 07:00)	47	43	38	36	36	31	22

6.2 Basis of assessment

Noise breakout from the venue due to internal amplified sound has been modelled to predict the impact on the surrounding sensitive receptors. Please note that no external amplified music sources (e.g. loudspeaker) are proposed. Based on this, the minimum sound insulation performance requirements have been determined for the building envelope (i.e. external walls and roof).

The following maximum internal amplified music noise levels have been used as part of our assessment. This is in line with the noise levels generated by the proposed operator at other immersive event venues and for context is typical of a loud bar / club with a DJ music playing.

Table 6 Maximum designed sound pressure levels inside immersive events space

Internal show: Maximum designed sound pressure levels inside audience space	Sound Pressure Level (dB, Leq) Octave Band Centre Frequency (Hz)							dBA
	63	125	250	500	1k	2k	4k	
Internal show design levels	101	98	96	96	85	84	80	95

6.3 3D acoustic modelling & noise breakout testing.

A 3D acoustic model of the site has been developed using the industry standard software package CadnaA by Datakustik to assess the predicted levels of amplified music noise breakout.

Screenshots from the model are provided in Figure 4

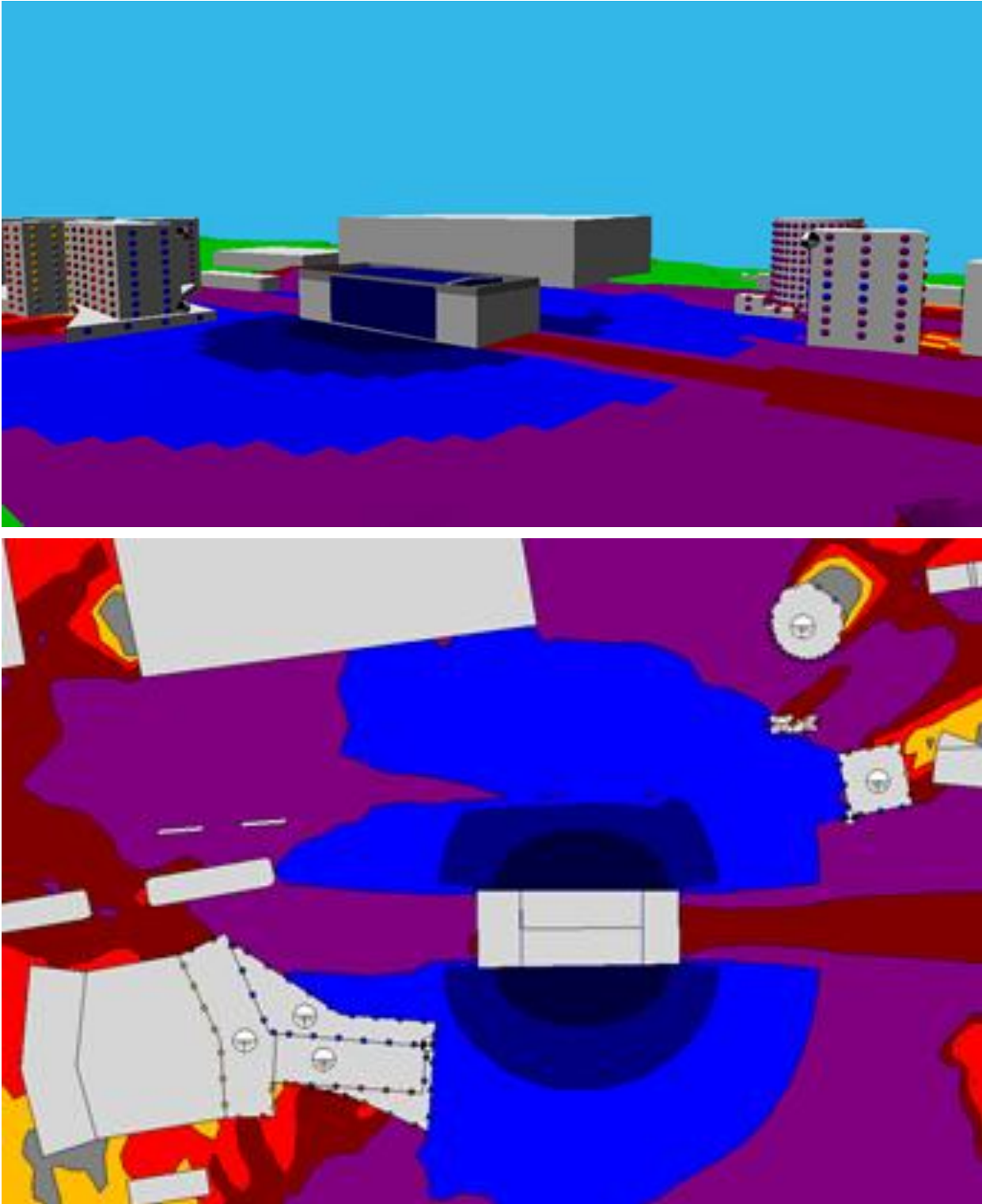


Figure 4 Screenshot from 3D acoustic model

6.4 Acoustic performance requirements of the building envelope.

6.4.1 Serenity Stays

In order to meet MCC entertainment noise requirements (set out in Table 5 above) at the nearest noise sensitive receptor and based on the maximum internal entertainment noise levels presented in Table 6, the minimum required sound reduction performance requirements have been determined and set out in Table 7.

Table 7 Minimum required sound reduction performance for building envelope

Building envelope	Minimum required sound reduction performance (dB)						
	Octave band centre frequencies (Hz)						
	63	125	250	500	1k	2k	4k
Roof	33	37	39	42	28	31	36
External walls to immersive events space	33	38	39	42	28	31	36

These performance requirements are capable of being achieved with several methods of building construction and will be progressed as part of the developing design.

6.4.2 MCFC Stadium hotel

