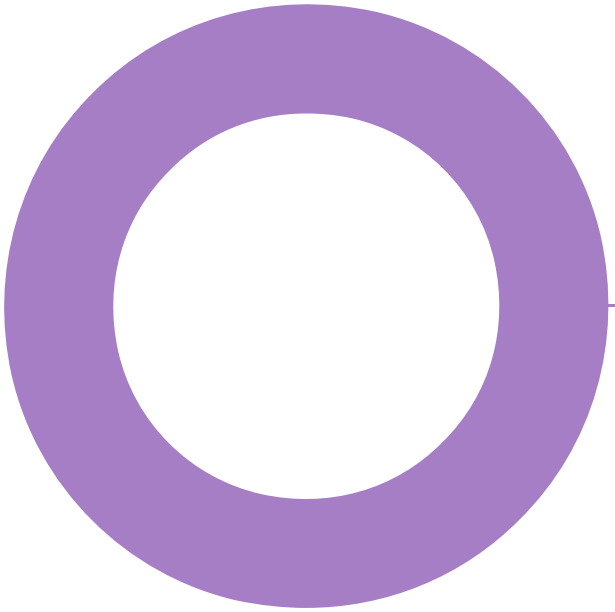
HOARE LEA

Rooftop Car Park at Victoria Exchange (former Martin House). Manchester.

LondonMetric Property PLC.

ACOUSTICS
NOISE ASSESSMENT REPORT

REVISION 9 – 30 JUNE 2026



Audit sheet.

Rev.	Date	Description of change / purpose of issue	Prepared	Reviewed	Authorised
0	20/02/2025	For issue.	SG	AP	PM
1	17/03/2025	Updated following comments.	SG	AP	PM
2	21/07/2025	Updated following additional comments and minor design changes.	SG	AP	PM
3	25/07/2025	Updated following additional comments.	SG	AM	PM
4	18/02/2026	Including rooftop noise assessment.	SG	PM	PM
5	18/02/2026	Updated following comments.	SG	PM	PM
6	17/06/2026	Updated roof layout.	SG	MW	PM
7	19/06/2026	Updated following comments.	SG	PM	PM
8	24/06/2026	Updated following further comments.	SG/AJ	PM	PM
9	30/06/2026	Updated following further comments.	SG/AJ	PM	PM

This document has been prepared for LondonMetric Property PLC only and solely for the purposes expressly defined herein. We owe no duty of care to any third parties in respect of its content. Therefore, unless expressly agreed by us in signed writing, we hereby exclude all liability to third parties, including liability for negligence, save only for liabilities that cannot be so excluded by operation of applicable law. The consequences of climate change and the effects of future changes in climatic conditions cannot be accurately predicted. This report has been based solely on the specific design assumptions and criteria stated herein.

Project number: 10/15927
Document reference: 1015927-HLE-RP-AC-Martin House noise assessment report-Rev9.docx

Contents.

Audit sheet. **2**

Executive summary. **4**

1. Introduction. **5**

2. Site and development details. **5**

3. Acoustic criteria. **6**
3.1 Local Authority planning guidance. 6
3.2 BS 4142:2014. 6
3.3 Sport England. 7

4. Existing noise climate. **7**
4.1 Noise survey. 7
4.2 Observations. 9

5. Entertainment noise. **10**
5.1 Design criteria. 10
5.2 Proposal. 10
5.3 Noise assessment. 11

6. Plant noise. **13**
6.1 Plant noise limits. 13
6.2 Attenuation measures. 13

7. Sports noise. **14**
7.1 Source noise levels. 14
7.2 Calculations. 16
7.3 Assessment. 17

8. Conclusion. **18**

Appendix A: Policy and guidance. **19**
National policy. 19
Local policy. 22
Recognised guidance. 25

Appendix B: Survey and equipment details. **27**

Appendix C: Detailed survey results. **28**

Executive summary.

Hoare Lea has been appointed to provide a noise assessment report suitable for submission with the planning application for the proposed redevelopment known as Victoria Exchange (former Martin House). The proposed development is a change of use and physical works to the rooftop of Victoria Exchange to create a Padel Tennis facility.

An environmental noise survey has been carried out between Thursday 6th February and Tuesday 11th February 2025 to determine the background and ambient sound levels representative of the closest noise-sensitive receptors to the development.

The closest receptors are the Old Brewery Gardens apartments under construction to the north, with the New Vic apartment to the south at a greater distance from the site. Old Brewery Gardens is directly adjacent to the Manchester inner Ring Road, which generates high levels of noise. It is understood that all apartments within this development are to be provided with a mechanical ventilation system with heat recovery and summer bypass. This means that windows are not required to be open to provide suitable internal conditions.

The proposed development includes new items of mechanical and electrical plant. Based on BS 4142:2014 and Manchester City Council guidance, all plant, equipment and machinery associated with the development shall be controlled to ensure that the overall rating level at 1 m from the façade of the nearest noise-sensitive receptors do not exceed 48 dB $L_{Ar,1h}$ during the daytime (07:00 to 23:00 hrs) and 45 dB $L_{Ar,15min}$ during the night-time (23:00 to 07:00 hrs). If the plant contains any tonal characteristics a further correction will be required. The existing noise levels are relatively high, so given the distance and potential for mitigation, the noise limits should be readily achievable during daytime and night-time periods.

There are five padel courts proposed on the roof. A noise model has been produced to calculate the noise levels at the closest receptors in accordance with Sport England guidance. The assessment indicates that the proposed usages are suitable for the location in terms of noise emissions, complying with recognised guidance and criteria by at least 3 dB. Two of the courts are enclosed with a lightweight tensile fabric which is assumed to be acoustically transparent. In reality, this may provide some sound reduction and therefore the sound level at the closest receptors may be further reduced.

Noise limits have been proposed for entertainment noise in line with Manchester City Council policy, specifically relating to background music proposed within the rooftop bar/seating area as well as to the courts. An assessment has been carried out including the proposed loudspeaker locations which shows that noise levels typical of background music within the rooftop areas would lead to sound levels of at least 5 dB below the existing background sound level in each octave band, as required by Manchester City Council. Separate noise limits have been provided within the proposed bar area and court areas which would lead to compliance at the closest residential receptors.

The proposals given in this report accord to the National Planning Policy Framework, Manchester City Council Guidance and relevant guidance for sport and entertainment noise.

1. Introduction.

Hoare Lea has been appointed to provide a noise assessment report suitable for submission with the planning application for the proposed redevelopment of the rooftop car park at Victoria Exchange (former Martin House).

An environmental noise survey has been carried out on site over 6 days commencing on Thursday 6th February 2025. The aim of the survey was to determine the existing sound levels around the site, with the purpose of establishing the prevalent ambient and representative background sound levels to set maximum noise egress limits for plant and machinery associated with the development, as well as sports and entertainment noise.

