



Noise Impact Assessment

Site Address: 78-80 Tib Street, Manchester, M4 1LG

Client Name: LDM Group

Project Reference No: NP-010980



Authorisation and Version Control

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1. Introduction

NOVA Acoustics Ltd has been commissioned to prepare a noise assessment for a commercial-led development ('the Proposed Development') at 78-80 Tib Street, Manchester ('the Site').

The applicant is preparing a planning application ('the Application') to be submitted to Manchester City Council as part of planning application No. 137210/FO/2023. This technical report has been prepared to accompany the planning application.

A noise survey has been undertaken to establish the prevailing ambient and background sound levels at and around the proposed development. The findings have been subsequently used to assess the level of impact from the site. Where applicable, measures required to mitigate noise from the proposed development have been assessed in accordance with the relevant performance standards, legislation, policy and guidance.

This noise assessment is necessarily technical in nature; therefore, a glossary of terms is included in Appendix A to assist the reader.

1.1 Standards, Legislation, Policy & Guidance

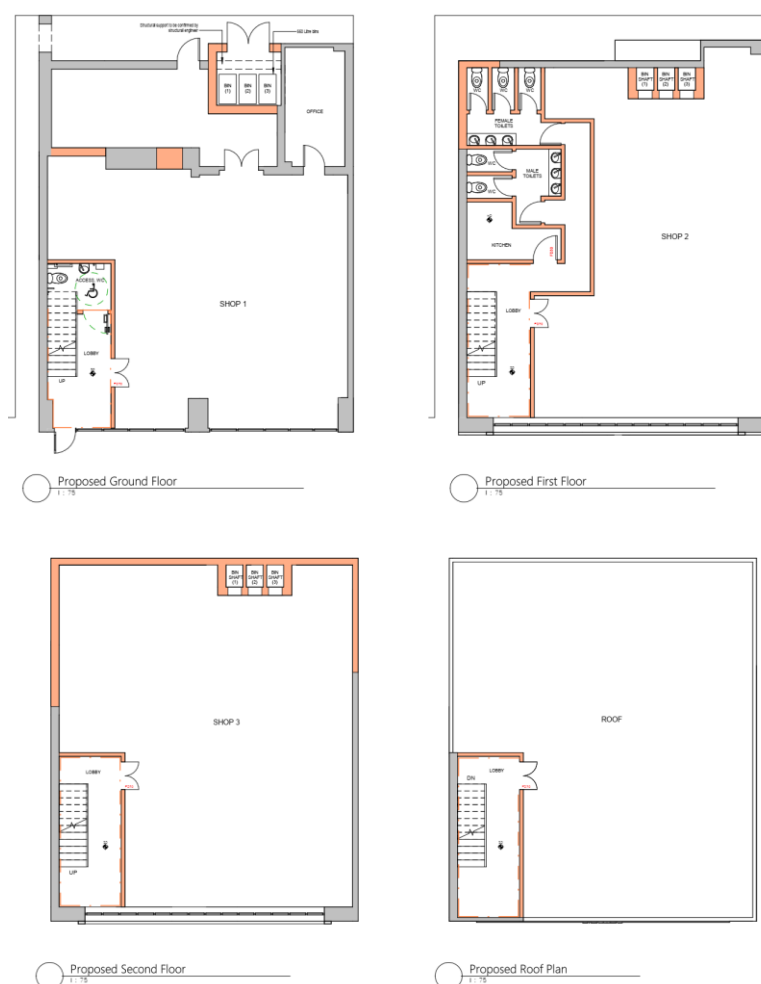
The following performance standards, legislation, policy, and guidance have been considered to ensure good acoustic design in the assessment:

- National Planning Policy Framework (2023).
- Noise Policy Statement for England (2010).
- Manchester City Council's technical guidance 'Planning and Noise Technical Guidance – October 2022'.
- British Standard BS4142:2014+A1:2019 – 'Methods on rating and assessing industrial and commercial sound'.
- IEMA 'Guidelines on Noise Impact'

Further information on the legislation can be found in Appendix B.

1.2 Proposal Brief

The proposal is for the conversion of the existing derelict building at the site into a three-storey mixed-use development comprised of a ground floor restaurant, first floor retail unit and a second-floor cafe with an external rooftop patron area. Figure 1 below shows the proposed development.



Drawing Ref No. (20)001 Rev A from 'Orange Design Studio'

Figure 1 – Proposed Development

NOVA Acoustics has been informed of the following:

- The restaurant will operate between the hours of 12:00 to 22:00 hours, daily.
- The first-floor retail unit, second-floor café and roof terrace will operate between the hours of 11:00 to 19:00 hours, daily.
- The maximum occupancy of the rooftop area will be 9 patrons (3 x 3 tables).
- Low level background music will be played in the café but not externally in the rooftop area.
- Slightly higher amplified music will be played in the restaurant. It is assumed that no live music will be played.
- No external fixed plant has been proposed at this stage. However, to ensure robustness, a plant noise level limit will be set.

2. Acoustic Design Criteria

2.1 Restaurant Breakout

Based on Manchester City Council's design document, 'Planning and Noise Technical Guidance' (PNTG), in relation to entertainment venues that are structurally connected to nearby residential buildings, the following criterion is applicable:

'Music noise levels in the 63Hz and 125Hz octave centre frequency bands (Leq) should be controlled so as not to exceed (in habitable rooms) 47dB and 41dB (Leq,5min), respectively'.

For noise sensitive receptors that are not structurally connected to the proposed development, PNTG states the following:

'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'.

2.2 External Patron Area Breakout

Manchester City Council do not have any set criterion for controlling noise breakout from external patron areas. Therefore, an IEMA 'Increase in Ambient Noise Level Assessment' will be undertaken. The level of impact from the site is calculated considering the increase in ambient noise level due to the noise emissions from the development. This will demonstrate whether external patron noise is likely to be louder or quieter than noise events in the existing environment. The purpose of this assessment is to guide the decision-maker as to the audibility and prominence of external patron noise externally at the closest dwellings.

It should be highlighted that the example criteria presented within the IEMA guidelines are generally for anonymous noise sources (i.e. from road traffic, rail, etc). Given the character of noise associated with the development and the associated impacts at nearby NSRs, it is considered appropriate to adapt the criteria accordingly. Noise from external patrons is likely to be distinguishable in most environments and has the potential to cause higher levels of impact than anonymous noise sources.

The table below outlines the adopted criteria for the assessment and the associated NPPF/NPSE impact levels.

