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Environmental Assessments

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NOISE IMPACT ASSESSMENT FOR PROPOSED DEVELOPMENT:

273 Clayton Lane, Manchester M11 4SS

Prepared for:

Style Builders Limited

Prepared by:

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Institute of Acoustics number: 43468

Test Report Number: AS24-63.V1

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1.0 INTRODUCTION

1.1

Acoustic Solutions has been commissioned by Style Builders Limited to undertake a noise impact assessment for the proposed development, reference, 141276/FO/2024: Creation of a restaurant (Class E) to the first floor, erection of a single storey side extension, elevational alterations and creation of roof terrace with associated balustrade at the existing (but currently vacant Bridge Inn Public House at 273 Clayton Lane, Manchester M11 4SS. Manchester City Council's Planning Department has stated:

"I am unable to progress your property as the application is invalid or incomplete for the following reasons ..."

Reason 5) cites the lack of a noise impact assessment and report. It goes on to recommend that the applicant provides the following:

"An acoustic study identifying the ambient noise levels during daytime, nighttime and weekends, along with details of the noise levels that are currently achieved within the accommodation at various times during operating hours. The study should identify the acoustic treatment and measures necessary to limit the breakout of noise is according with a noise study of the premises and a scheme of acoustic treatment. The scheme shall include measures such as acoustic lobbies at access and egress points of the premises, acoustic treatment of the building structure, sound limiters linked to sound amplification equipment, details of the acoustic glazing and acoustically treated ventilation you have installed/propose to use and specified maximum internal noise levels. In your case the acoustic study is mainly going to relate to the air conditioning/ventilation."

1.2

The objectives for the noise impact assessment were therefore as follows:

- Establish the daytime, evening and nighttime ambient, residual and background sound levels at the application site and its surrounding environs;
- Establish the specific sound level of the extraction system, served by 1x Vent Axia MFW 500/4 kitchen extraction fan.
- Establish the likely noise impact of the development upon the occupiers of the nearest noise-sensitive premises.

1.3

This report details the methodology and results of the assessment. It has been prepared to accompany an application for planning permission that has been submitted to Manchester City Council.

1.4

This report has been prepared for the sole purpose described above and no extended duty of care to any third party is implied or offered. Third parties referring to the report should consult Style Builders Limited and Acoustic Solutions as to the extent to which the findings may be appropriate for their use.

1.5

A glossary of acoustic terms used in the main body of the text is contained in Appendix 1.

2.0 NOISE IMPACT ASSESSMENT CRITERIA

2.1

In terms of noise impact assessment criteria, Paragraph 170e of the National Planning Policy Framework (NPPF) 2023 states that planning policies and decisions should contribute to and enhance the natural local environment by '*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.'*

2.2

Planning Practice Guidance 2023 specifically dealing with noise was uploaded to the Government's Planning Portal in March 2014 as an accompaniment to the National Planning Policy Framework. This guidance is summarised herein.

2.3

The guidance states that noise needs to be considered when new developments may create additional noise. Whilst noise can override other planning concerns, neither the Noise Policy Statement for England and Wales nor the National Planning Policy Framework (which reflects the Noise Policy Statement for England and Wales) expects noise to be considered in isolation, separately from the economic, social and other environmental dimensions of proposed development.

2.4

In order to determine noise impact, local planning authorities' plan-making and decision taking should take account of the acoustic environment and in doing so consider:

- 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.

2.5

In line with the Explanatory Note of the Noise Policy Statement for England and Wales, this would include identifying whether the overall effect of the noise exposure is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation.

2.6

In terms of Observed Effect Levels:

- No Observed Adverse Effect Level (NOAEL) – This is the level of noise exposure below which no effect at all on health or quality of life can be detected;

- Lowest Observed Adverse Effect Level (LOAEL) – This is the level of noise exposure above which adverse effects on health and quality of life can be detected, and;

- Significant Observed Adverse Effect Level (SOAEL) – This is the level of noise exposure above which significant adverse effects on health and quality of life occur.

