



8/8A ST JOHN STREET,
MANCHESTER

Acoustic Planning Report

Reference: 10212.RP01.EBF.0

Prepared: 23 July 2020

Revision Number: 0

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Acoustic Planning Report



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Revision	Comment	Date	Prepared By	Approved By
0	First issue of report	23 July 2020	Helen Sheldon	Torben Andersen

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The recommendations within this report relate to acoustics performance only and will need to be integrated within the overall design by the lead designer to incorporate all other design disciplines such as fire, structural integrity, setting-out, etc. Similarly, any sketches appended to this report illustrate acoustic principles only and again will need to be developed in to full working drawings by the lead designer to incorporate all other design disciplines.

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1.0 INTRODUCTION

It is proposed to convert the existing office buildings at 8/8a St John Street back into residential premises. These properties are listed Georgian properties on the corner of St John Street and Longworth Street, close to Deansgate in Manchester City Centre. In addition to this, it is proposed to construct a new, detached, single family dwelling on land to the rear of the site.

There is a nightclub and a tapas restaurant located directly across Longworth Street from the site, and there is therefore the potential for high noise levels to occur outside the site.

This report provides an initial assessment of the suitability of the site for residential development, and the measures likely to be required to ensure reasonable acoustic conditions within the proposed development.

2.0 COVID-19 PANDEMIC

At the time of writing, there are limitations imposed on many operations by the UK Government as a result of the COVID-19 pandemic. In the case of this site, the nearby nightclub is not currently operating, and the tapas restaurant has only recently re-opened and is running at a reduced capacity. Therefore, the noise levels in the area are not expected to be representative of 'normal' conditions, and any noise survey carried out under current conditions would not be considered representative.

Therefore, an initial assessment has been carried out based on publicly available data for the area in order to support the planning application, with a view to completing a noise survey and more detailed assessment in due course once the surrounding noise sources are operating normally.

3.0 NOISE SURVEY

As noted above, it has not been possible to conduct a representative noise survey at the site. However, a reviewing of planning applications in the area revealed that a similar (albeit larger scale) development was completed around 2 years ago at 2 St John Street ('The Residence'). This development also had residential windows directly overlooking Longworth Street, which were affected by noise from the nightclub.

As part of the application to discharge a condition for the site, details of a noise survey carried out in late 2018 by Hepworth Acoustics are publicly available on the Manchester City Council Planning Portal. It is considered that the noise levels measured during this survey would be reasonably representative of those which would affect the proposed development site.

The Hepworth Acoustics note is appended to this report for reference, and the relevant external noise levels, as measured at 1 m from the façade of the building overlooking Longworth Street, are summarised below. The highest levels recorded were over Saturday night to Sunday morning (10-11 November 2018), and these have therefore been used as the basis of this assessment.

Table 1 – Measured External Noise Levels (Hepworth Acoustics)

	Sound Level (dB) at Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	A
$L_{eq,8hour}$ (23:00 to 07:00)	78	65	63	67	66	61	59	70
Typical L_{max} (15 th highest)	91	81	80	84	85	79	73	88

Given that these were measured at 1 m from the façade of the residential building directly opposite the proposed development site, in a narrow lane, it is considered that these are reasonably representative of the worst affected facades of the proposed development at 8/8a St John Street.

4.0 CRITERIA

Manchester City Council have specific criteria defined in the guidance in relation to internal noise levels, including low frequency noise limits from entertainment premises. These criteria are summarised below, and have been used as the basis of the assessment presented in this report.

Table 2 – MCC Residential Criteria

Room	07:00 to 23:00	23:00 to 07:00
Living Rooms	35 dB $L_{Aeq,16hour}$	--
Bedrooms	--	30 dB $L_{Aeq,8hour}$ 45 dB L_{AFmax} (not normally exceeded more than 15 times)

In addition to this, Manchester City Council recommend the following low frequency noise limits in all habitable rooms where a proposed residence is affected by entertainment noise:

47 dB L_{eq} at 63 Hz
41 dB L_{eq} at 125 Hz

These criteria have been used as the basis of the assessment presented in this report.