IEMA Effect Descriptors	
Substantial	Greater than 5dB LAeq change in sound level at a noise sensitive receptor.
Significant Observed Adverse Effect Level (SOAEL)	
Moderate	A 3dB to 4.9dB LAeq change in sound level at a noise sensitive receptor.
Lowest Observed Adverse Effect Level (LOAEL)	
Slight	A 1dB to 2.9dB LAeq change in sound level at a noise sensitive receptor.
No Observed Adverse Effect Level (NOAEL)	
None/Not Significant	Less than 1dB LAeq change in in sound level at a noise sensitive receptor.

Table 1 – IEMA Guidelines Effect Descriptors

It is important to note however that there are several other venues within close proximity to the site. Therefore, it is likely that noise at the receptors is already influenced by patrons and/or mechanical plant associated with existing businesses. For this reason, it could be argued that the noise emissions should not be considered an entirely new noise source in terms of auditory sensation, reducing the sensitivity of the nearby receptors potential noise impacts associated with the development.

2.3 Mechanical Plant Services Breakout

In relation to mechanical plant services breakout and potentially impacting the nearest noise sensitive receptors, PNTG states the following should be set as a criterion:

'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'.

3. Environmental Noise Survey

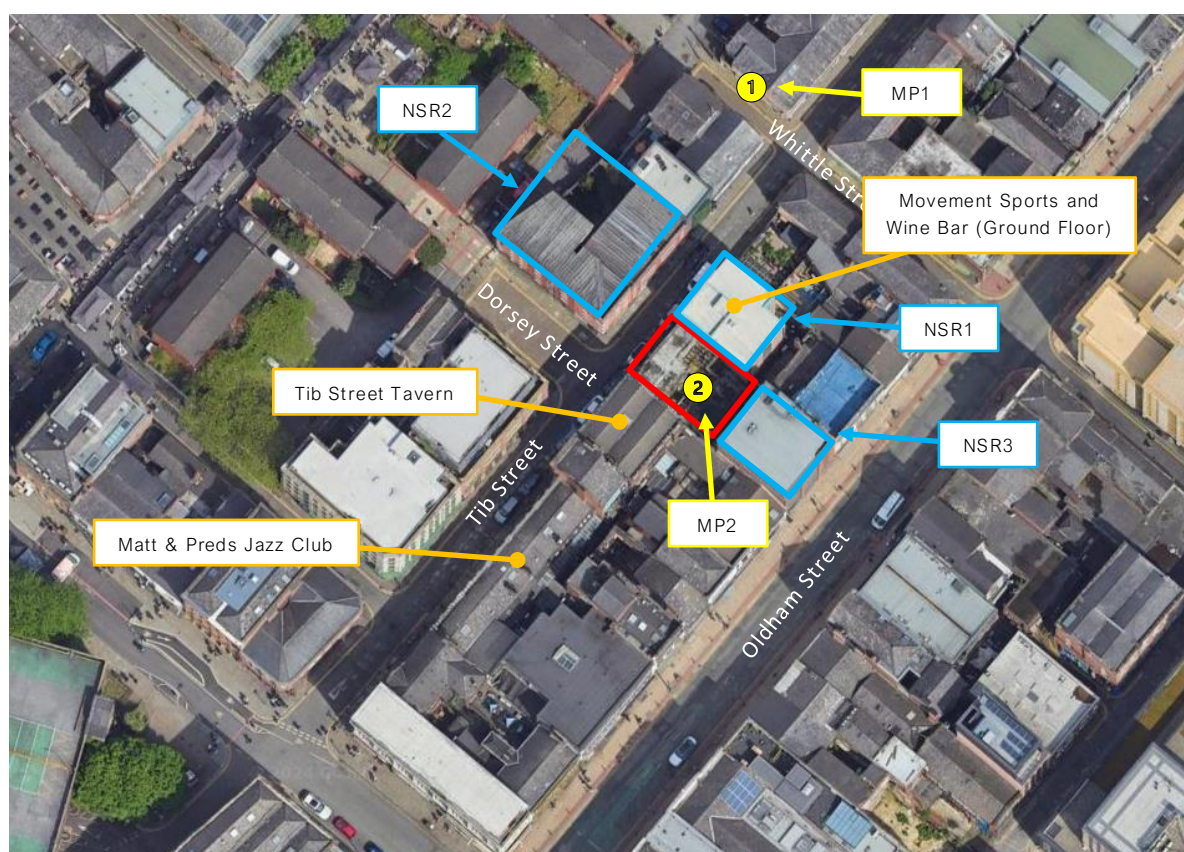
3.1 Measurement Methodology

The following table outlines the measurement dates and particulars. In all instances the equipment was field calibrated before and after each set of measurements; negligible drift was noted. 130mm diameter windshields were fitted to the microphones. The equipment register and survey weather conditions can be found in Appendix D.

Location	Survey Dates	Measurement Particulars
MP1	05/04/2024 – 08/04/2024	Microphone positioned on lamppost on Whittle Street, approximately 1m from the 1 st floor façade of the nearest building; appropriate façade corrections have been applied.
MP2	05/04/2024 – 08/04/2024	Microphone positioned on a tripod approximately 3.5m above the 2 nd floor level of the existing derelict building at 78-80 Tib Street.

Table 2 – Measurement Methodology

The figure below outlines the site surroundings and measurement locations:



Imagery ©2024 Infoterra Ltd & Bluesky, Maxar Technologies, The GeoInformation Group, Map data ©2024

Figure 2 – Measurement Locations and Site Surroundings

3.2 Context & Subjective Impression

The proposed development site is located within the Northern Quarter area of Manchester amongst several bars, restaurants, and nearby retail establishments. The nearest of these are the Movement Sports and Wine Bar (84 Tib Street) and Tib Street Tavern (74 Tib Street), which are the neighbouring units to the site and are open until 00:00 hours at weekends.

The nearest Noise Sensitive Receptors (NSRs) to the site are in the neighbouring apartments above the Movement Sports and Wine Bar (NSR1), those located approximately 8m away opposite the site in the apartment building where Dorsey Street and Tib Street meet (NSR2), and in the apartment building located off Oldham Street that backs onto the rear of the site (NSR3).

3.3 Environmental Noise Survey Results

Ambient Sound Level Results Summary

The following table outlines the lowest measured free-field ambient sound levels recorded during the proposed operational hours of the external rooftop patron area, that have been used in the IEMA 'Increase in Ambient Noise Level ('IANL') assessment. The measurements at MP1 have been corrected to obtain a free-field level.