This report presents the findings of the noise survey, sets out the permissible maximum plant noise egress limits in accordance with BS 4142:2014 guidance, sets out the maximum entertainment noise levels in line with Manchester City Council requirements, and assesses the potential noise generated by the proposed sports usages and loudspeakers.

2. Site and development details.

Martin House is an existing office building which forms part of the Manchester Arena complex. The proposal is to repurpose the building into leisure usages including a rooftop amenity space proposed to incorporate padel courts and a bar.

The proposed operating hours are as below, noting that the loudspeakers associated with the courts and the rooftop bar are not to be operational for the full opening hours:

- Opening Hours: 07:00 – 23:00

There will be no entertainment noise/music within the bar area other than between the hours listed below:
- Sunday-Wednesday: 07:00 – 22:00
- Thursday-Saturday: 07:00 – 22:30

The site is located within a relatively noisy area with heavy traffic flow along Trinity Way (the Manchester inner Ring Road), as well as pedestrians and activity noise associated with Manchester Victoria railway station and the AO Arena.

The closest noise-sensitive receptors to the proposed development are the apartments under construction approximately 30 metres to the north, known as Old Brewery Gardens. The other nearby noise-sensitive receptors are the existing New Vic apartments, approximately 80 metres to the south.

The closest residential receptors, Old Brewery Gardens, are directly adjacent to the Manchester inner Ring Road, which generates high levels of noise. Based on the planning submission for this development (planning reference *118831/FO/2018*), all the apartments within this development are to be provided with a mechanical ventilation system with heat recovery and summer bypass (from Hilson Moran report reference *24173/MEP/CR/RP01/02*). This means that suitable internal conditions are achieved with windows closed. On this basis, the risk of complaint from future occupants is considered low.

The site location is presented within Figure 1.

The development has been through several design iterations. The latest amendments include moving the bar and court areas significantly back from the northern elevation. This provides additional distance between the noise sources and the sensitive receptors, reducing the noise levels by approximately 2 dB compared with the previous design. The assessment is presented in Sections 5 and 7.



Figure 1: Aerial photograph indicating nearby noise-sensitive receptors (courtesy of Google Earth).

3. Acoustic criteria.

3.1 Local Authority planning guidance.

3.1.1 Plant noise.

Criteria for plant noise egress are provided in the Manchester City Council (MCC) "Planning & Noise Technical Guidance (October 2022)" document.

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."

3.1.2 Entertainment noise.

MCC stipulate the following with regards to the control of noise emissions from amplified music/entertainment sound:

'Entertainment noise (LAeq,5min) should be controlled to 5dB below the typical background noise level (LA90) in each octave band at the nearest noise sensitive location'.

3.1.3 Sports activity noise.

MCC have no specific guidance on noise from sports activities. On this basis, guidance is taken from other sources.

3.2 BS 4142:2014.

Noise egress from any plant and machinery associated with the development should not cause disturbance at nearby noise-sensitive receptors.

The rating level for all new plant and machinery should be no more than equal to the existing representative background sound levels.

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

Where the Rating Level exceeds the background, the level of impact increases as shown below.

Comparison with background	Assessment
+ 0 dB or below measured background	Low impact
+ 5 dB	Adverse impact
+ 10 dB or more above measured background	Significant adverse impact

Table 1: BS 4142 assessment criteria.

3.3 Sport England.

There is no specific recognised guidance on padel or similar activities. On this basis, reference has been made to the Sport England "Artificial Grass Pitch (AGP) Acoustics - Planning Implications" document for the padel courts. The main noise source present on typical AGPs is noise from conversation/shouting associated with the users, as well as ball impacts, whistles etc depending on the usage. This is likely to be similar for padel and therefore the document is considered to provide a suitable assessment methodology.

The document states that the AGP noise can be compared with the existing noise climate. It suggests the following:

"Where noise from the new source does not exceed the existing noise climate the increase in noise will be no more than 3 decibels. This is the minimum that can normally be perceived. The noise levels are both to be measured using the L_{Aeq} parameter over the same time period".

As an alternative assessment approach, the document gives a fixed design target of 50 dB $L_{Aeq,1h}$ external to residential properties and within external living areas during daytime and evening periods. This is independent of the existing noise climate in the area.

Both approaches have been considered within the assessment.

4. Existing noise climate.

4.1 Noise survey.

An environmental noise survey has been carried out on site over a period of six days between Thursday 6th February and Wednesday 12th February 2025. During this time, long-term unattended measurements were carried out. Details of the equipment used, and weather conditions are presented within Appendix B.

The survey measurement position and main noise sources around the site are summarised in the annotated aerial photograph presented in Figure 2.



Figure 2: Aerial photograph indicating measurement position (courtesy of Google Earth).

The results of the unattended noise measurements are presented in Table 2. A graph showing the results from the unattended logging survey are provided in Appendix C.

Date	Measured ambient sound levels (dB)	
	Daytime (07:00 - 23:00), $L_{Aeq,\ 16hr}$	Night (23:00 - 07:00), $L_{Aeq,\ 8hr}$
06/02/2025	57 [1]	55
07/02/2025	58 [2]	55
08/02/2025	57 [2]	54
09/02/2025	58	54
10/02/2025	61	54
11/02/2025	62 [1]	-
Overall	60	55

Notes:
[1] Measurement not made over full period.
[2] Some periods have been excluded due to the operation of nearby mechanical plant.

Table 2: Summary of ambient sound levels measured during unattended measurements at logger position.

The Sport England guidance gives the design target in terms of hourly ambient sound levels ($L_{Aeq,1h}$). For comparison with the existing sound levels, the range of hourly values as measured were 51 – 65 dB $L_{Aeq,1h,}$ with the lowest value occurring between 06:00-07:00 on a Sunday morning.

In line with BS 4142:2014, for the purpose of analysis and establishing representative background sound levels during the periods of interest, the background sound levels have been quantified using statistical analysis from the continuous logging measurements. These are presented in Appendix C.

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

- Daytime (07:00 - 23:00) - 53 dB $L_{A90,15min}$
- Night-time (23:00 - 07:00) - 50 dB $L_{A90,15min}$

The octave band values for these overall levels are presented in Table 3.

Background sound levels	Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
Daytime / evening (07:00 - 23:00), $L_{90,15min}$ (dB)	57	53	49	48	50	45	34	25
Night-time (23:00 - 07:00), $L_{90,15min}$ (dB)	53	49	45	45	47	43	33	25

Table 3: Octave band representative background sound levels.

4.2 Observations.

The dominant noise source on site was noted to be due to road traffic along Trinity Way. There were no other notable noise sources whilst on site. It is worth noting that the measurement position was slightly set back from the edge of the building, with some screening provided by the building parapet and nearby staircore. The survey is therefore considered to be at a quieter location than would be expected at the façades of the nearest residents, which are directly overlooking Trinity Way. This is discussed within the assessment.