2.7

At the lowest extreme, when noise is not noticeable, there is by definition no effect. As the noise exposure increases, it will cross the 'no observed' effect level as it becomes noticeable. However, the noise has no adverse effect so long as the exposure is such that it does not cause any change in behaviour or attitude. The noise can slightly affect the acoustic character of an area but not to the extent there is a perceived change in quality of life. If the noise exposure is at this level no specific measures are required to manage the acoustic environment.

2.8

As the exposure increases further, it crosses the lowest observed adverse effect level boundary above which the noise starts to cause small changes in behaviour and attitude, for example, having to turn up the volume on the television or needing to speak more loudly to be heard. The noise therefore starts to have an adverse effect and consideration needs to be given to mitigating and minimising those effects (taking account of the economic and social benefits being derived from the activity causing the noise).

2.9

Increasing noise exposure will at some point cause the significant observed adverse effect level boundary to be crossed. Above this level the noise causes a material change in behaviour such as keeping windows closed for most of the time or avoiding certain activities during periods when the noise is present. If the exposure is above this level the planning process should be used to avoid this effect occurring, by use of appropriate mitigation such as by altering the design and layout. Such decisions must be made taking account of the economic and social benefit of the activity causing the noise, but it is undesirable for such exposure to be caused.

2.10

At the highest extreme, noise exposure would cause extensive and sustained changes in behaviour without an ability to mitigate the effect of noise. The impacts on health and quality of life are such that regardless of the benefits of the activity causing the noise, this situation should be prevented from occurring.

2.11

Table 2.1 summarises noise exposure hierarchy, based on likely average response.

Table 2.1 Guidelines – Noise Exposure Hierarchy

Noise Source	Assessment Location	LOAEL	SOAEL	Time
	Outdoor living space	55 dB $L_{Aeq,\ 1\ hour}$ (A)	56-60 dB $L_{Aeq,\ 1\ hour}$ (A)	Day (07:00-23:00)
	Façade	50 dB $L_{Aeq,\ 1\ hour}$ (A)	72 dB $L_{Aeq,\ 16\ hour}$ (A)	Day (07:00-23:00)
General environmental noise: Road/Rail	Façade	45 dB $L_{Aeq,\ 8\ hour}$ (B)	67 dB $L_{Aeq,\ 8\ hour}$ (A)	Night (23:00-07:00)
	Habitable Room	30 dB $L_{Aeq,\ 8\ hour}$ (B)	40 dB $L_{Aeq,\ 8\ hour}$ (A)	Night (23:00-07:00)
	Habitable Room	35 dB $L_{Aeq,\ 16\ hour}$ (A)	45 dB $L_{Aeq,\ 16\ hour}$ (A)	Day (07:00-23:00)
(A: World Health Organisation, 'Guidance for Community Noise: 1999';				
B: World Health Organisation, 'Night Time Noise Guidance for Europe: 2009';				
C: BS4142+A1: 2019)				

2.12

The subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any particular situation. These factors include:

- The source and absolute level of the noise together with the time of day it occurs;

- For non-continuous sources of noise, the number of noise events, and the frequency and pattern of occurrence of the noise;

- The spectral content of the noise (i.e. whether or not the noise contains particular high or low frequency content) and the general character of the noise (i.e. whether or not the noise contains particular tonal characteristics or other particular features);

- The local acoustic character of the area.