Measurement Period ('T')		MP1 $L_{Aeq,T}$ (dB)	MP2 $L_{Aeq,T}$ (dB)
Date & Day	Hours (hh:mm)		
05/04/2024: Friday – Day 1	17:00 – 18:00	61	49
	18:00 – 19:00	59	61
06/04/2024: Saturday – Day 2	17:00 – 18:00	57	52
	18:00 – 19:00	58	52
07/04/2024: Sunday – Day 3	17:00 – 18:00	55	52
	18:00 – 19:00	52	52

Table 3 – Ambient Sound Level Results Summary

In summary, the ambient noise level climate at both measurement locations was affected by road traffic and pedestrian footfall in the area. The complete time history results can be found in Appendix C.

It was observed that there were several pigeons that regularly roost in the roof space where MP2 was located. Whilst this did not impact the typical ambient noise levels, occasional spikes that are evidence on Figure 6 of Appendix C are believed to be due to pigeon noise.

Background Sound Level Analysis

The following section outlines the measured background sound levels that will be used as the baseline for the noise assessment. The figures on the overleaf show histograms of the background sound levels measured during the daytime operational hours.

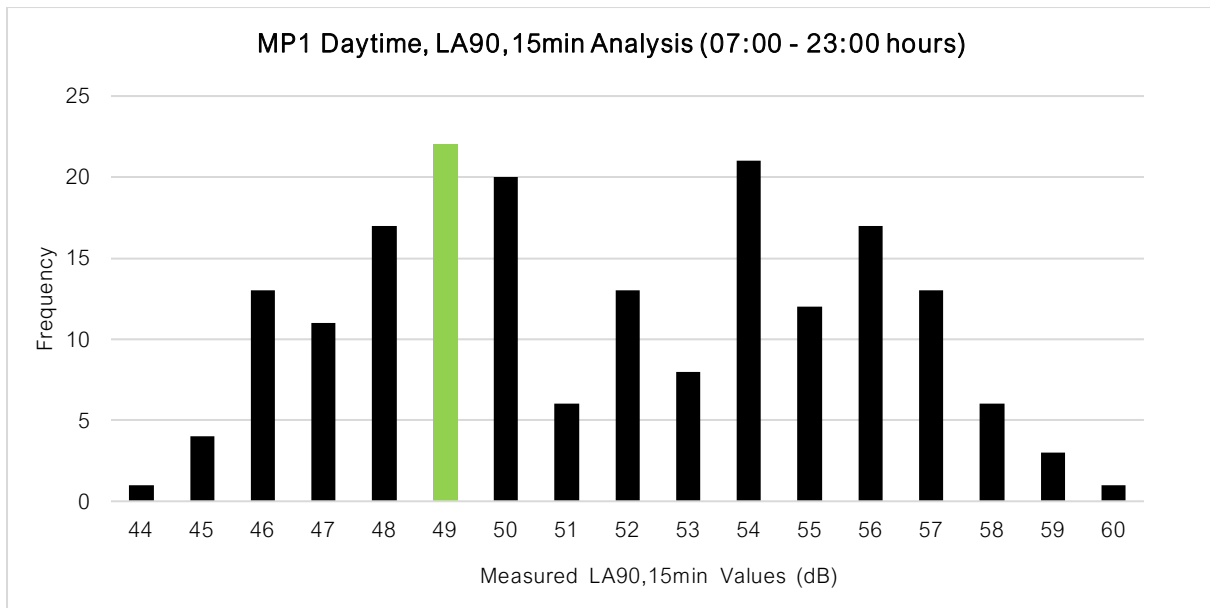


Figure 3 – MP1 $L_{A90,15min}$ Background Sound Level Analysis (07:00 – 23:00 hours)

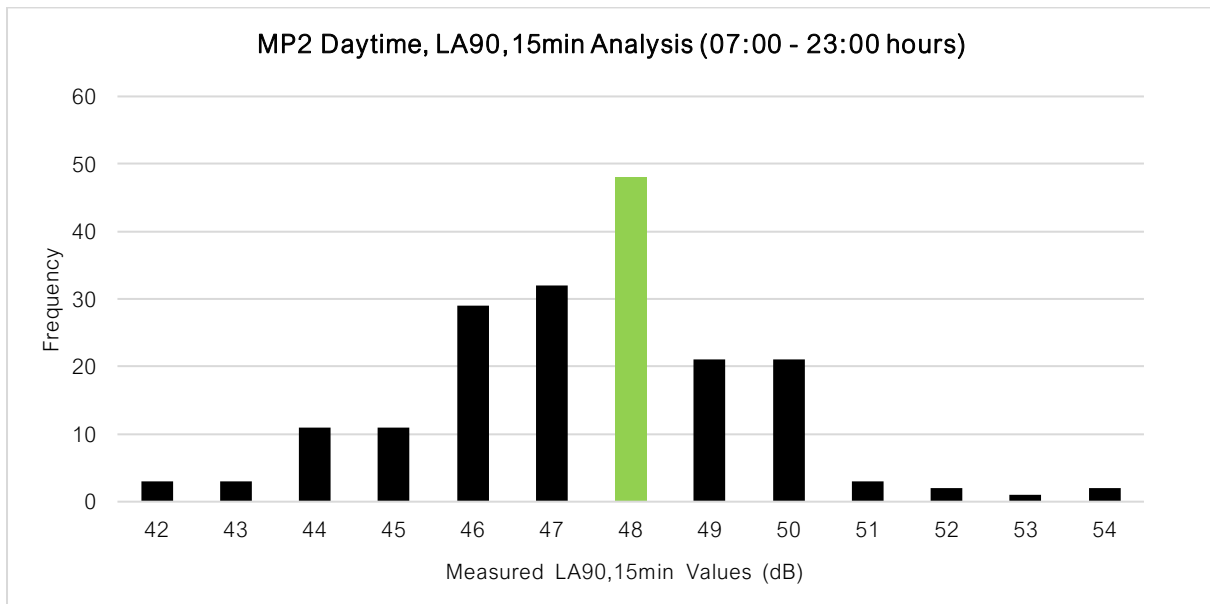


Figure 4 – MP2 $L_{A90,15min}$ Background Sound Level Analysis (07:00 – 23:00 hours)

As can be seen in the figures above, the modal values are deemed to be the lowest 'typical' values.

Presented in the table below is the typical $L_{90,T}$ octave band spectrum corresponding to the most sensitive time period (19:00 to 22:00 hours) throughout the entire survey period. These have been used as the baseline for the entertainment noise breakout assessment.