There is existing plant on the roof of the building, however the noise monitoring equipment was positioned such that it was generally screened from the nearby operating plant. Subjective observations during installation and collection found the plant noise was not a contributing factor above the traffic noise at the monitoring location. The time history noise data also shows diurnal variation in noise as would be expected from environmental sources with no significant interference from plant sources, with the exception of periods on 7th and 8th February which have been excluded from the assessment.

5. Entertainment noise.

5.1 Design criteria.

The rooftop terrace area is proposed to incorporate loudspeakers. These are to play background music which supports the use of the area. In line with MCC requirements, the noise levels are to be limited to the levels given in Table 4 at the closest noise-sensitive receptors to ensure there is no impact on nearby residential properties. These limits are equal to 5 dB below the existing background sound level in each octave band at the closest receptors.

Amplified sound noise limits	Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
Daytime / evening (07:00 - 23:00), L_{eq} (dB)	52	48	44	43	45	40	29	20
Night (23:00 - 07:00), L_{eq} (dB)	48	44	40	40	42	38	28	20

Table 4: Amplified sound noise limits at nearby residential receptors.

5.2 Proposal.

The proposal is to include a total of nine loudspeakers within the roof area: four within the bar/seating area, and one in each of the five courts on the net line. The locations of these are presented in Figure 3, and these are all proposed for background music playback only.

Each of the loudspeakers to the courts are proposed to be mounted at a height of 3500 mm above floor level and directed down at an angle of approximately 20°. The loudspeakers in the bar area are to be level with the rim of the surrounding bar units and directed down at an angle of approximately 20°.

The proposed loudspeakers are as below:

- 4 no. loudspeakers to bar/seating area: TOA F08 8" 2-way speakers
- 5 no. loudspeakers to courts: TOA F05 5” 2-way speakers

Directivity data for these specific loudspeaker models is not available. On this basis, directivity data for comparable 8" and 5” 2-way speakers have been used in the calculations.

The calculations include the following mitigation, proposed as part of the development:

- Screens around the padel courts as described in Section 7, to a height of 3 m above roof level.
- The bar and WC structures, to a height of approximately 3 m above roof level.

There is a canopy over the bar area which may provide some acoustic benefit, but as there is no sound insulation data available for the proposed material, this has been assumed to be acoustically transparent within the calculations. This is considered to provide a worst-case assessment for the bar loudspeakers in particular.

The development has been through several design iterations. The latest amendments include moving the bar and court areas significantly back from the northern elevation. This provides additional distance between the noise sources and the sensitive receptors, reducing the noise levels by approximately 2 dB compared with the previous design.



Figure 3: Proposed roof layout showing loudspeaker locations.

5.3 Noise assessment.

To establish the maximum noise levels permissible from the loudspeakers whilst complying with the noise limits presented in Table 4, a noise model of the site has been developed, including the loudspeakers, nearby noise-sensitive receptors and the existing and proposed structures.

5.3.1 Courts.

For the courts, there is only one loudspeaker per court, and therefore the sound level will reduce with distance from the speaker within each court. It is therefore considered appropriate to provide a noise limit at a given distance from the loudspeaker in these instances (3 m is provided). The maximum calculated sound levels are presented in Table 5.

Period	Courts
Daytime (07:00-23:00)	70 dB $L_{Aeq,T}$ @ 3 m from speaker 76 dB @ 63 Hz 72 dB @ 125 Hz
Night-time (23:00-07:00) [1]	67 dB $L_{Aeq,T}$ @ 3 m from speaker 72 dB @ 63 Hz 68 dB @ 125 Hz
Notes: [1] The loudspeakers within the padel courts are not proposed to play music before 07:00 or after 23:00, and therefore compliance with the night-time limits is not required.	

Table 5: Maximum permissible sound levels within the courts to comply with noise limits at closest receptors.

5.3.2 Bar area.

As the bar/seating area includes multiple loudspeakers, the sound level would be relatively uniform, and a maximum sound level within this zone can be established. The maximum permissible sound levels calculated from the modelling are provided in Table 6 .

Period	Bar/seating area
Daytime (07:00-23:00)	68 – 73 dB $L_{Aeq,T}$ 78 dB @ 63 Hz 73 dB @ 125 Hz
Night-time (23:00-07:00) [1]	65 – 70 dB $L_{Aeq,T}$ 74 dB @ 63 Hz 69 dB @ 125 Hz
Notes: [1] The loudspeakers within the bar area are not proposed to play music before 07:00 or after 23:00, and therefore compliance with the night-time limits is not required.	

Table 6: Maximum permissible sound levels within bar/seating area to comply with noise limits at closest receptors.

5.3.3 Discussion.

The maximum levels are given in accordance with Manchester City Council planning policy. Achieving the limits given in Tables 6 and 7 will satisfy the Manchester City Council requirement that entertainment noise should be 5 dB below background in each octave band at the closest receptor.To put these noise levels into context, this would be considered a typical sound level experienced in a bar with background music. With these sound levels, normal/slightly raised speech would typically be required for conversation. The limits are significantly below the sound level in which elevated speech/shouting would be required to communicate, as would be expected in a DJ / club setting, or a live music venue.

These noise levels will be sufficient to enable padel to be played and the operator to provide entertainment music whilst meeting Manchester City Council requirements.

The following is a suggested planning condition:

'No amplified sound or any music shall be produced or played in any part of external areas in the development, other than in accordance with a scheme detailing the levels at which any music shall be played and the hours during which it shall be played which has been submitted to and approved in writing by the City Council as local planning authority. '

6. Plant noise.

6.1 Plant noise limits.

Based on the criteria set out in Section 3 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 7 at 1 m from the nearest noise-sensitive receptors.

Time of day	Maximum sound pressure level at 1 m from the nearest noise-sensitive receptors (dB $L_{Aeq,Tr}$) *
07:00 to 23:00 hours	48
23:00 to 07:00 hours	45
*If plant noise contains any tonal or impulsive characteristics, a further correction shall be applied to the levels set out above in accordance with BS 4142:2014.	

Table 7: Maximum permissible sound pressure levels at 1 m from the nearest noise-sensitive receptors.

6.2 Attenuation measures.

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.

The existing noise levels are relatively high, so given the distance and potential for mitigation, the noise limits should be readily achievable during daytime and night-time periods.

7. Sports noise.

7.1 Source noise levels.

Within the Sport England document, there is a recommended sound level to use for AGP assessment. This is a sound level of 58 dB $L_{Aeq,T}$ at a distance of 10 metres. No spectrum is provided within the document, so this would have to be assumed based on other data.

Although it has not been possible to measure padel activity directly for this development, publicly available noise measurement data has been used for comparison against the Sport England sound levels. The data reviewed is summarised below:

Fulham.