5.0 ASSESSMENT AND RECOMMENDATIONS

This assessment primarily relates compliance with the low frequency noise limits (47 dB L_{eq} at 63 Hz and 41 dB L_{eq} at 125 Hz), as these are applicable in habitable rooms, and apply at any time of the day, although they specifically relate to entertainment noise. Calculations indicate that provided the low frequency limits are met, the overall daytime and night time limits will be comfortably achieved.

5.1 Overlooking Longworth Street

In order to achieve the appropriate internal noise levels, any habitable room directly overlooking Longworth Street is likely to require the following measures:

- High acoustic performance secondary glazing approx. 200mm from existing glazing
- High performance façade
- Mechanical Ventilation (MVHR or similar)
- Mechanical Cooling

In the existing Listed Buildings, if the existing windows are to be retained, it is likely that they will need to be well sealed and have high performance secondary glazing installed behind. The masonry façade elements may need an additional lining to ensure the internal noise limits are met. Consideration will need to be given to any limitations associated with the listing of the building.

In the new build section, secondary glazing would be required in combination with high performance double glazing, and again a high performance façade will be required, which is likely to consist of independently lined masonry.

Mechanical ventilation will be required so that occupants do not have to rely on open windows or trickle vents for background ventilation purposes. In addition to this, given the high noise levels which could occur when the nightclub is operational, it is recommended that allowance is also made for mechanical cooling so that open windows overlooking Longworth Street are not required to control overheating.

However, given the limited hours of operation of the nightclub, it is considered that windows can be openable, providing occupants with the choice of utilising openable windows, especially when the nightclub is not operational.

5.2 Other Elevations

On other elevations, away from the nightclub (i.e. those which do not have direct line of sight to the Longworth Street), the measures are likely to be reduced, although some mitigation measures will likely be required. The precise nature of these measures will need to be determined when more detailed noise survey information is available. However, it is recommended that the following is allowed for:

- Glazing with a moderately high acoustic performance
- Mechanical Ventilation (MVHR or similar)

5.3 Summary

It is considered that it is possible to achieve appropriate internal noise levels within the proposed residential development, based on the noise levels from the nightclub measured by others in November 2018.

High performance mitigation measures will be required to control noise ingress to the development, and it is considered that noise from other sources (such as the tapas restaurant, and other general environmental sources such as road traffic) will be adequately controlled by the measures introduced to control noise from the nightclub. The precise specification of such measures will need to be determined based on detailed noise survey data once the noise sourced in the area are operating at a reasonable capacity.

The formation of residential premises at 2 St John Street, with bedrooms directly overlooking Longworth Street, sets a precedent for this area, and it is therefore considered that, providing appropriate allowance is made for mitigation measures to be installed, the site is suitable for residential development.

6.0 AGENT OF CHANGE

The agent of change principle came into force as part of The National Planning Policy Framework (NPPF2) came into force on 24th July 2018. The principle states:

“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.”

The principles however have previously been established in the previous National Planning Policy Framework published in 2012, stating:

“123. Planning policies and decisions should aim to: recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established”

Although the agent of change is a long-established principle within the National Planning Policy Framework no specific mention of “agent of change” was made until NPPF2.

This principle requires the developers to mitigate against the effects of existing noise sources to protect the existing establishment from future noise complaints. Equally the principle enables the assumption to be made that any changes to existing commercial uses should have no “unreasonable” restrictions put upon them. This however does not mean that there are no restrictions, rather that such restrictions should not be unreasonable.

It is considered that by incorporating measures within the design to ensure that the Manchester City Council acoustic requirements are met, the proposed development is mitigating the existing noise source to protect against future complaints. This is strengthened by the precedent of recently formed dwellings overlooking the same area who would also be impacted by any changes to the operation of the nightclub. Should the operation of the nightclub increase, the extension of operating hours would not affect the results of the assessment, as the noise would be mitigated to a suitable level internally. If noise levels from the nightclub were to increase, it would not be unreasonable to require some mitigation measures to counter that.