Location	Octave Frequency Band (Hz, $L_{90,T}$, dB)							$L_{A90,T}$ (dB)
	63	125	250	500	1k	2k	4k	
MP1	54	52	45	44	42	38	30	47
MP2	51	50	45	44	42	35	25	46

Table 4 – Background Sound Level Results – Noise Breakout

4. Entertainment Noise Assessment

To assess the impacts associated with the proposed development, the following assumptions regarding internal noise levels are included in the calculations:

- Amplified music is to be played within the restaurant but at a higher level than within the café.
- Low level background amplified music will be played in the café.
- The retail unit is not deemed to be noise generative and so has been excluded from the assessment.

The below table outlines the total predicted internal noise levels within the café and restaurant. These are based on NOVA's previous experience of similar city centre establishments. Please note that these figures are inclusive of internal patron noise.

Description	Octave Band Centre Frequency (Hz, L_{eq} dB)							L_{Aeq} (dB)
	63	125	250	500	1k	2k	4k	
Restaurant –Amplified Music Noise Level	85	85	80	80	85	80	80	86
Café – Background Amplified Music Noise Level	70	70	70	75	75	65	65	78

Table 5 – Total Predicted Internal Noise Levels

4.1 Noise Breakout Assessment

Calculations have been undertaken in accordance with BS12354-4, focusing on noise breaking out of the weakest element of the façade, the glazing. It is assumed that this will be at least 35dB R_w glazing which is equivalent to having a make-up of approximately 10mm glass / 6 – 16mm cavity / 6mm glass.

Noise breakout from the site has been predicted below and is based on achieving the relevant requirements of PNTG. Internal noise breakout to the receptor at the rear of the site has not been included as the proposed site has no glazed elements overlooking this area.

Noise breakout via the walls has not included for in the below assessments as this is expected to have a sound insulation performance 15-20dB greater than via the glazing and, therefore, would result in negligible impact on the predicted results.

It is also seen in the development plans that a lobbied door system is proposed. This is considered 'good acoustic design' and will minimise potential impacts of noise break-out through openings during access and egress. Accordingly, noise breakout from doors is not included in the assessment.

NSR1 - Flats Adjacent to the Proposed Site

The table on the below presents the noise breakout assessment which takes into consideration the size of the glazing as well as distance attenuation to NSR1.

Description	Octave Band Centre Frequency (Hz, dB)							L _{pA} (dB)
	63	125	250	500	1k	2k	4k	
Restaurant External Breakout								
Internal Noise Level (L _{eq})	85	85	80	80	85	80	80	89
Glazing SRI (R')	23	24	24	32	37	37	44	-
External Noise Level at NSR1 (L _{eq})	44	43	38	30	30	25	18	35
Café External Breakout								
Internal Noise Level (L _{eq})	70	70	70	75	75	65	65	78
Glazing SRI (R')	23	24	24	32	37	37	44	-
External Noise Level at NSR1 (L _{eq})	31	30	35	27	22	12	5	29
Combined External Breakout								
Cumulative External Noise Level at NSR1 (L _{eq})	44	43	39	31	30	25	18	36
MP2 Background Noise Level (L ₉₀)	51	50	45	44	42	35	25	46
Exceedances	-7	-7	-6	-13	-12	-10	-7	-10

Table 6 – Noise Breakout Assessment – NSR(1)

NSR2 - Flats Opposite the Proposed Site

The table on the overleaf presents the noise breakout assessment which takes into consideration the size of the glazing as well as distance attenuation to NSR2.

Description	Octave Band Centre Frequency (Hz, dB)							L _{pA} (dB)
	63	125	250	500	1k	2k	4k	
Restaurant External Breakout								
Internal Noise Level (L _{eq})	85	85	80	80	85	80	80	89
Glazing SRI (R')	23	24	24	32	37	37	44	--
External Noise Level at NSR2 (L _{eq})	46	45	40	32	32	27	20	40
Café External Breakout								
Internal Noise Level (L _{eq})	70	70	70	75	75	65	65	78
Glazing SRI (R')	23	24	24	32	37	37	44	--
External Noise Level at NSR2 (L _{eq})	32	31	31	28	23	13	6	30
Combined External Breakout								
Cumulative External Noise Level at NSR2 (L _{eq})	46	45	40	32	32	27	20	40
MP2 Background Noise Level (L ₉₀)	51	50	45	44	42	35	25	46
Exceedances	-5	-5	-5	-12	-10	-8	-5	-6

Table 7 – Noise Breakout Assessment – NSR(2)

As shown above, the cumulative entertainment noise breakout emissions at the most affected NSRs are predicted to be at least 5dB below the prevailing background sound levels in each octave frequency band.

Assuming that both NSRs utilise openable windows as its ventilation strategy, based on NOVA's experience, the external to internal level difference provided by an open window at low frequencies (63Hz and 125Hz) would be no greater than -5dB. Applying this figure to the combined external noise levels at NSR2 would indicate that internal noise levels because of the restaurant and café operating simultaneously would be 41dB and 40dB at the 63Hz and 125Hz frequency bands, respectively. Comparing this with the PNTG limits of 47dB and 41dB at these frequency bands would indicate that the requirements can be achieved.

As noted above, the adopted criteria can be met which is a positive indication that the proposed development would be unlikely to adversely affect the surrounding NSRs. In accordance with NPPF and NPSE, this indicates 'No Observed Adverse Effect Level' ('NOAEL').

4.2 Noise Breakthrough Assessment

Based on the layout of the site, only the first and second floors of the site will be structurally connected via a separating wall with the habitable rooms at NSR1. The ground floor is separated via an alleyway.

On the first floor, however, the main retail area is buffered from this wall via the lobby and stairwell or via the toilets and small kitchen area. At second floor level, there is still a buffer to this wall via the lobby and stairwell, but this only covers about half of the separating wall meaning that some of the main café area will share a separating wall with the habitable rooms at NSR1.

It is expected that the walls to the apartment block would be a cavity masonry construction. The walls to the site are expected to be at least two layers of brick. Based on this construction, noise levels within the café at the 63Hz and 125Hz frequency bands would need to be at least 90dB L_{eq} for the 47dB and 41dB criteria to be exceeded. As this is unlikely to ever occur, noise breakout via this element has not been considered further.