Within the planning application for All Star Tennis King George's Park, Neville Gill Close, London, SW18 2G, Sustainable Acoustics Limited have produced a report for proposal padel and tennis facilities (report reference *22-0029-0 R01a*). The measurements used within the report were carried out at Hurlingham Club, Fulham, London SW6 3PR.

A summary of the measured padel activity is presented below:

Position reference	Position description	Measured sound level, dB $L_{Aeq,T}$
1	5 m from open side	60
1	5 m from open side	63
1	5 m from open side	66
2	5 m from closed end	54
2	5 m from closed end	53
2	5 m from closed end	54

Table 8: Summary of sound levels measured by Sustainable Acoustics Limited at Hurlingham Club, Fulham (from report reference *22-0029-0 R01*).

The sound level spectrum has also been presented as below:

Frequency	63	125	250	500	1k	2k	4k	8k	Hz
Sound pressure level at 5 m	59	59	61	61	65	57	52	45	dB

Table 9: Padel activity sound level spectrum measured by Sustainable Acoustics Limited at Hurlingham Club, Fulham (from report reference *22-0029-0 R01*).

The following was noted within the report:

"the character of sound from Padel is not dissimilar from tennis; whilst there are more impulsive impact sounds due to some impacts on the glass surrounding the court, the ball has a lower pressure, and the impacts are quieter than the sound of a tennis racquet hitting a ball."

In addition, *"the frequency spectrum of Padel and tennis is very similar."*

Earls Court.

Within the planning application for Land Located at the rear of Greenwood Place, Kentish Town, London NW5 1JU, Spratt and Hamer Limited have produced a report for proposed padel courts (report reference *22413E V4*). The measurements used within the report were carried out at Padel Social Club, Earls Court, London SW6 1TT.

A summary of the measured padel activity is presented below. It is worth noting that these levels included the contribution from background music, and on this basis are considered to be very conservative considering just padel activity.

Position reference	Position description	Measured sound level, dB $L_{Aeq,T}$
2	1.5 m from courts 3 & 4 side boundaries. Padel activity and background music.	64
3	1.5 m from court 3 rear boundary (glass) & court 4 side boundary. Padel activity and background music.	59

Table 10: Summary of sound levels measured by Spratt and Hamer Limited at Padel Social Club, Earls Court (from report reference *22413E V4*).

As presented above, the measured values include activity from two courts operating simultaneously, so these sound levels should be reduced by 3 dB to assess a single court. The report notes that they were *"good level games in both courts with continuous play and sporadic raised voices."*

Manchester.

Within the planning application for Premiere House, Renaissance Hotel, Blackfriars Street, Manchester M3 2GQ, Fisher Acoustics Limited have produced a report for proposed padel courts (report reference *PR0657-Rep06-MPF*). The measurements used within the report were carried out at an existing commercial padel court (location unknown).

A summary of the measured padel activity is presented below:

Position reference	Position description	Measured sound level, dB $L_{Aeq,T}$
1	15 m from glazed ends of courts	51
2	8.5 m from open sides of closest court	55
2	8.5 m from open sides of closest court	59
2	8.5 m from open sides of closest court	52

Table 11: Summary of sound levels measured by Fisher Acoustics Limited at commercial padel court (from report reference *PR0657-Rep06-MPF*).

The following was noted within the report:

"The principal noise source from the padel courts in question was the impact of the padel ball on the bats. In addition, during the first male doubles game, the raised voices of the players contributed significantly to the measured noise levels. Occasional impacts of the padel ball on the glazed perimeter screens around the courts can be heard, but these impacts were not considered to be a significant contributor to the measured noise levels."

These measurements carried out were of multiple courts operating simultaneously. As a worst-case it is assumed that only the closest court is contributing to the noise levels given.

Solihull.

The report above also presents padel sound level measurements carried out by others (within '*Solihull Arden Club; Environmental Noise Assessment of Proposed Padel Courts, dated 20 March 2019, Solihull Metropolitan Borough Council planning reference 'PL/2019/01566/PPFL'*).

The results are summarised below:

Position reference	Position description	Measured sound level, dB $L_{Aeq,T}$
1	5 m from court	60
2	10 m from court	56
3	20 m from court	51
4	30 m from court	49
5	40 m from court	46

Table 12: Summary of sound levels measured at Solihull Arden Club (planning reference *PL/2019/01566/PPFL*).

7.2 Calculations.

7.2.1 Methodology.

A noise model has been produced in CadnaA. This uses the principles of ISO 9613-2 to calculate the sound level at the closest residential façades to the proposed padel courts. All noise sources have been assumed to be at a height of 1.5 m above roof level.

A total of 5 padel courts have been modelled based on the current proposals, with all courts assumed to be operational simultaneously. Although two of the proposed courts are to be partially enclosed, the sound insulation performance of the lightweight tensile fabric is unknown. On this basis, the enclosure has been assumed to be acoustically transparent as a conservative assessment.

The padel courts are to include a 3-metre-high solid screen to the two short ends, that return round the long sides to approximately 4 metres, as is typical for a padel court. The screening around the remainder of these courts is assumed to be acoustically transparent.

7.2.2 Source noise levels.

Various padel measurements have been carried out by others, as reviewed in Section 7.1. As the measurements have been undertaken at several different distances from the court, it is difficult for them to be directly compared. On this basis, a noise model of a typical padel court has been produced to determine the attenuation due to distance at each of the distances presented (1.5 m, 5 m, 8.5 m, 10 m, 15 m, 20 m, 30 m, and 40 m).

The levels have been corrected to a distance of 5 m for direct comparison, as presented below:

Measurement source	Measured sound levels corrected to 5 m distance, dB $L_{Aeq,T}$
Sport England guidance	62
Hurlingham Club, Fulham	53 – 66
Padel Social Club, Earls Court	52 – 57
Commercial padel court (Manchester)	55 – 62
Solihull Arden Club	59 – 60

Table 13: Summary of measured padel sound levels, corrected to 5 m.

For the purposes of the assessment, a sound level of 62 dB $L_{Aeq,T}$ at 5 metres has been assumed. This is considered to provide a conservative assessment based on the survey data reviewed. The sound spectrum used within the assessment is from the Hurlingham Club, Fulham measurements, as presented in Table 9.

It should be noted that padel operator for the proposed site is Padel Social Club. The measurements at the Earls Court site are therefore considered to be the most representative of activity within the proposed development, and these measurements included a noise contribution from the background music. The

assessment conducted therefore uses source sound levels that are more than 5 dB higher than if the Earls Court data was used in isolation.

7.2.3 Results.

A section through the noise model, showing the propagation of sound between the courts and the closest residences to the north has been presented within Figure 4.

