

Capri Beach Club Exchange Square Manchester

Acoustic Planning Report
1271/APR1

8 July 2024

For:

Premier Winter Wonderland Events Ltd
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Time History Graph 1271/THG1

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1.0 Introduction

Lighthouse Acoustics has been appointed by Premier Winter Wonderland Events Ltd to undertake an assessment of operational sound levels from the existing Capri Beach Club outdoor venue at Exchange Square Manchester to the nearest noise sensitive receptor.

The measurement methodology, results and assessment are presented in this report.

2.0 Objectives

To establish the Local Authority's acoustic requirements for the existing outdoor venue.

To visit site to undertake measurements of representative environmental sound levels at the nearest noise sensitive receptor and typical operational sound levels from the existing outdoor venue.

To assess typical operational sound levels from the existing outdoor venue to the nearest noise sensitive receptor and provide comments on the acceptability in terms of achieving the requirements of the Local Authority.

3.0 Site Description

The Capri Beach Club is a temporary outdoor venue situated in Exchange Square Manchester and comprises a fenced off area featuring outdoor seating, outdoor bar and mobile catering units.

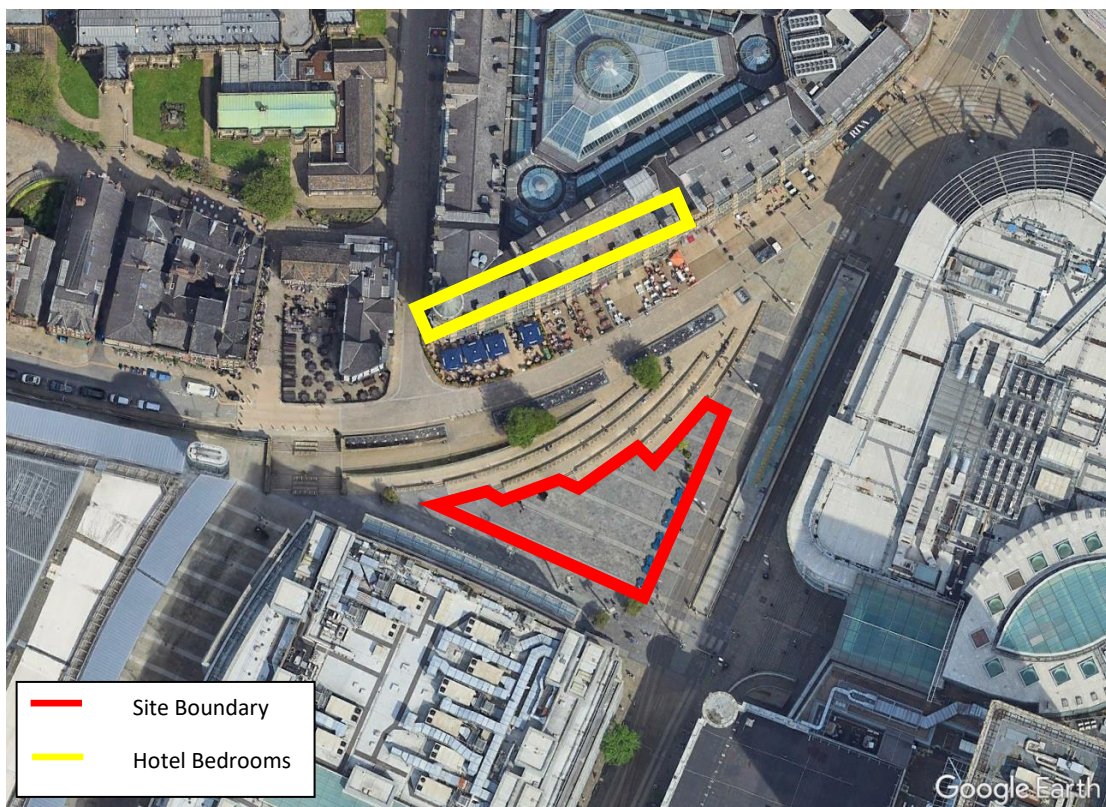


The site is bound by the Corn Exchange to the north, Metrolink and Arndale Centre to the east and Selfridges to the south west.