5. External Patron Noise Assessment

The external rooftop patron area will hold a maximum of 9 patrons. Considering this, the calculations have been conducted assuming the following:

- 9 No. patrons speaking in a 'normal' voice. This assumes that all patrons are talking in 'normal' voices simultaneously, which is deemed to be unlikely scenario and presents a 'robust' assessment.
- The source noise levels are taken from ANSI S3.5-1997 (R2017) from the 250Hz to 4kHz octave frequency bands.
- There is direct line of sight between the patron area and NSR3, however, The line of sight between the patron area and NSR1 is fully broken; consequently, a conservative 5dB of screening attenuation has been applied.
- Based on the layout of the site, the nearest receptors to the proposed rooftop area are NSR1 and NSR3. Assuming the criteria is achieved at these receptors, it would inherently be met at NSR2.
- The distances from each receptor to the seating area has been taken from the central point of the rooftop.

Description	Octave Frequency Band (Hz, dB)					Overall (dBA)
	250	500	1k	2k	4k	
1 No. Normal Voice Noise Level (L_w)	65	69	63	56	50	68
9 No. Normal Voices Noise Level (L_w)	75	79	73	66	60	78
Distance Correction to NSR1 (6m, Q2)	-24					-
Acoustic Shielding	-5					-
Patron Noise Level at NSR1 (L_{eq})	46	50	44	37	31	49
Distance Correction to NSR3 (10m, Q2)	-28					-
Acoustic Shielding	0					-
Patron Noise Level at NSR3 (L_{eq})	47	51	45	38	32	50

Table 8 – External Patron Noise Level Calculations

5.1 IEMA 'Increase in Ambient Noise Level' Assessment

In order to predict the level of impact at the most affected NSRs, an IEMA 'Increase in Ambient Noise Level Assessment' has been undertaken. For the assessment, the predicted specific sound level of patrons are added to the existing ambient noise levels (Shown in Table 2). The higher the increase in level, the greater the level of impact. This is shown in the Tables 8 and 9 below, for the MP1 (NSR1) and MP2 (NSR3) measurement locations.

Measurement Period ('T')		MP1 L _{Aeq,T} (dB)	Cumulative Ambient Noise Level (dB)	Increase (dB)	IEMA Impact Rating
Date & Day	Hours (hh:mm)				
05/04/2024: Friday – Day 1	17:00 – 18:00	61	61.3	0.3	Not Significant
	18:00 – 19:00	59	59.4	0.4	Not Significant
06/04/2024: Saturday – Day 2	17:00 – 18:00	57	57.6	0.6	Not Significant
	18:00 – 19:00	58	58.5	0.5	Not Significant
07/04/2024: Sunday – Day 3	17:00 – 18:00	55	56.0	1.0	Slight
	18:00 – 19:00	52	53.8	1.8	Slight

Table 9 – External Patron Noise Assessment at NSR1

Measurement Period ('T')		MP2 L _{Aeq,T} (dB)	Cumulative Ambient Noise Level (dB)	Increase (dB)	IEMA Impact Rating
Date & Day	Hours (hh:mm)				
05/04/2024: Friday – Day 1	17:00 – 18:00	49	52.5	3.5	Moderate
	18:00 – 19:00	61	61.3	0.3	Not Significant
06/04/2024: Saturday – Day 2	17:00 – 18:00	52	54.1	2.1	Slight
	18:00 – 19:00	52	54.1	2.1	Slight
07/04/2024: Sunday – Day 3	17:00 – 18:00	52	54.1	2.1	Slight
	18:00 – 19:00	52	54.1	2.1	Slight

Table 10 – External Patron Noise Assessment at NSR3

As can be seen in the assessment above, for the majority of the time, the noise emissions predicted from the external patron area are expected to have a 'Not Significant' or 'Slight' impact on the most affected NSRs. This equates to between 'No Observed Adverse Effect Level' ('NOAEL') to 'Lowest Observed Adverse Effect Level' ('LOAEL') when assessed in accordance with the NPSE and NPPF.

It is recognised that 'Moderate' impact is predicted at NSR3 on Friday 17:00 – 18:00 hours. However, the report is based on the 'robust' and unlikely scenario whereby all patrons are simultaneously speaking over one another; consequently, a low level of impact is anticipated. In terms of the NPPF and NPSE, this level of impact is also considered to be between 'No Observed Adverse Effect Level' ('NOAEL') and 'Lowest Observed Adverse Effect Level' ('LOAEL'). It is understood that at NOAEL, "noise can be heard, but does not cause any change in behaviour, attitude or other physiological response". In addition, noise at this

level *“can slightly affect the acoustic character of the area but not such that there is a change in the quality of life”*.

6. BS4142 Noise Impact Assessment

6.1 External Fixed Plant Noise Limit Level

The proposed plant equipment specification has not yet been finalised. As such, plant noise limit levels have been defined to ensure that the cumulative noise emissions from the site do not exceed 5dB below the lowest existing 'typical' background sound level measured at any of the NSRs. The limit levels are inclusive of any rating penalties that should be applied to account for audible characteristics of the noise which could be deemed to cause increased annoyance, such as intermittency, impulsivity, or tonality. Only daytime limits are presented as none of the units will operate into the night-time period.

The calculated plant noise limit levels are shown in the table below.

Description	Noise Level (dBA)
Background Sound Level	47
Cumulative Plant Noise Limit Level at NSR	42
BS4142 Assessment Outcome	Low Impact, dependent on context.
NPPF & NSPSE Outcome	No Observed Adverse Effect Level ('NOAEL')

Table 11 – BS4142 Plant Noise Limit Levels

Once the plant units are specified the noise emissions should be calculated by an appropriately qualified person to ensure that the limit levels are achieved.

7. Conclusion and Action Plan

The proposed development has been assessed against the acoustic design criteria and a mitigation scheme has been provided to ensure the adopted criteria will be achieved.

The following 'Action Plan' is outlined to ensure the design considerations and specifications from this report are duly implemented:

1. The assessment of noise breaking out from the site is based on the glazing that forms the 'front' envelope of the site (at least 35dB R_w). Furthermore, the size of these glazed areas is based on the current latest 'A01-C' site plans. Any reduction in this glazing specification and any increase in the size of the glazing may result in increased noise level breakout and as such, NOVA should be contacted if either of these scenarios occurs.
2. The noise breakout calculations for either the restaurant or cafe operators do not allow for any live amplified music. If there was a desire for this, NOVA should be contacted to confirm if this would be acceptable.
3. At this stage, a noise limiting device has not been included for as the internal noise levels used within this assessment are deemed to be worst-case. If there is a desire to change the sites to include live amplified music, a limiting device would need to be considered.
4. It is also seen in the development plans that a lobbied door system is proposed. This is considered 'good acoustic design' and will minimise potential impacts of noise break-out through openings during access and egress.
5. The external patron noise calculations are based on there being no more than 9 no. patrons in this area at any time. Whilst NOVA are appreciative that it may be difficult to 'police' this figure, for there to be any noticeable increases in noise emissions from the rooftop patron area, there would need to be a doubling in the number of patrons in this area (18). As this is unlikely to be the case, noise breakout from the patron area will be appropriately controlled.
6. All calculations of noise emissions from the rooftop patron area have not included for any external amplified music.
7. Any external fixed plant that may be installed should not exceed the plant noise limit levels presented in Section 6.1. These should be inclusive of any BS4142 acoustic feature corrections. Once the plant units are specified the noise emissions should be calculated by an appropriately qualified person to ensure that the limit levels are achieved.