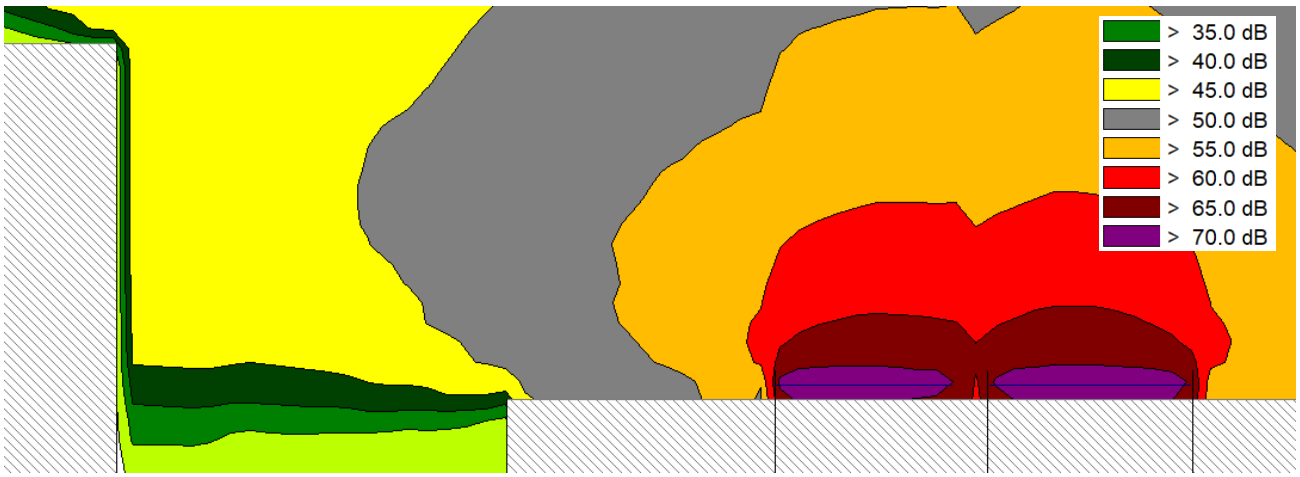


Figure 4: Section through CadnaA noise model showing propagation of sound between courts and closest residences.

Based on the noise model produced, the sound level at the worst-affected residential façade is 47 dB $L_{Aeq,T}$.

7.3 Assessment.

Sport England guidance recommends comparing the calculated sound level with the measured ambient sound level. This approach is considered more appropriate than using the fixed limit, due to the high existing sound levels present at the site. The assessment is presented below.

Parameter	Sound level	Comments
Calculated external sound level, dB $L_{Aeq,T}$	47	Based on CadnaA noise model
Alternative Sport England criteria, dB $L_{Aeq,1h}$	51 to 65	Hourly ambient sound level – 06:00-00:00
Difference, dB	-4 to -18	Meets criteria

Table 14: Sport England assessment – comparison with existing hourly sound levels.

As an alternative approach, Sport England recommends a sound level of no higher than 50 dB $L_{Aeq,T}$, external to residential properties. The assessment is presented below on this basis.

Parameter	Sound level	Comments
Calculated external sound level, dB $L_{Aeq,T}$	47	Based on CadnaA noise model
Sport England criteria, dB $L_{Aeq,1h}$	50	From World Health Organisation guidelines
Difference, dB	-3	Meets criteria

Table 15: Sport England assessment – based on fixed limit.

As presented above, the calculations undertaken show that the target criteria as detailed within the Sport England document are anticipated to be achieved, considering both assessment approaches.

It should also be noted that the survey position was set back from the main road, and therefore is likely to have captured lower sound levels than would be expected at the closest residential receptors, which are located

directly overlooking the main road. The impact would therefore be expected to reduce further based on the actual sound levels at the receptor location.

8. Conclusion.

Hoare Lea has carried out a noise assessment for the proposed redevelopment of Martin House, Manchester.

The proposed development includes new items of mechanical and electrical plant. Based on BS 4142:2014 and Manchester City Council guidance, all plant, equipment and machinery associated with the development shall be controlled to ensure that the overall rating level at 1 m from the façade of the nearest noise-sensitive receptors do not exceed 48 dB $L_{Ar,1h}$ during the daytime (07:00 to 23:00 hrs) and 45 dB $L_{Ar,15min}$ during the night-time (23:00 to 07:00 hrs). If the plant contains any tonal characteristics a further correction will be required. These limits are not especially onerous due to the high external sound levels local to the site, the distance to the receptors, and the potential for mitigation, so should be readily achievable during daytime and night-time periods.

There are a number of padel courts proposed on the roof. An assessment has been carried out of the proposed usages in accordance with Sport England guidance. The assessment indicates that the proposed usages are suitable for the location in terms of noise emissions. Two of the courts are enclosed with a lightweight tensile fabric which is assumed to be acoustically transparent. In reality, this may provide some sound reduction and therefore the sound level at the closest receptors may be further reduced.

Criteria have been proposed for entertainment noise in line with Manchester City Council policy, specifically relating to any amplified music that is proposed within the rooftop bar and court areas. Separate noise limits have been set within the bar and court areas to ensure the criteria are achieved at the closest receptors. These limits allow a reasonable level of background music and therefore are not considered to be overly restrictive for the development.

Appendix A: Policy and guidance.

National policy.

Noise Policy Statement for England.

The *Noise Policy Statement for England* (NPSE) advises that noise impacts should be assessed on the basis of adverse and significant adverse effects but does not provide any specific guidance on assessment methods or noise limits.

The NPSE introduces the concepts summarised in Table that can be applied when considering the significance of noise impacts, which are applied by the World Health Organization.

The document advises that it is not possible to have '*a single objective noise based measure.... that is applicable to all sources of noise in all situations*'. It further advises that the sound level at which an adverse effect occurs is likely to be different for different noise sources, for different receptors at different times.

Effect Level 1	Description
No Observed Effect Level (NOEL)	This is the noise level below which no effect can be detected. In simple terms, below this level of noise, there is no detectable effect on health and quality of life due to the noise being assessed.
Lowest Observed Adverse Effect Level (LOAEL)	This is the level of noise above which adverse effects on health and quality of life can be detected.
Significant Observed Adverse Effect Level (SOAEL)	This is the level of noise above which significant adverse effects on health and quality of life occur.

Table A1: NPSE observed effect levels.

National Planning Policy Framework.

National Planning Policy Framework (NPPF) sets out the Government's planning policies and how these are expected to be applied. In relation to noise and vibration, NPPF section 15 paragraphs 170, 180 and 182 are presented below:

'*187. Planning policies and decisions should contribute to and enhance the natural and local environment by:*

e. preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability'

'*198. Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:*

1. *mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;*
2. *identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason;*

and

3. *limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.*

'*200. Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs).*

Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed.'