Therefore, the proposals are considered to be in line with principles of the agent of change.

7.0 PLANT NOISE LIMITS

Plant noise limits have not been set, as full representative noise survey data for the site is not yet available. However, any plant associated with the development would be domestic (MVHR units and condenser units) and would be located and designed to ensure that the relevant plant noise limits (as determined by a future noise survey) are met.

8.0 CONCLUSION

The proposed residential development at 8/8a St John Street has the potential to be affected by noise from the nearby nightclub. At present, it is not possible to undertake a representative noise survey due to restriction imposed by the UK Government due to the COVID-19 pandemic. In this instance, the nightclub is not operational due to these restrictions. However, a desktop study has been undertaken based on previous noise survey data in the area, which is publicly available on the Manchester City Council Planning Portal.

This desktop assessment has indicated that the relevant internal noise limits can be met with high performance façade elements (including secondary glazing). It is also recommended that mechanical ventilation and cooling are allowed for.

The assessment contained in this report will be revisited and updated once a representative noise survey can be carried out.

Appendix A - Acoustic Terminology

dB	Decibel - Used as a measurement of sound pressure level. It is the logarithmic ratio of the noise being assessed to a standard reference level.
dB(A)	The human ear is more susceptible to mid-frequency noise than the high and low frequencies. To take account of this when measuring noise, the 'A' weighting scale is used so that the measured noise corresponds roughly to the overall level of noise that is discerned by the average human. It is also possible to calculate the 'A' weighted noise level by applying certain corrections to an un-weighted spectrum. The measured or calculated 'A' weighted noise level is known as the dB(A) level. Because of being a logarithmic scale noise levels in dB(A) do not have a linear relationship to each other. For similar noises, a change in noise level of 10dB(A) represents a doubling or halving of subjective loudness. A change of 3dB(A) is just perceptible.
L_{eq}	L_{eq} is defined as a notional steady sound level which, over a stated period of time, would contain the same amount of acoustical energy as the actual, fluctuating sound measured over that period (1 hour).
L_{Aeq}	The level of notional steady sound which, over a stated period of time, would have the same A-weighted acoustic energy as the A-weighted fluctuating noise measured over that period.
L_{An} (e.g. L_{A10} , L_{A90})	If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The L_n indices are used for this purpose, and the term refers to the level exceeded for n% of the time, hence L_{10} is the level exceeded for 10% of the time and as such can be regarded as the 'average maximum level'. Similarly, L_{90} is the average minimum level and is often used to describe the background noise.
$L_{max,T}$	The instantaneous maximum sound pressure level which occurred during the measurement period, T. It is commonly used to measure the effect of very short duration bursts of noise, such as for example sudden bangs, shouts, car horns, emergency sirens etc. which audibly stand out from the general level of, say, traffic noise, but because of their very short duration, maybe only a very small fraction of a second, may not have any effect on the L_{eq} value.

Appendix B – Previous Noise Survey (Hepworth Acoustics)

Mr Michael Bagot
Buttress
41 Bengal Street
Manchester
M4 6AF

Our ref: P15-407-L03v3
21 November 2018

By email only: mbagot@buttress.net

Dear Michael,

**Re: 2 St John Street, Manchester - residential conversion
Measurements of External Noise Ingress re Planning Condition 3**

Following on from our recent measurements of external noise ingress to the bedroom of the completed apartment 7 on the Longworth Street elevation of the development, I'm writing with our findings.

The noise measurements were carried out in the bedroom of apartment 7 for several reasons:

- Apartment 7 was the first apartment to be completed and decorated, allowing the compliance noise measurements to be carried out; and
- The Longworth Street elevation bedrooms have the most stringent sound insulation requirement due to the planning noise limits specifically relating to low frequency entertainment noise (from the nightclub nearby on Longworth Street).

We consider that if noise is adequately controlled within bedrooms on the Longworth Street elevation, acceptable noise levels will also be achieved in other rooms within the development.

In addition to noise measurements within the bedroom of apartment 7, we also carried out simultaneous external noise measurements outside the bedroom directly below (apartment 5).