The findings of this report will require written approval from the Local Authority prior to work commencing.

Appendix A – Acoustic Terminology

A-weighted sound pressure level, L_{pA}	Quantity of A-weighted sound pressure given by the following formula in decibels (dBA). $L_{pA} = 10 \log_{10} (pA/p_0)^2$. Where: pA is the A-weighted sound pressure in pascals (Pa) and p_0 is the reference sound pressure (20 μ Pa)
Background Sound	Underlying level of sound over a period, T , which might in part be an indication of relative quietness at a given location
Equivalent continuous A-weighted sound pressure level, $L_{Aeq,T}$	Value of the A-weighted sound pressure level in decibels (dB) of a continuous, steady sound that, within a specified time interval, T , has the same mean-squared sound pressure as the sound under consideration that varies with time
Facade level	Sound pressure level 1 m in front of the facade
Free-field level	Sound pressure level away from reflecting surfaces
Indoor ambient noise	Noise in a given situation at a given time, usually composed of noise from many sources, inside and outside the building, but excluding noise from activities of the occupants
Noise Criteria	Numerical indices used to define design goals in a given space
Noise Rating (NR)	Graphical method for rating a noise by comparing the noise spectrum with a family of noise rating curves
Octave Band	Band of frequencies in which the upper limit of the band is twice the frequency of the lower limit
Percentile Level, $L_{AN,T}$	A-weighted sound pressure level obtained using time-weighting “F”, which is exceeded for $N\%$ of a specified time interval
Rating Level, $L_{Ar,Tr}$	Equivalent continuous A-weighted sound pressure level of the noise, plus any adjustment for the characteristic features of the noise
Reverberation time, T	Time that would be required for the sound pressure level to decrease by 60 dB after the sound source has stopped
Sound Pressure, p	root-mean-square value of the variation in air pressure, measured in pascals (Pa) above and below atmospheric pressure, caused by the sound
Sound Pressure Level, L_p	Quantity of sound pressure, in decibels (dB), given by the formula: $L_p = 10 \log_{10} (p/p_0)^2$. Where: p is the root-mean-square sound pressure in pascals (Pa) and p_0 is the reference sound pressure (20 μ Pa)
Weighted sound reduction index, R_w	Single-number quantity which characterizes the airborne sound insulating properties of a material or building element over a range of frequencies

Appendix B – Standards, Legislation, Policy, and Guidance

This report is to be primarily based on the following standards, legislation, policy and guidance.

B.1 – National Planning Policy Framework (2023)

Government policy on noise is set out in the National Planning Policy Framework (NPPF), published in 2023. This replaced all earlier guidance on noise and places an emphasis on sustainability. In section 15, Conserving and enhancing the natural and local environment, paragraph 180e, it states:

Preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans;

Paragraph 191 states:

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:

- a) Mitigate and reduce to a minimum potential adverse impact resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;*
- b) 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*
- c) Limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.*

B.2 – Noise Policy Statement for England (2010)

Paragraph 191 of the NPPF also refers to advice on adverse effects of noise given in the Noise Policy Statement for England (NPSE). This document sets out a policy vision to:

Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development.

To achieve this vision the Statement identifies the following three aims:

Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- Avoid significant adverse impacts on health and quality of life;
- Mitigate and minimise adverse impacts on health and quality of life;
- Where possible, contribute to the improvement of health and quality of life.

In achieving these aims the document introduces significance criteria as follows:

SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur. It is stated that “significant adverse effects on health and quality of life should be avoided while also considering the guiding principles of sustainable development”.

LOAEL – Lowest Observed Adverse Effect Level

This is the level above which adverse effects on health and quality of life can be detected. It is stated that the second aim above lies somewhere between LOAEL and SOAEL and requires that: “all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also considering the guiding principles of sustainable development. This does not mean that such adverse effects cannot occur.”

NOEL – No Observed Effect Level

This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise. This can be related to the third aim above, which seeks: “where possible, positively to improve health and quality of life through the pro-active management of noise while also considering the guiding principles of sustainable development, recognising that there will be opportunities for such measures to be taken and that they will deliver potential benefits to society. The protection of quiet places and quiet times as well as the enhancement of the acoustic environment will assist with delivering this aim.”

This is further expanded using the updated “Noise Exposure Hierarchy Table” which includes an additional level of impact referred to as the ‘No Observed Adverse Effect Level’ (‘NOAEL’). It is stated that at this level: “*noise can be heard, but does not cause any change in behaviour, attitude or other physiological response*”. In addition, noise at this level “*can slightly affect the acoustic character of the area but not such that there is a change in the quality of life*”.

The NPSE recognises that it is not possible to have a single objective noise-based measure that is mandatory and applicable to all sources of noise in all situations and provides no guidance as to how these criteria should be interpreted. It is clear, however, that there is no requirement to achieve noise levels where there are no observable adverse impacts but that reasonable and practicable steps to reduce adverse noise impacts should be taken in the context of sustainable development and ensure a balance between noise sensitive and the need for noise generating developments.

Any scheme of noise mitigation outlined in this report will, therefore, aim to abide by the above principles of the NPPF and NPSE whilst recognizing the constraints of the site.

B.3 – Manchester City Council ‘Planning and Noise Technical Guidance’ October 2022

This document provides guidance to advise on noise in a planning context to encourage good acoustic design for developments that are within the jurisdiction of Manchester City Council.

It outlines what is expected in relation to current guidance and policy with the aspiration that new developments achieve the highest possible standards without compromising the health and well-being of people that live and work within the City of Manchester.

The document provides information on how to appropriately set noise criteria for a range of different noise sources such as that from entertainment venues, transport sources and industrial plant, as well as many others.

For this assessment, reference has been made to ensuring that 'entertainment noise' breakout from the proposed development is controlled within nearby receptors that are either structurally connected or not.