Although not considered to be the nearest noise sensitive premises, it was agreed with MCC that noise levels would be suitably controlled to ensure that internal noise levels in the Stadium Hotel guest rooms did not exceed the requirements set out in Section 3.2.

Based on the sound reduction performance requirements specified in Table 7 and the internal noise limits set out in Table 5, the calculated low frequency octave band noise levels at 1m from the worst affected hotel façade are:

- 51 dB at 63 Hz
- 47 dB at 125 Hz

To achieve the internal noise limits, set out in Section 3.2 (i.e. 47 dB and 41 dB at 63 Hz and 125 Hz) a 4 dB and 6 dB sound reduction performance requirement would be required from the facade at 63 Hz and 125 Hz respectively. A standard double-glazing system would provide at least 15 dB attenuation at these frequencies.

It is understood that the hotel guest room façade will be sealed, has a high-performance acoustic glazing system and relies on mechanical ventilation. On this basis, noise break-in levels from entertainment noise will be suitably controlled.

6.5 Recommendations.

The following best practice measures are advised to ensure that the acoustic strategy is maintained:

- A noise management plan is recommended to ensure internal amplified music levels within the immersive events space venue are controlled to ensure the noise levels at the nearest noise sensitive receptors are not exceeded.
- A high-performance acoustic door arrangement is recommended to all access routes from outside the building to the main immersive space where amplified music is proposed.
- Suitable attenuation to ventilation routes to maintain the sound insulation performance of the building envelope.

Appendix A: Survey and Equipment Details

Attended and Unattended Noise Survey Measurements.

Attended noise measurements were carried out on Thursday 20th November.

Unattended noise measurements were carried out between Thursday 27th November 2025 to Tuesday 2nd December 2025 (six days).

Prior to commencement of the unattended survey, a subjective assessment of the noise climate was undertaken which indicated that the chosen logger position was deemed to be representative of the noise levels along northern perimeter of the site and the south perimeters of the site.

The microphones was fitted with a windshield. The meters were calibrated before and after the survey and no significant drift was noted.

Photos showing the two measurement positions are provided below.



Equipment details.