It is understood that the nearest noise sensitive receptors to the site are the hotel bedrooms of Roomzzz hotel which is situated at upper floor levels of the Corn Exchange and overlooks the site.

The ground floor units of the Corn Exchange facing Exchange Square (Banyan, Cosy Club, The Real Greek, Salvi's, etc.) all feature outdoor seating areas, some with amplified music.

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

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:

"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."

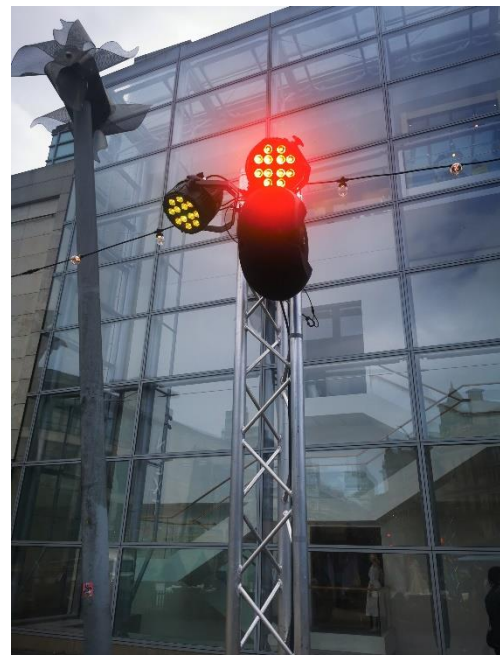
5.0 Sound System

The sound system comprises the following items of equipment.

- Apple iPad (MP3 Player);
- 1No. NewHank Control USB BT (BT Receiver);
- 2No. QSC GX3 (Amplifier);
- 2No. FBT AX800 (Amplifier);
- 8No. Electro Voice EVID 6.2 (Compact Speakers).



The audio equipment is situated behind the bar in a locked cupboard (manager access only) whilst the 8No. compact speakers are mounted on trusses at approximately 3m above ground level and situated around the perimeter of the site pointing in towards the centre of the site. The volume control for staff is via the iPad situated behind the bar. The music playlist is restricted to beach club chill out tracks.



6.0 Environmental Sound Survey

6.1 Measurements

It is understood that the existing outdoor venue operates between 11:00 and 23:00 hours 7 days a week. Of these periods, environmental sound levels may typically be expected to be at their lowest during a weekday daytime period.

Manned environmental sound measurements were therefore undertaken between 14:15 and 16:25 hours on Thursday 4 July 2024. During this period the L_{Amax} , L_{Aeq} and L_{A90} sound pressure levels were measured continuously over 1 minute periods at Position A with simultaneous individual 1 minute measurements at Position B.

Amplified music was played at the maximum desired level for the duration of the measurements with the exception of between 14:35 and 14:50 when it was turned off in order to establish the impact.

6.2 Weather Conditions

During the survey period there was a gentle westerly breeze (<5m/s) and the sky was scattered cloud. There was no rainfall and road surfaces were dry. The temperature was approximately 16°C.