A noise level limit for mechanical services plant, should any be installed, has also been set based on the requirements of this guidance document.

B.4 – British Standard BS 4142:2014+A1:2019 - Methods for rating and assessing industrial and commercial sound

Overview

BS4142 sets out a method to assess the likely effect of sound from factories, industrial premises or fixed installations and sources of an industrial nature in commercial premises, on people who might be inside or outside a dwelling or premises used for residential purposes in the vicinity.

The procedure contained in BS4142 for assessing the effect of sound on residential receptors is to compare the measured or predicted sound level from the source in question, the $L_{Aeq,T}$ 'specific sound level', immediately outside the dwelling with the $L_{A90,T}$ background sound level.

Where the sound contains a tonality, impulsivity, intermittency and other sound characteristics, then a correction depending on the grade of the aforementioned characteristics of the sound is added to the specific sound level to obtain the $L_{Ar,Tr}$ 'rating sound level'. A correction to include the consideration of a level of uncertainty in sound measurements, data and calculations can also be applied when necessary.

Rating Penalty

Section 9 of BS4142 describes how the rating sound level should be derived from the specific sound level, by deriving a rating penalty.

BS4142 states:

"Certain acoustic features can increase the significance of impact over that expected from a basic comparison between the specific sound level and the background sound level. Where such features are present at the assessment location, add a character correction to the specific sound level to obtain the rating level. This can be approached in three ways:

- a) subjective method;*
- b) objective method for tonality;*
- c) reference method."*

Due to the nature of the development the subjective method has been adopted to derive the rating sound level from the specific sound level. This is discussed in Section 9.2 of BS4142, which states:

"Where appropriate, establish a rating penalty for sound based on a subjective assessment of its characteristics. This would also be appropriate where a new source cannot be measured because it is only proposed at that time, but the characteristics of similar sources can subjectively be assessed."

Correct the specific sound level if a tone, impulse or other characteristics occurs, or is expected to be present, for new or modified sound sources.”

BS4142 defines four characteristics that should be considered when deriving a rating penalty, namely; tonality; impulsivity; intermittency; and other sound characteristics, which are defined as:

a) Tonality

A rating penalty of +2dB is applicable for a tone which is “just perceptible”, +4dB where a tone is “clearly perceptible”, and +6dB where a tone is “highly perceptible”.

b) Impulsivity

A rating penalty of +3dB is applicable for impulsivity which is “just perceptible”, +6dB where it is “clearly perceptible”, and +9dB where it is “highly perceptible”.

c) Other Sound Characteristics

BS4142 states that where “the specific sound features characteristics that are neither tonal nor impulsive, though otherwise are readily distance against the residual acoustic environment, a penalty of +3dB can be applied.”

d) Intermittency

BS4142 states that when the “specific sound has identifiable on/off conditions, the specific sound level ought to be representative of the time period of length equal to the reference time interval which contains the greatest total amount of on time ... if the intermittency is readily distinctive against the residual acoustic environment, a penalty of +3dB can be applied.”

Background Sound Level

The background sound level is the underlying level of sound over a period, T, and is indicative of the relative quietness at a given location. It does not reflect the occurrence of transient and/or higher sound level events and is generally governed by continuous or semi-continuous sounds.

To ensure the background sound level values used within the assessment are reliable and suitably represent both the particular circumstance and periods of interest, efforts have been made to quantify a ‘typical’ background sound level for a given period. The purpose has not been to simply select the lowest measured value. Diurnal patterns have also been considered as they can have a major influence on background sound levels, for example, the middle of the night can be distinctly different (and potentially of lesser importance) compared to the start or end of the night-time period for sleep purposes.

Since the intention is to determine a background sound level in the absence of the specific sound that is under consideration, it is necessary to understand that the background sound level can in some circumstances legitimately include industrial and/or commercial sounds that are present as separate to the specific sound.

Assessment of Impact

BS4142 states: *“The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs”*. An estimation of the impact of the specific sound can be

obtained by the difference of the rating sound level and the background sound level and considering the following:

- “Typically, the greater this difference, the greater the magnitude of the impact.”
- “A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.”
- “A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.”
- “The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a negligible impact, depending on the context.”

Interpreting the guidance given in BS4142, with consideration of the guidance given in the NPSE and NPPG Noise, an estimation of the impact of the rating sound is summarised in the following text:

- A rating sound level that is +10dB above the background sound level is likely to be an indication of a Significant Observed Adverse Effect Level;
- A rating sound level that is +5dB above the background sound level is likely to be an indication of a Lowest Observed Adverse Effect Level;
- The lower the rating sound level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating sound level does not exceed the background sound level, this is an indication of the specific sound source having a negligible impact and would therefore be classified as No Observed Effect Level.
- During the daytime, the assessment is carried out over a reference time period of 1-hour. The periods associated with day or night, for the purposes of the Standard, are 07.00 to 23.00 and 23.00 to 07.00, respectively.