Table A1 summarises the details of the equipment used during the environmental noise survey. All equipment used was within dates of calibration and calibration certificates are available on request.

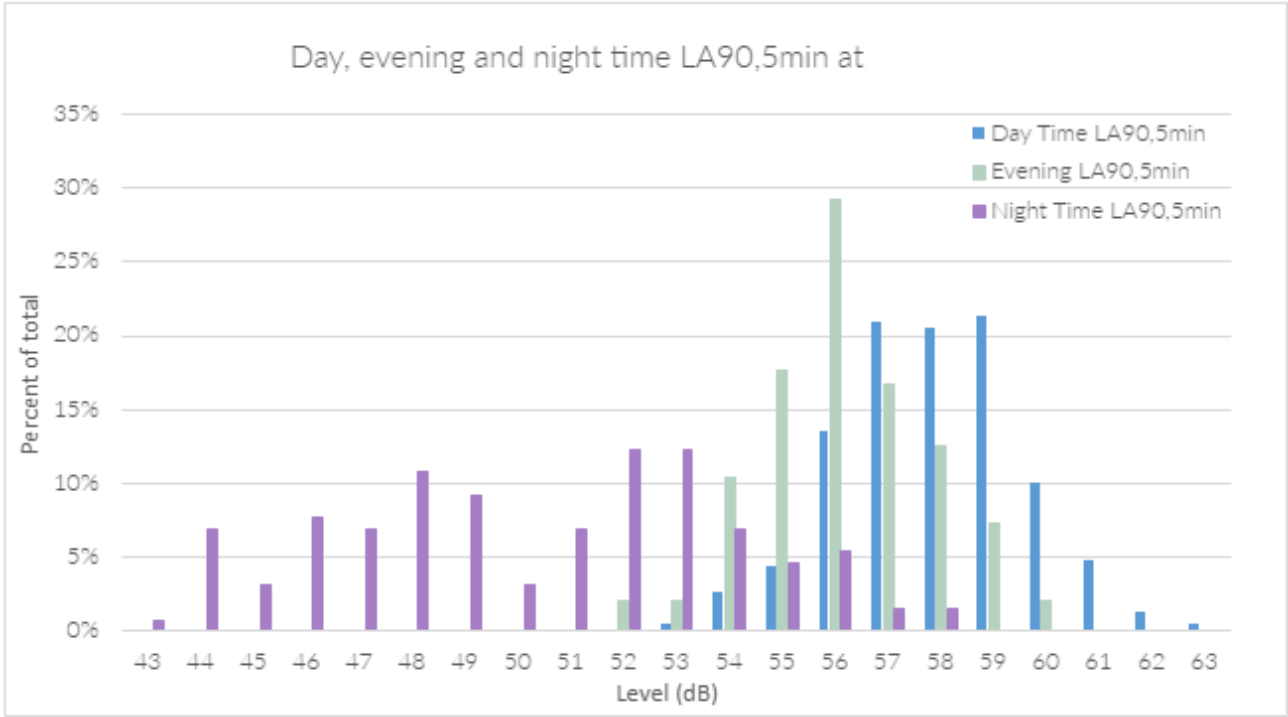
Table A1 Equipment used during environmental noise survey

Sound Level Meter	Description	Serial Number	Calibration Expiration Date
Position L1 (Unattended)	Rion - Sound Level Meter: NL-52 Rion - Microphone: UC-59 Rion - Pre-amplifier: NH-25	00297868 14887 32190	11/04/2027
Position P2 (Attended)	Brüel and Kjær - Sound Level Meter: 2250 Brüel and Kjær - Pre-amplifier: ZC-0032 Brüel and Kjær - Microphone: 4189	3003815 29116 2887159	11/11/2027

Weather information.

Weather reports for the area indicate that temperatures ranged between 2 °C to 14 °C. Online weather history data suggests there was occasional light rain during this period. Wind speeds were consistently low over the measurement period; therefore, the measured data is considered suitable as being representative of typical conditions.

Appendix B: Background noise measurement statistics.