Internal Acoustic Criteria

The required internal noise criteria for the development is set out in Condition 3 of planning consent ref. 111175/FO/2016/C1 as follows:

3) The development shall be implemented in accordance with the approved acoustic and window specification information so as to achieve the internal noise criterion as follows:

- *Bedrooms (night time - 23.00 - 07.00) 30 dB L_{Aeq} (individual noise events should not normally exceed 45 dB L_{Amax} by more than 15 times)*
- *Living Rooms (daytime - 07.00 - 23.00) 35 dB L_{Aeq} Additionally, where entertainment noise is a factor in the noise climate the sound insulation scheme shall be designed to achieve internal noise levels in the 63Hz and 125Hz octave centre frequency bands so as not to exceed (in habitable rooms) 42dB and 36dB, respectively.*

Upon completion of the development and before first occupation of the residential units, a verification report will be required to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved acoustic consultant's report. The report shall also undertake post completion testing to confirm that the internal noise criteria has been met. Any instances of non-conformity with the recommendations in the report shall be detailed along with any measures required to ensure compliance with the internal noise criteria.

It is important to note that the above noise limits of 42 dB and 36 dB in the 63 Hz and 125 Hz octave bands respectively are 5 dB lower (more stringent) than Manchester City Council's normal limits where entertainment noise is present (as is set out in section 3.6.1.2 of the council's *Planning & Noise* Technical Guidance dated December 2015).

Details of Noise Measurements

Noise measurements were taken as a series of consecutive five-minute values between 16:00 on the afternoon of Friday 9 October 2018 and the morning of Monday 12 November 2018. On-going construction/fit-out works were ceased prior to the start of the measurements on the Friday and commenced again first thing on Monday morning. As such, the levels measured during Monday morning have been discarded as they most likely include extraneous noise.

The internal noise measurements were taken using a Rion NL52 'Type 1' sound analyser (serial no. 0242747), with the microphone mounted at approximately 1.4m above floor level in the centre of the Longworth Street bedroom of apartment 7. As before, it was noted that the room was decorated and carpeted (although with a polythene carpet protector in place), but not furnished.

The external noise measurements were taken using a Rion NA28 'Type 1' sound analyser (serial no. 00960036) with the microphone mounted onto a pole protruding approximately 1m outside the façade of the Longworth Street bedroom of apartment 5.

During the survey it was overcast, cool and generally dry although there was some rain on Friday evening and also for short periods during the daytime on both Saturday and Sunday. Wind speeds were generally low and below around 3 ms⁻¹ at all times.

Results of Internal Noise Measurements

The results of the noise measurements are summarised in Charts 1 and 2 (enclosed). Table 1 sets out the measured internal noise levels, with the relevant planning noise criteria also shown for completeness:

Table 1: Planning noise criteria and measured noise levels (dB)

Period	Noise Levels (dB)			
	15 th highest L _{Amax}	L _{Aeq}	L _{eq} at 63 Hz	L _{eq} at 125 Hz
Planning criteria				
Daytime	-	35	-	-
Night-time (including entertainment noise)	45	30	42	36
Measured noise levels				
Friday up to 23:00	-	23	-	-
Friday/Saturday 23:00 – 07:00	44	29	45	37
Saturday 07:00 – 23:00		22		
Saturday/Sunday 23:00 – 07:00	46	30	46	39
Sunday 07:00 – 23:00	-	21	-	-
Sunday/Monday 23:00 – 07:00	36	24	38	31

Values shown in green were within the relevant criteria, with those shown in red in excess of the required criteria.

It can therefore be seen that in terms of the overall L_{Aeq} values, the criteria were met for all daytime and night-time periods. The L_{Amax} criterion was met on both the Friday/Saturday and Sunday/Monday night-time periods, and the L_{eq} criteria in the 63 Hz and 125 Hz octave bands were also met during the Sunday/Monday night-time period.