2.13

In addition, further useful contextual guidance is provided in:

- British Standard BS4142+A1: 2019: 'Methods for Rating and Assessing Industrial and Commercial Sound' (BS BS4142+A1: 2019);

- British Standard 8233:2014 'Guidance on Sound Insulation and Noise Reduction for Buildings' (BS 8233);

- World Health Organisation (WHO) Guidelines for Community Noise (1999)

2.14

BS BS4142+A1: 2019 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'. Typically, the greater this difference, the greater the magnitude of the impact. For example:

- *A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context;*

- *A difference of around +5 dB 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 low impact, depending on the context*

- *Adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact. Where the initial estimate of the impact needs to be modified due to the context, take all pertinent factors into consideration, including the absolute level of sound.*

- *For a given difference between the rating level and the background sound level, the magnitude of the overall impact might be greater for an acoustic environment where the residual sound level is high than for an acoustic environment where the residual sound level is low. Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night.*

2.15

British Standard 8233:2014 'Guidance on Sound Insulation and Noise Reduction for Buildings' sets indoor ambient noise levels from residential dwellings (see table below).

Table 2.2 – Indoor Ambient Noise Levels in Dwellings (BS 8233): 2014

Activity	Location	Good Indoor Ambient Noise Levels	
Resting	Living Room	35 dB $L_{Aeq\ (0700–2300)}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq\ (0700–2300)}$	30 dB $L_{Aeq\ (2300–0700)}$

2.16

With regard to sound attenuation through the building envelope, the 'weak points' in the building façade are generally considered to be the windows. The worked example (G.1) at Annex G of BS 8233 suggests that a partially opened window would provide sound attenuation of approximately 15 dB R_w.

The Standard also suggests that *"..standard insulating glass units have an insulation value of approximately 30 dB Rw"* when closed.

2.17

With respect to noise affecting external areas, i.e. gardens, BS 8233 states that *".. it is desirable that the steady noise level does not exceed 50 dB L_{Aeq}, and 55 dB L_{Aeq} should be regarded as the upper limit".*

2.18

The World Health Organisation's Guidelines for Community Noise (1999) sets indoor ambient noise levels from residential dwellings (see table below).

Table 2.3 – Indoor Ambient Noise Levels in Dwellings (WHO 1999)

Activity	Location	Good Indoor Ambient Noise Levels	
Resting	Living Room	35 dB $L_{Aeq\ (0700–2300)}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq\ (0700–2300)}$	30 dB $L_{Aeq\ (2300–0700)}$

3.0 BASELINE NOISE SURVEY

3.1

The application site is 273 Clayton Lane, Manchester M11 4SS (Appendix 2). The site stands at the point where Clayton Lane intersects the Ashton Canal, approximately 4 km east of Manchester city centre. Clayton Lane runs north-south to the east of the development site.

To the west of the site is Manchester City Football Club's training facilities. To the north and east are 2x large industrial premises, Carbogen Amcis and Evonik. Approximately 150 metres to the south is a small residential estate. The closest noise sensitive dwelling to the site is 30 Emily Beavan Close (150 metres south).

3.2

In order to establish the daytime, evening and nighttime residual and background noise levels at the application site and its surrounding environs, a noise impact survey was undertaken on Saturday 9 and Sunday 10 November 2024 between 12:00 and 01:00 hours (it is understood that the proposed opening hours of the restaurant will be approximately 12:00-23:00 hours). Table 3.1 summarises the identified noise sources in the vicinity of 273 Clayton Lane. Table 3.2 summarises the likely noise sources associated with the proposed restaurant in relation to the nearest noise-sensitive dwelling, 30 Emily Beavan Close.

Table 3.1 Identified Noise Sources

Source	Distance at its closest point, m			
	North	South	East	West
Road traffic, Clayton Lane	N/A	N/A	12	N/A
Pedestrians walking on Clayton Lane	N/A	N/A	9	N/A

Table 3.2 Potential Noise Sources Associated with the Development

Source	Distance at its closest point, m				Notes
	North	South	East	West	
Internal patrons	150	N/A	N/A	N/A	As perceived from 30 Emily Beavan Close
Patrons of roof terrace	150	N/A	N/A	N/A	As perceived from 30 Emily Beavan Close
Condenser unit associated with refrigeration	150	N/A	N/A	N/A	As perceived from 30 Emily Beavan Close
Kitchen Extraction unit	150	N/A	N/A	N/A	As perceived from 30 Emily Beavan Close
Car parking (front of site)	150	N/A	37	N/A	As perceived from 30 Emily Beavan Close
Patrons leaving	150	N/A	45	N/A	As perceived from 30 Emily Beavan Close

3.3

For the purpose of the assessment, two noise monitoring positions, MP1 and MP2 were adopted in free field environments at over 1.5 metres above ground and over 3 metres from any vertical reflective surface (see Appendix 2):

- MP1. Outside the eastern façade of 273 Clayton Lane. The monitoring position was selected to assess typical daytime, evening and nighttime Background and Residual noise levels at the development site.