Appendix C: Time History of unattended measurements.

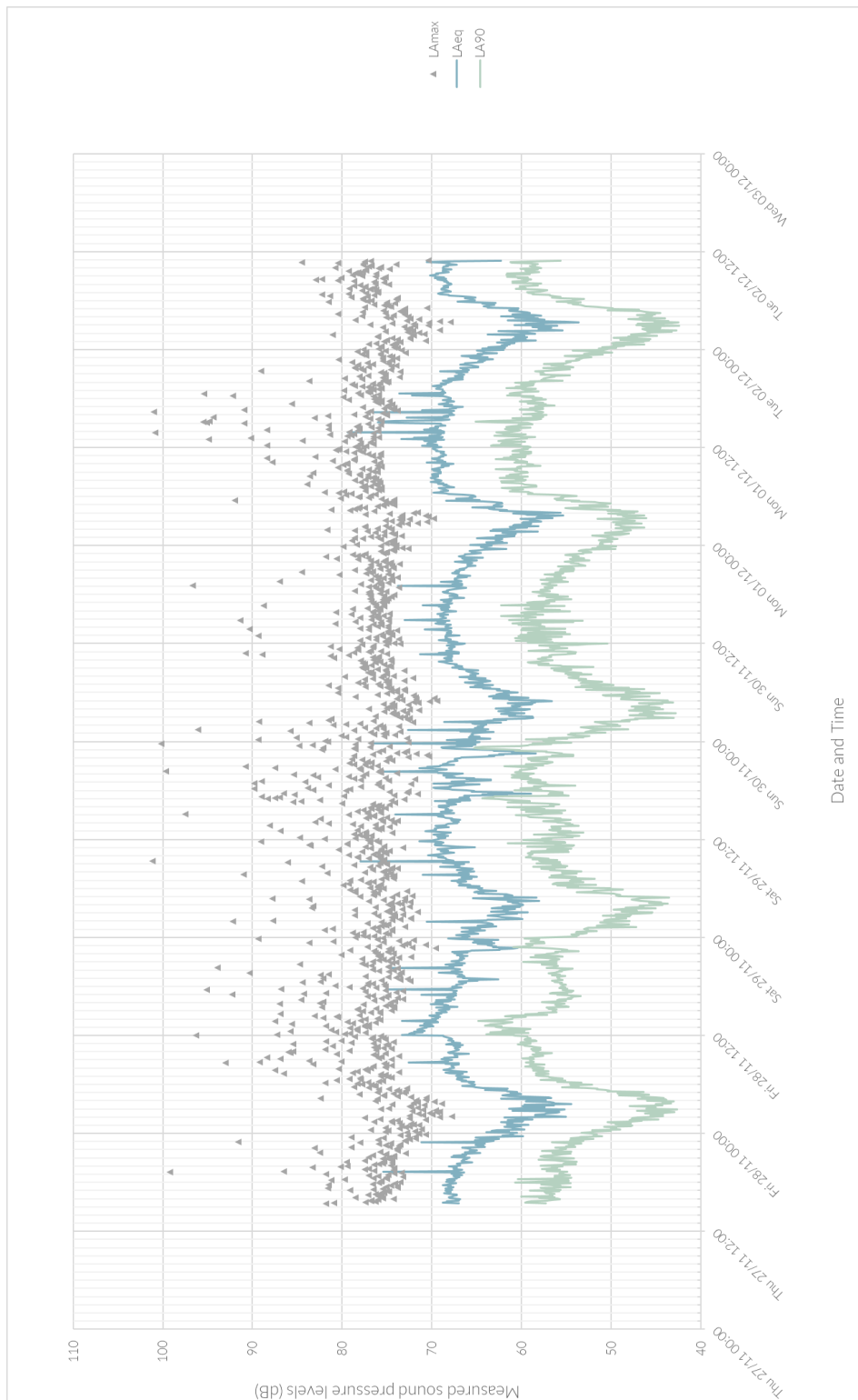


Figure 5: Time History of unattended measurements.



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