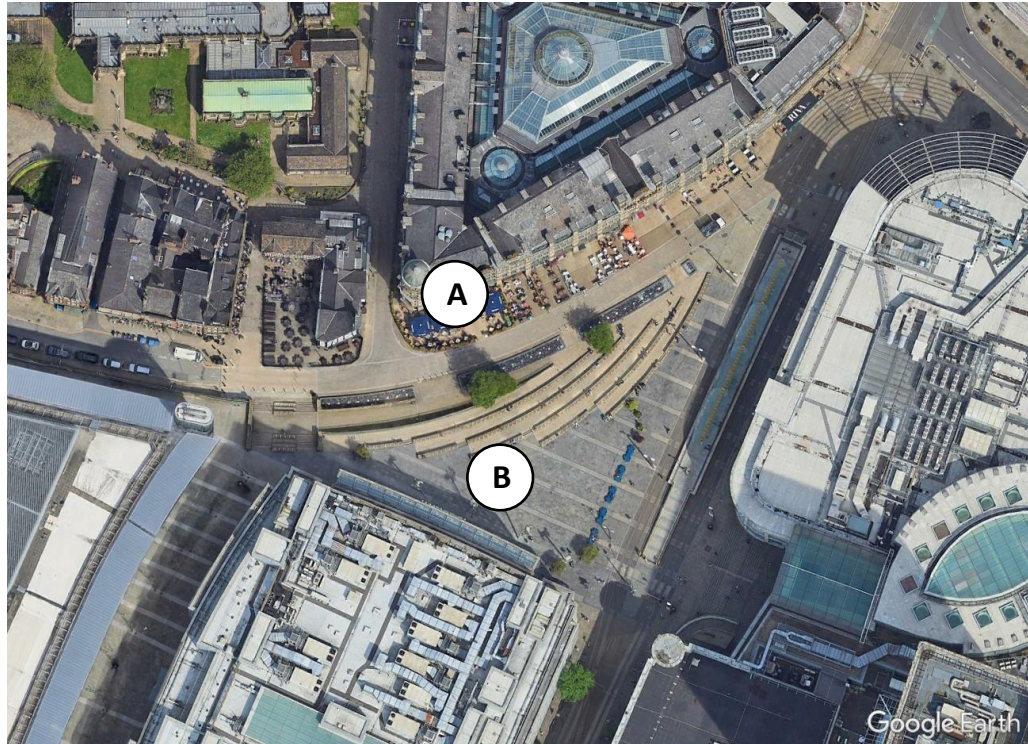
The weather conditions during the survey period are therefore considered to be suitable for undertaking measurements of sound levels.

6.3 Measurement Positions

Sound levels were measured at two positions on-site as described in the table below.

Position	Description
A	Microphone situated at 2 nd floor level at 1m from the south façade of a hotel bedroom overlooking the site.
B	Microphone situated at 1m from an external speaker at 2m above ground level within the site.

The measurement positions are shown on the site plan below.



Site plan showing measurement positions

Measurement Position A was selected in order to assess typical environmental sound levels at the nearest noise sensitive receptor to the site.

Measurement Position B was selected in order to assess typical amplified music sound levels within the site.

6.4 Equipment

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

Equipment	Manufacturer	Model	Serial No.	Calibration Date
Class 1 Sound Level Meter	Bruel & Kjaer	2250	2626230	28/10/2022
Preamplifier	Bruel & Kjaer	ZC-0032	21309	28/10/2022
Microphone	Bruel & Kjaer	4189	2621208	27/10/2022
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

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

6.5 Results

The results of the sound level measurements at Position A are presented on Time History Graph 1271/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.

The typical background L_{90} octave band sound level measurements at Position A with amplified music turned off are presented in the table below.

Music	$L_{90,1min}$ Sound Pressure Level (dB) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
Off	64	65	56	55	54	52	47	43	59

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 typical L_{eq} octave band sound level measurements at Position B are presented in the table below.

Music	$L_{eq,1min}$ Sound Pressure Level (dB) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
On	68	74	68	65	62	53	60	60	69
Off	66	63	56	56	54	50	50	52	60

6.6 Discussion of Results

As can be seen from Time History Graph 1271/THG1, measured sound levels at Position A did not reduce when the amplified music was turned off and did not increase when amplified music was turned back on. This is a good indication the Local Authority's requirements are achieved.

As can be seen from the table above, measured sound levels at Position B at 1m from an external speaker are L_{eq} 69dBA. This is only 9dBA above the measured ambient sound level at 1m from an external speaker and is a good indication that the amplified music levels are not excessive.