Planning Practice Guidance.
Online Planning Practice Guidance (PPG) has been published to provide greater details in relation to the relevance of noise to the planning process following the introduction of the NPPF and NPSE.

This guidance states, under the heading *'How to Determine the Noise Impact'*, that the following should be considered by Local Authorities:

- *'whether or not a significant adverse effect is occurring or likely to occur;*
- *whether or not an adverse effect is occurring or likely to occur; and*
- *whether or not a good standard of amenity can be achieved.'*

In line with NPSE, this includes identifying where noise exposure is above or below the significant observed adverse effect level and the lowest observed adverse effect level for a given situation during the operation of the Proposed Development.

Further guidance on each of the various observed effect levels set out in the NPSE is provided in the table detailed in the section headed 'How to Recognise when Noise could be a concern?' which is reproduced in Table.

It is important to note that no specific noise parameters are defined in the text or target noise levels provided. Under the heading 'What factors influence whether noise could be a Concern?', the subjective nature of noise is discussed. It is stated that there is no simple relationship between noise levels and the impact on those affected. This depends on how various factors combine in particular situations.

In respect of mixed-use developments, the following guidance is provided:

'When proposed developments could include activities that would be covered by the licensing regime, local planning authorities should consider whether the potential for adverse noise impacts will be addressed through licensing controls (including license conditions). Local planning authorities should not however presume that license conditions will provide for noise management in all instances and should liaise with the licensing authority.'

Perception	Example of outcomes	Increasing effect level	Action
Not noticeable	No effect	No Observed Effect	No specific measures required
Noticeable and not Intrusive	Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.		No specific measures required
		Lowest Observed Adverse Effect Level	
Noticeable and Intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; closing windows for some of the time because of the noise. Potential for non-awakening sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
		Significant Observed Adverse Effect Level	
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. having to keep windows closed most of the time, avoiding certain activities during periods of intrusion. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect Level	Avoid
Noticeable and disruptive	Extensive and regular changes in behaviour and/or inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

Table A2: PPG observed effects.

Local policy.

Manchester Core Strategy.

Manchester's Local Development Framework Core Strategy Development Plan Document was adopted in 2012. The document outlines the Council's vision for Manchester in 2027 and includes planning policies to be followed within the Manchester City Council area. The document includes two policies relating to noise and this development. The key paragraphs are presented below:

Policy SP1
The key spatial principles which will guide the strategic development of Manchester to 2027 are:

- *The City is covered by regeneration areas including the City Centre. All development should have regard to the character, issues and strategy for each regeneration area as described in the North, East, Central and South Manchester and Wythenshawe Strategic Regeneration Frameworks and the Manchester City Centre Strategic Plan.*

Development in all parts of the City should make a positive contribution to neighbourhoods of choice including:

- *creating well designed places that enhance or create character.*
- *making a positive contribution to the health, safety and wellbeing of residents*
- *considering the needs of all members of the community regardless of age, gender, disability, sexuality, religion, culture, ethnicity or income.*
- *protect and enhance the built and natural environment.*

Policy DM1
All development should have regard to the following specific issues for which more detailed guidance may be given within a supplementary planning document:

- *Impact on the surrounding areas in terms of the design, scale and appearance of the proposed development. Development should have regard to the character of the surrounding area.*
- *Effects on amenity, including privacy, light, noise, vibration, air quality, odours, litter, vermin, birds, road safety and traffic generation. This could also include proposals which would be sensitive to existing environmental conditions, such as noise.*
- *Design for health.*

Unitary Development Plan for the City of Manchester.

Although the Unitary Development Plan for the City of Manchester (1995) has been superseded by the Manchester Core Strategy, some policies have been retained. One saved policy relates to noise and the key paragraphs are presented below:

Policy DC26
The Council intends to use the development control process to reduce the impact of noise on people living and working in, or visiting, the City. In giving effect to this intention, the Council will consider both:

a. the effect of new development proposals which are likely to be generators of noise; and

b. the implications of new development being exposed to existing noise sources which are effectively outside planning control.

Developments likely to result in unacceptably high levels of noises will not be permitted:

a. in residential areas;

b. near schools, hospitals, nursing homes and similar institutions;

c. near open land used frequently for recreational purposes.

The Council will control noise levels by requiring, where necessary, high levels of noise insulation in new development as well as noise barriers where this is appropriate.

Manchester City Council Noise and Planning Technical Guidance.
The Manchester City Council have produced supplementary technical guidance on noise and planning, released in 2022. This considered assessment methodologies and criteria for various aspects of noise within planning. The key paragraphs in relation to the proposed development are presented below:

3.7.1.2 Entertainment Venues
A planning application for a new entertainment venue that is structurally detached from other building uses should demonstrate that music noise from the proposal will not be 'audible' in nearby residential properties, assuming that the residential properties in question have their windows open. The criterion here is:

'Entertainment noise (LAeq,5min) should be controlled to 5dB below the typical background noise level (LA90) in each octave band at the nearest noise sensitive location'.

In order to control music noise levels so as not to exceed any agreed maximum permissible operating levels, as a last resort, a suitable noise limiting device may be necessary to install, in addition to structural acoustic treatments such as uprated lobby systems and size, location and fixing of loudspeakers.

3.7.1.5 Noise and Vibration from Fixed Plant / Equipment
Noise from fixed plant, equipment or machinery can be very annoying and disruptive to people living nearby particularly where that item involved emits a noise with impulsive or tonal characteristics.

Many of the noise complaints Environmental Health receive about noise from plant, equipment and machinery specifically concern the character of the noise emitted. Any noise assessment needs to consider not only the overall level of noise emitted but also its particular characteristics. The noise assessment should be based on BS 4142: 2014 and any application for fixed plant, equipment or machinery must demonstrate that:

'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 (LAeq) below the typical background (LA90) level at the nearest noise sensitive location'.

By designing the sound pressure level of any plant items to generate a noise impact of at least 5dB below the existing background level, any plant noise impact should be of a negligible level which should not give rise to complaints from users or occupiers of existing noise-sensitive usages.

Past experience has shown that this criterion can be readily achieved. Where available, product specification data for new items should be submitted with the acoustic report. Consultants should be using these to compare with data from the noise survey, and propose mitigation where the levels are above those specified in the criterion. Where this information is not available a consultant may choose to measure the noise levels generated by the equipment in question where the equipment has already been installed elsewhere (and in accordance with the guidance in BS 4142).

Where fixed plant, equipment or machinery is attached to a building the vibration caused by it can pass through the building structure and cause structure borne noise elsewhere in the building. Where it is to be installed in or on a building containing a noise sensitive use structure borne noise should be considered in the noise assessment and adequate control measures should be proposed. An example of where this would be required is where there is a proposal to install fixed plant or equipment on the roof of a residential apartment block.