Appendix C – Environmental Survey

C.1 – Time History Noise Data

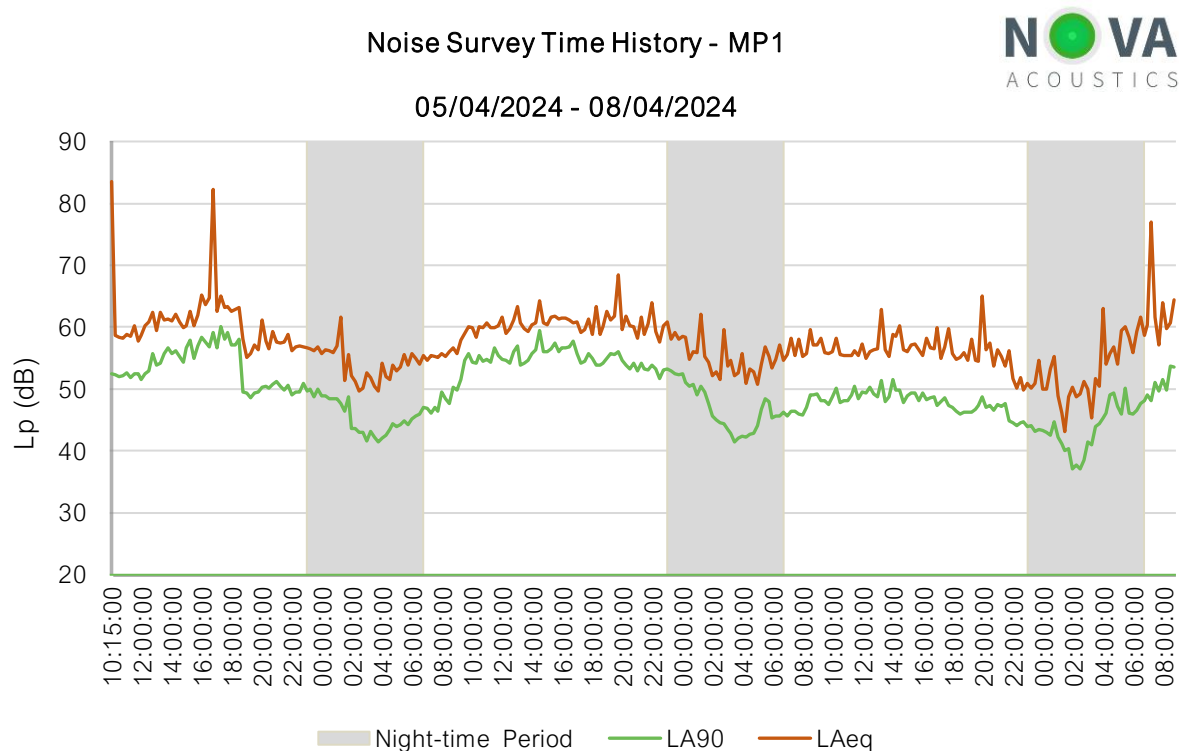


Figure 5 – MP1 Noise Survey Time History

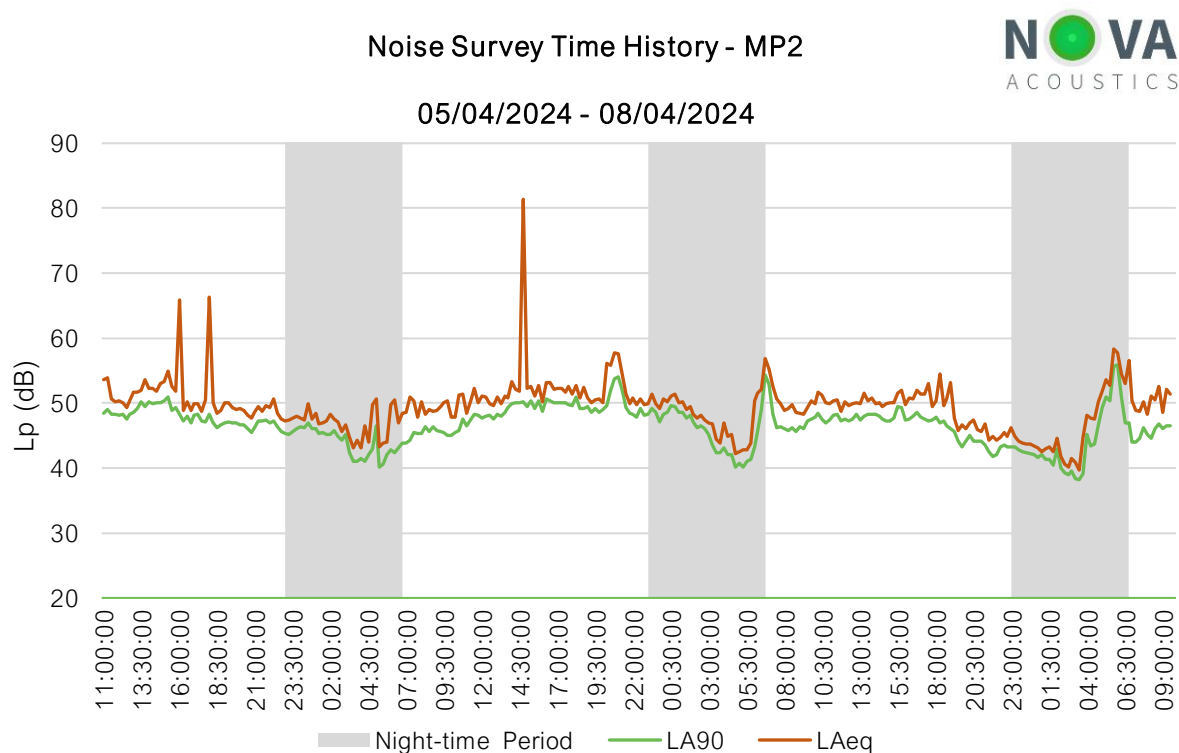


Figure 6 – MP2 Noise Survey Time History

C.2 – Surveying Equipment

Piece of Equipment	Serial No.	Calibration Deviation
Svantek SV971 Class 1 Sound Level Meter	77796	≤0.13
Svantek SV33B Class 1 Calibrator	116639	
Svantek SV971 Class 1 Sound Level Meter	34826	≤0.09
Svantek SV33B Class 1 Calibrator	116639	

Table 12 – Surveying Equipment

All equipment used during the survey was field calibrated at the start and end of the measurement period with negligible deviation noted. All sound level meters are calibrated every 24 months and all calibrators are calibrated every 12 months, by a third-party calibration laboratory. All microphones were fitted with a protective windshield for the entire measurements period. Calibration certificates can be provided upon request.

D.3 – Meteorological Conditions

As the environmental noise survey was unattended, it is not possible to comment on the weather conditions for the full duration of the monitoring period. However, during the set up of the equipment it was noted that the weather was generally dry with a light breeze and therefore suitable for undertaking noise measurements. At collection, there was light rain, and this measurement period has been excluded from the assessment. There was no noticeable wind. Further to this, all measurements have been compared with local weather data available on the Met Office website and any measurements periods thought to be adversely affected by inclement weather conditions have not been included in the analysis.

Weather Conditions – Booth Hall (Approx. 4.7km NE of Site)				
Time Period	Air Temp (°C)	Rainfall (mm/h) ^[1]	Prevailing Wind Direction	Wind Speed (m/s)
05/04/2024: 00:00 – 23:59	10.7 – 16.4	0.0 – 3.0	SSW	0.0 – 5.1
06/04/2024: 00:00 – 23:59	9.5 – 18.3	0.0 – 9.6	SSW	0.0 – 6.3
07/04/2024: 00:00 – 23:59	7.6 – 14.2	0.0 – 7.2	SSW	0.0 – 7.6
08/04/2024: 00:00 – 23:59	7.9 – 14.8	0.0 – 7.8	S	0.0 – 4.4

Table 13 – Weather Conditions

[1] Rainfall rate data obtained from closest weather station to record it; Chorlton-Cum-Hardy.



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