6.7 Discussion of Sound Climate

During the survey period the dominant sound sources at Position A were that of amplified music from the outdoor seating areas of the ground floor units of the Corn Exchange facing Exchange Square, frequent Metrolink tram passby's and passing pedestrians. Amplified music from the site was subjectively inaudible when turned on/off.

During the survey period the dominant sound source at Position B with amplified music on was the amplified music and with amplified music off was amplified music from the external entrance speakers of Selfridges, frequent Metrolink tram passby's and passing pedestrians.

Amplified music within the site was considered to be background music and at a level where conversations could still be had without the need to use raised voices.

It should be noted that the hotel bedroom used for measurement Position A was air conditioned and featured secondary glazing. As such, occupants should not need to open the windows for summertime cooling.

7.0 Operational Sound Assessment

7.1 Operating Hours

It is understood that the existing outdoor venue operates between 11:00 and 23:00 hours 7 days a week. Of these periods, environmental sound levels may typically be expected to be at their lowest during a weekday daytime period.

Typical L_{Aeq} octave band amplified music levels from the site are therefore assessed against the typical background L_{90} octave band sound levels measured during this period.

7.2 Background Sound Levels

The typical background L_{90} octave band sound level measurements at the nearest noise sensitive receptor with amplified music turned off are presented in the table below.

Music	$L_{90,1min}$ Sound Pressure Level (dB) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
Off	64	65	56	55	54	52	47	43	59

7.3 Sound Sources

The sound sources are limited to 8No. compact speakers mounted on trusses at approximately 3m above ground level and situated around the perimeter of the site pointing in towards the centre of the site.

7.4 External Sound Data

The typical L_{eq} octave band amplified music levels at 1m from an outdoor speaker are presented in the table below.

Music	$L_{eq,1min}$ Sound Pressure Level (dB) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
On	68	74	68	65	62	53	60	60	69

7.5 Nearest Noise Sensitive Receptors

The table below details the approximate distance between the centre of the site and the windows of the nearest noise sensitive receptor.

Nearest Noise Sensitive Receptor	Distance (m)
Existing hotel bedroom windows to the north of the site	40

7.6 Calculation

The sound pressure level radiated from the site due to outdoor speakers has been calculated using the following formula:

$$L_p = L_{p1m} + 10 \log N - 20 \log R$$

Where:

L_p is the sound pressure level at the receiver, dB;

L_{p1m} is the sound pressure level of 1No. outdoor speaker at 1m, dB;

N is the total number of outdoor speakers within the external space;

R is the distance in meters between the external space and the receiver, m.

7.7 Results

The calculated typical L_{Aeq} octave band amplified music levels from the site incident upon the windows of the nearest noise sensitive receptor are presented in the table below along with the typical background L_{90} octave band sound levels and the difference between them.

Descriptor	Sound Pressure Level (dB) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
Music at 1m L_{eq}	45	51	45	42	39	30	37	37	46
Background L_{90}	64	65	56	55	54	52	47	43	59
Difference	-19	-14	-11	-13	-15	-22	-10	-6	-13

The assessment indicates that typical L_{Aeq} octave band amplified music levels from the site are likely to achieve the Local Authority's requirement of not to exceed 5dB below typical background L_{90} octave band sound levels at the nearest noise sensitive receptor.

8.0 Conclusion

The Local Authority's acoustic requirements for the existing outdoor venue have been established.

Measurements of representative environmental sound levels at the nearest noise sensitive receptor and typical operational sound levels from the existing outdoor venue have been undertaken.

An assessment of typical operational sound levels from the existing outdoor venue to the nearest noise sensitive receptor has been undertaken.

The assessment indicates that typical operational sound levels from the existing outdoor venue are likely to achieve the Local Authority's requirement at the nearest noise sensitive receptor.

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

Robin Wood
LIGHTHOUSE ACOUSTICS