5.1.2 Noise generated within the development
The existing and expected noise source/s should first be identified and the following procedures should be applied:

1) select metrics to use for measuring or predicting noise levels (e.g. LAeq,T)

2) assess effects of topography and other features, such as noise screens or reflecting surfaces.

3) measure or predict noise levels at strategic points. In some complex situations it might be beneficial to produce a contour map of external noise levels.

4) if appropriate, assess noise levels due to user activities around the development.

The levels of existing noise and noise expected in the foreseeable future should be based on measurement where practicable, or may be predicted if there is reliable information.

5.2 Assessing noise

The following information MUST be included in all acoustic reports:

- *A statement of the reason for and scope of the report.*
- *Details of the proposed development to which the report relates.*
- *A location and development plan.*
- *A description of the area and environment surrounding the development site*
- *The methodology used to carry out the noise survey including the location of any noise monitoring locations, the equipment used and details of its last accredited calibration, and the weather conditions at the time the survey was carried out*
- *Full table of results.*
- *Assessment of the results in accordance to the relevant standards and policies.*
- *Recommendations for noise control measures if needed.*
- *Full calculations of the noise reductions expected to support any suggested noise control measures.*

5.3.1.7 Plant and Equipment

Noise from external plant, equipment or servicing items are assessed when determining planning applications. Typical equipment in both commercial and residential developments includes items such as air conditioning plant, retail refrigeration plant or lift motors.

Industrial developments are much more varied with the types of plant and equipment being entirely related to the industry in question.

The design aim here should be to meet the criterion in section 3.6.1.5.1. Consideration should initially be given to selecting the most low noise emitting models of plant and equipment possible. If this is not feasible, then it may be advisable to consider relocating noisy plant and equipment to a less noise sensitive area of the site and/or away from multiple reflecting surfaces.

It may also be possible to erect acoustic shielding around any necessary plant and equipment to contain noise and prevent it causing problems off-site. Some equipment may require additional acoustic mitigation measures to control the impacts from tonal noise or intermittent operation.

The use of any plant and equipment overnight usually causes an increase in noise sensitivity, so it may be advisable to limit use during night time periods if possible.

Consideration of the above measures at an early stage of the planning process is likely to progress an application more swiftly.

Recognised guidance.

BS 4142: 2014 Methods for rating and assessing industrial and commercial sound.
Current Government advice to Local Planning Authorities in both England and Wales refers to British Standard 4142:2014 (BS 4142) as being the appropriate guidance for assessing commercial operations and fixed building services plant noise. The British Standard provides an objective method for rating the significance of impact from industrial and commercial operations. It describes a means of determining sound levels from fixed plant installations and determining the background sound levels that prevail on a site.

The assessment of the impacts is based on the subtraction of the pre-existing background sound level ($L_{A90,T}$) from the rating level ($L_{Ar,Tr}$).

The standard does not give a definitive method for determining the background sound level but instead, as a commentary, states that *"the objective is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during particular time periods"*.

Clause 8.1.4, which discusses the monitoring duration, states *"there is no "single" background sound level as this is a fluctuating parameter. However, the background sound level used for the assessment should be representative of the period being assessed."* As a note to this clause the following commentary is given on obtaining a representative backgrounds sound level:

"To obtain a representative background sound level a series of either sequential or disaggregated measurements ought to be carried out for the period(s) of interest, possibly on more than one occasion. A representative level ought to account for the range of background sound levels and ought not automatically to be assumed to be either the minimum or modal value."

The rating level is defined objectively as the specific source noise level in question (either measured or predicted) with graduated corrections for tonality (up to +6 dB(A)), impulsivity (up to +9 dB(A)), intermittency (+3 dB(A)) and other sound characteristics (+3 dB(A)) which may be determined either subjectively or objectively, if necessary.

The background sound level is subtracted from the rating level. The following is considered when evaluating the potential impact:

- A difference of around +10 dB is likely to be an indication of a significant adverse impact, depending on context;
- A difference of around +5 dB is likely to be an indication of an adverse impact, depending on context; and
- A difference of +0 dB or less is an indication of the specific sound source having a low impact, depending on the context.

It also states '*where background sound levels and rating levels are low, absolute levels might be as, or more, relevant that the margin by which the rating level exceeds the background. This is especially true at night.*'.

Sport England Design Guidance Note: Artificial Grass Pitch (AGP) Acoustics-Planning Implications.

Sport England published a document in 2015, specifically considering planning and artificial grass pitches. The document states, *"it is important that the potential for disturbance to neighbours is considered at an early stage in the planning and design of the AGP"* and that *"planning policies and decisions should aim to avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development"*. On this basis, it is considered appropriate to carry out an assessment of the noise from the proposed padel courts at the nearby residences.

The document presents a suitable free-field noise level to use as the basis for assessment, based on the results of multiple noise surveys undertaken. This is presented below.

- Source noise level: 58 dB $L_{Aeq,1hr}$ at 10 m

Suitable noise criteria are also discussed, with guidance taken from the WHO Guidelines for Community Noise. The recommended noise criterion is to achieve 50 dB $L_{Aeq,1h}$ external to residential properties and within

external living areas during daytime and evening periods. This is independent of the existing external noise level, and on this basis, it is implied that this limit would apply in all cases, including in quiet environments.

The Sport England guidance states, *"where a site for a proposed pitch is surrounded by dwellings at high level e.g. blocks of flats, the evidence that noise levels increase at greater heights should be carefully considered"*. It goes on to suggest noise modelling is carried out to ensure the change of sound level at different heights, and any reflections are considered.

As an alternative assessment approach, the document states that the AGP noise could be compared with the existing noise climate. It suggests that *"where noise from the new source does not exceed the existing noise climate the increase in noise will be no more than 3 decibels. This is the minimum that can normally be perceived. The noise levels are both to be measured using the L_{Aeq} parameter over the same time period"*.

Appendix B: Survey and equipment details.

Equipment details.

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.

Description	Model	Serial Number	Calibration Date
Sound Level Meter Microphone Pre-amplifier	Rion Type NL-52 Rion Type UC-59 Rion Type NH-25	00732162 16798 32190	08/03/2024
Sound Calibrator	Rion Type NC-74	34172703	05/08/2024

Table B1: Equipment used during environmental noise survey.

Weather information.

Weather reports for the area indicate that temperatures ranged between 1 °C to 10 °C. Wind speeds were low and there were no known periods of rain.

The measured data is therefore considered suitable as being representative of typical conditions.

Appendix C: Detailed survey results.