Under normal circumstances, a change in noise of less than 3 dB is not perceptible. As such, the 1 dB exceedances of the 15th highest L_{Amax} and the corresponding L_{eq} at 125 Hz during the Friday/Saturday night-time are not significant.

The 3 - 4 dB exceedances in the measured L_{eq} in the 63 Hz octave band during Friday/Saturday and Saturday/Sunday night-times, and the corresponding value at 125 Hz during the Saturday/Sunday night-time would be just perceptible.

The measured noise levels in the 63 Hz and 125 Hz octave bands are within Manchester City Council's normal criteria.

There is no indication of any structure borne noise transmission from the nearby nightclub - we consider that the measured noise levels are due to external noise ingress only.

Results of External Noise Measurements

The night-time noise levels measured on Friday/Saturday 9/10 and Saturday/Sunday 10/11 November 2018 have been compared to the those measured over comparable periods between 7 – 10 August 2015 and which were used as part of the planning noise assessment.

Table 2: Comparison of measured external night-time noise levels (dB)

Elevation	Parameter	Octave band centre frequency (Hz)							A
		63	125	250	500	1k	2k	4k	
Adopted noise measurements for planning noise assessment									
August 2015	L _{max} *	87	86	80	78	82	78	71	85
	L _{eq,8hour}	73	65	64	63	64	60	52	67
Measured noise levels on 10 – 12 November 2018									
Friday/Saturday 9/10 November 2018	L _{max} *	87	78	77	81	82	77	71	85
	L _{eq,8hour}	75	62	61	65	65	59	52	68
Saturday/Sunday 10/11 November 2018	L _{max} *	91	81	80	84	85	79	73	88
	L _{eq,8hour}	78	65	63	67	66	61	59	70
Comparison of 2015 and 2018 noise levels									
Friday/Saturday 9/10 November 2018	L _{max} *	0	-8	-3	3	0	-1	0	0
	L _{eq,8hour}	2	-3	-3	2	1	-1	0	1
Saturday/Sunday 10/11 November 2018	L _{max} *	4	-5	0	6	3	1	2	3
	L _{eq,8hour}	5	0	-1	4	2	1	7	3

*- Typical L_{max} values based upon 15th highest L_{Amax}

Values shown in green indicate where the 2018 noise levels were the same as or below the 2015 values, with values shown in red indicating that 2018 levels were higher than in 2015.

As can be seen, the measured noise levels during the Friday/Saturday night-time period were very similar to, or slightly lower than, the 2015 values, with measured levels ranging from 8 dB below to 3 dB above the 2015 values. In overall A-weighted terms, the levels were the same or only marginally/imperceptibly higher.

During the Saturday/Sunday night-time period however, external noise levels were higher than in 2015, with individual octave band levels being up to 7 dB higher and overall A-weighted levels being 3 dB higher.

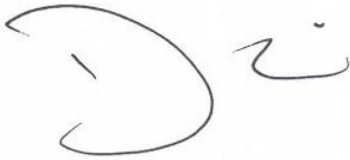
Summary & Conclusion

The recent internal noise measurements within the Longworth Street bedroom of apartment 7 have shown:

- Overall A-weighted L_{Aeq} noise levels during daytime and night-time periods are within the noise criteria set out in the planning consent;
- Typical L_{Amax} noise levels (i.e. the 15th highest over the whole of the night-time) are either within or only marginally (and imperceptibly) in excess of the planning noise criteria; and
- Average noise levels in the 63 Hz and 125 Hz octave bands during night-time periods when the History nightclub operates are 3 – 4 dB above the noise criteria set out in the relevant planning condition, but within Manchester City Council's normal limits where entertainment noise is present.

In addition to the above, the external noise measurements have shown that noise levels measured in November 2018 are generally similar to, or higher than, the corresponding levels measured as part of the planning noise assessment in August 2015.

Yours sincerely,
For Hepworth Acoustics Ltd

A handwritten signature in black ink, appearing to read 'D. Quinn', with a large 'D' and a stylized 'Q'.

Donald Quinn BSc FIOA
Managing Director

Enc.