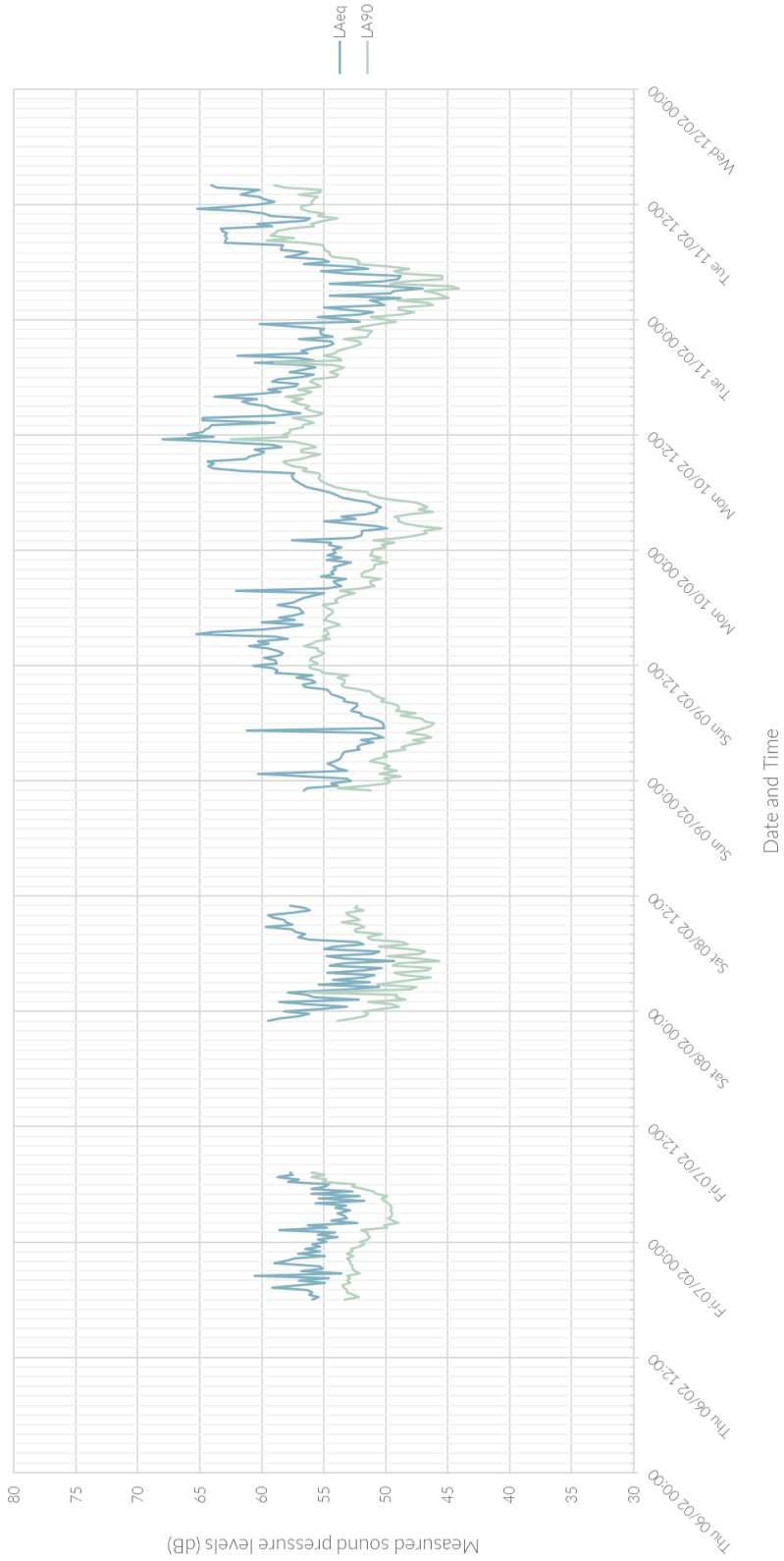


Figure C1: Time history graph.

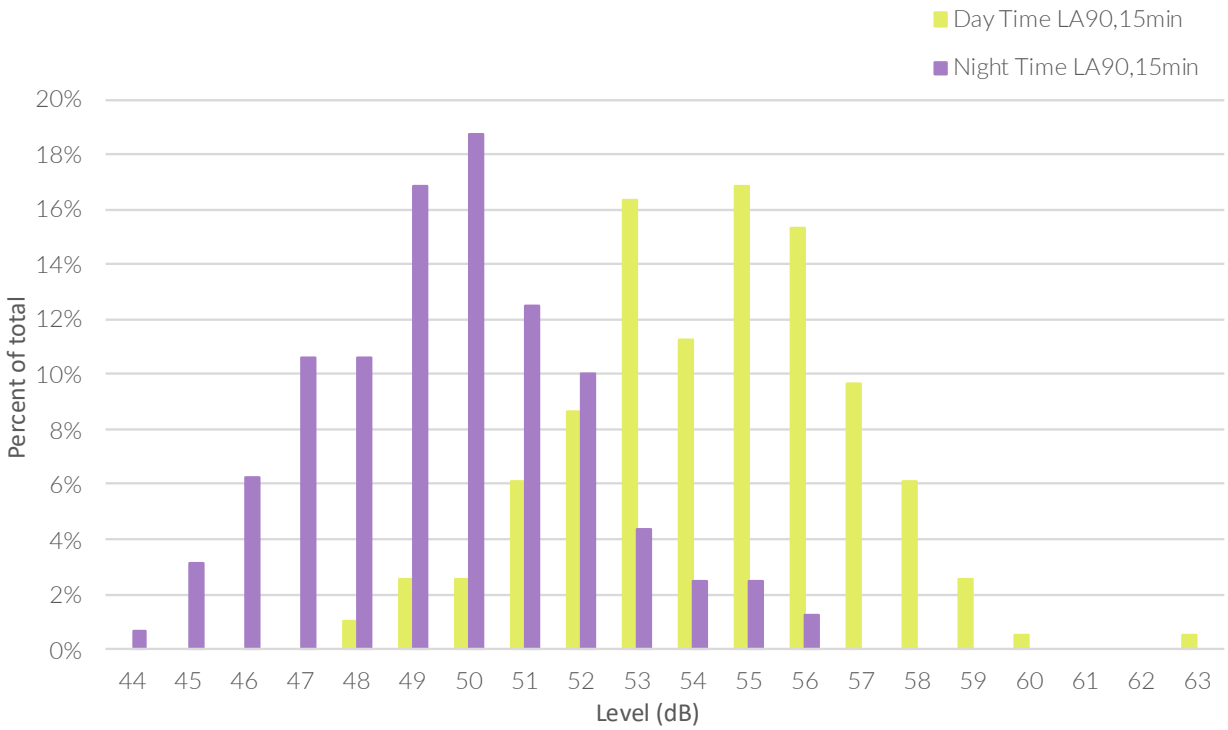


Figure C2: Statistical analysis of measured background sound levels.

HOARE LEA

SAM GARNE
PRINCIPAL ACOUSTICS ENGINEER

[redacted]

HOARELEA.COM

Royal Exchange
Manchester
M2 7FL
England