Chart 1: Measured internal noise levels

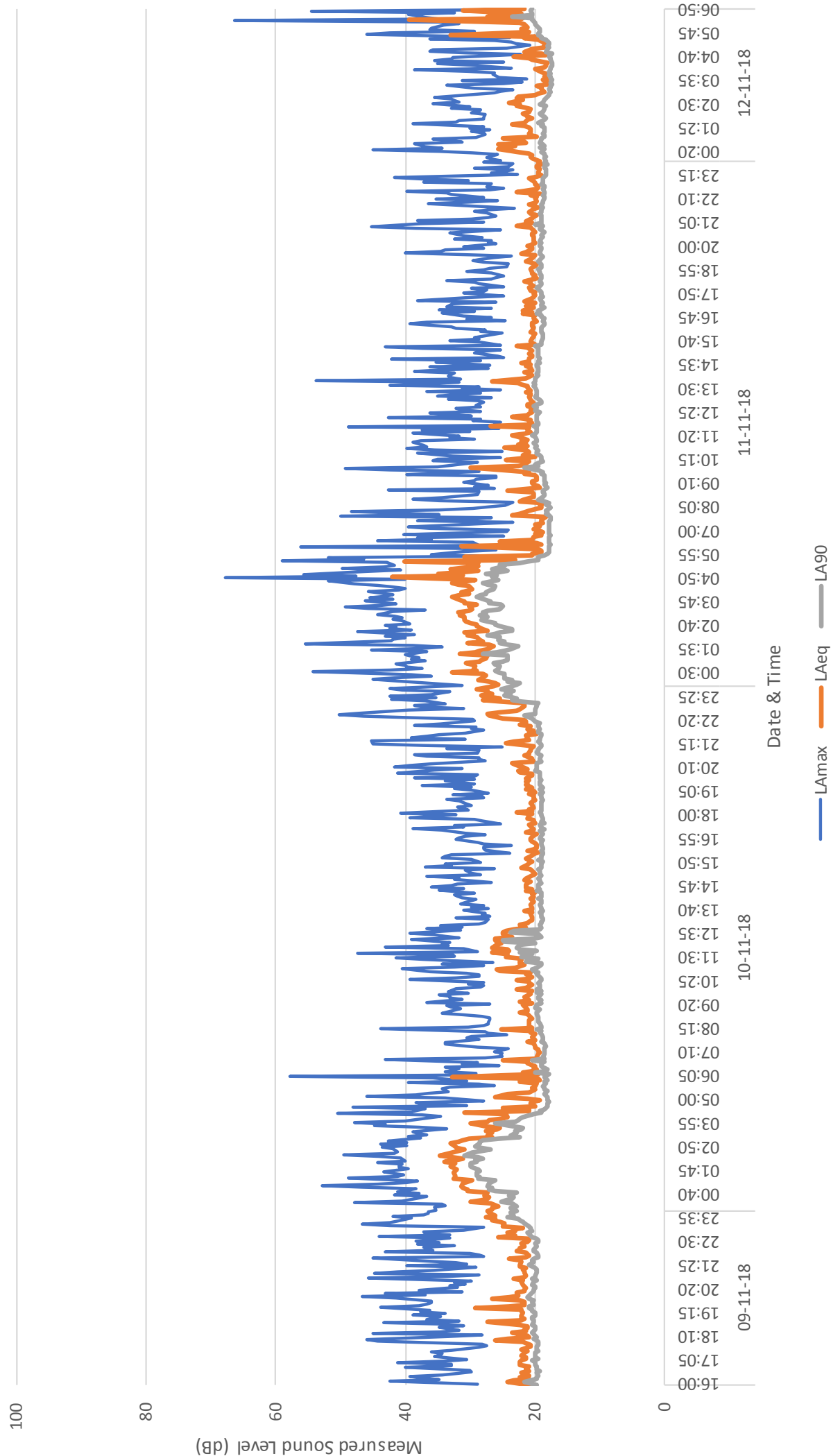
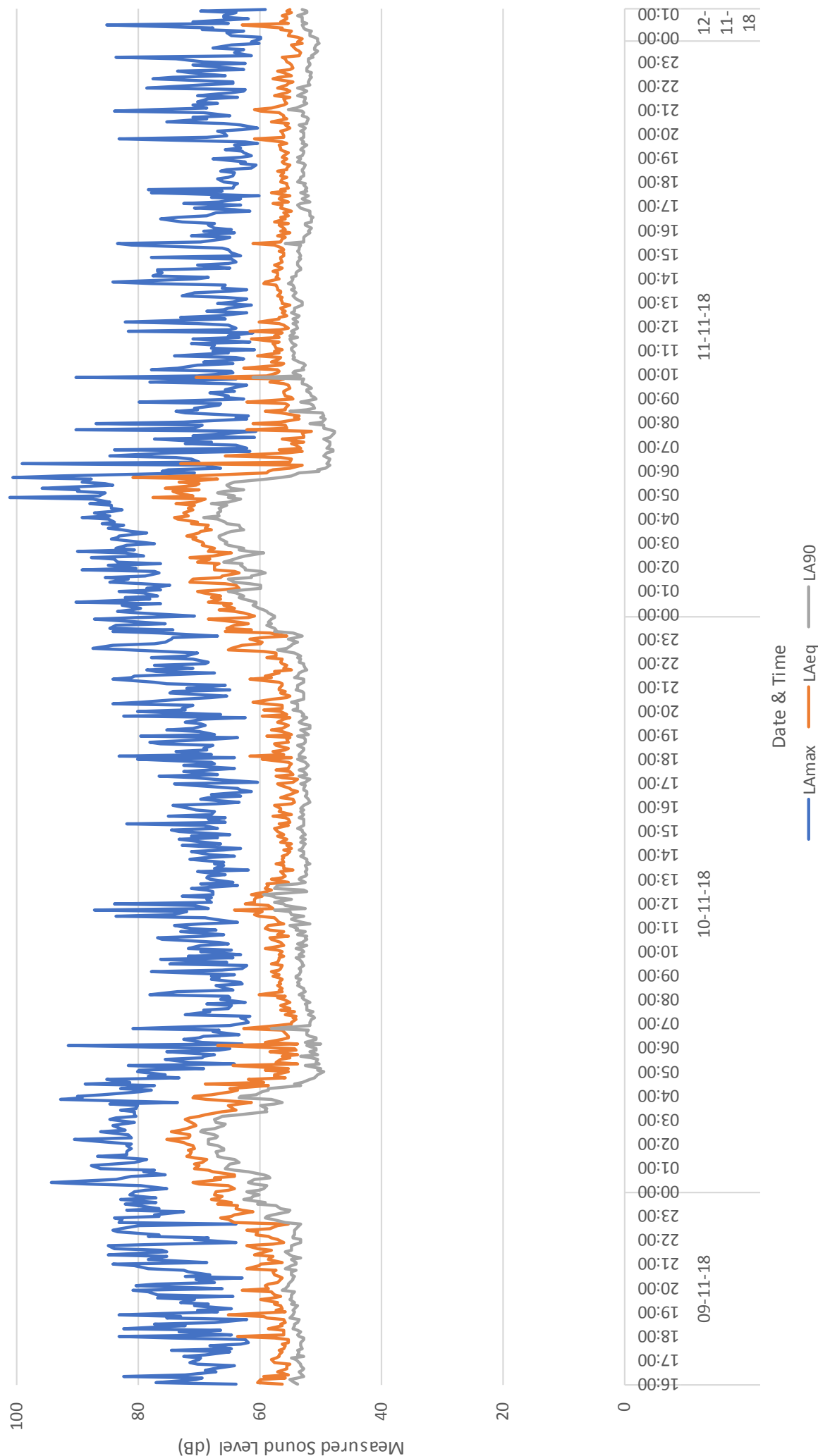


Chart 2: Measured external noise levels



Appendix C – Site Plan



8/8a St John Street, Manchester
 Site Layout
 Project 10212

Figure 1
 23 July 2020
 Not to Scale

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