- MP2. Outside the north-western façade of 30 Emily Beavan Close. The monitoring position was selected to assess typical daytime, evening and night time Background and Residual noise levels in the immediate vicinity of this address.

3.4

A series of hourly 15-minute noise measurements were undertaken using a Type 1 integrating sound level meter (Appendix 3). The measurement system calibration was verified immediately before the commencement of the

measurement sessions and again at the end. Weather conditions throughout the survey were dry and overcast with a maximum south-easterly wind speed of 3 metres per second: appropriate for monitoring. Measurements consisted of A–weighted parameters: L_{Aeq}, L_{A90}, and L_{AMax}.

3.5 MP1

Daytime, evening and nighttime sound levels can be described as moderately quiet. The principle existing daytime, evening and nighttime noise sources in the vicinity of MP1 was road traffic travelling along Clayton Lane. Traffic levels were low to moderate. Typical vehicle-counts established 10x daytime vehicle passes per minute and 3x nighttime (23:00-01:00 hours) vehicle passes per minute. A limited number of pedestrians were observed walking along the highway. There was no activity associated with Manchester City Football Club's training facilities. Table 3.3 summarises measured daytime, evening and nighttime noise. Residual and Background Noise Levels at MP1 (L_{Aeq}, L_{A90}, and L_{AMax} and their averages) and the Maximum Sound Levels (L_{Amax} and its maximum measured value).

Table 3.3 – MP1: Baseline Noise Measurement Data, Daytime, evening and nighttime Sound Levels

Measurement Time	Residual Noise Level, dB, $L_{Aeq, 15\ min}$	Background Noise Level, dB $L_{A90, 15\ min}$	Measured Noise Level, dB $L_{AMax, 15\ min}$
07:00	N/A	N/A	N/A
08:00	N/A	N/A	N/A
09:00	N/A	N/A	N/A
10:00	N/A	N/A	N/A
11:00	N/A	N/A	N/A
12:00	58.9	55.2	72.5
13:00	60.4	55.1	70.9
14:00	59.4	55.2	69.7
15:00	58.3	54.8	68.4
16:00	57.5	53	67.2
17:00	56.1	52.6	67.8
18:00	54.8	52.1	65.1
Average/Max	**58**	**54**	**73**
19:00	54.5	51.5	67.5
20:00	49.8	47.3	69.3
21:00	44.9	42	65.9
22:00	44.7	42.6	69.1
Average/Max	**48**	**46**	**69**
23:00	42	39.4	67.3
00:00	41.6	39	64.1
01:00	41.5	38.5	66
02:00	N/A	N/A	N/A
03:00	N/A	N/A	N/A
04:00	N/A	N/A	N/A
05:00	N/A	N/A	N/A
06:00	N/A	N/A	N/A
Average/Max	**42**	**39**	**67**

3.6 MP2

Daytime, evening and nighttime sound levels can be described as quiet. The principle existing daytime, evening and nighttime noise sources in the vicinity of MP2 was pedestrians using the footpaths that intersect the housing estate. Traffic using Clayton Lane was faintly audible. Table 3.4 summarises measured daytime, evening and nighttime noise. Residual and Background Noise Levels at MP2 (L_{Aeq}, L_{A90}, and L_{AMax} and their averages) and the Maximum Sound Levels (L_{Amax} and its maximum measured value).

Table 3.4 – MP2: Baseline Noise Measurement Data, Daytime, evening and nighttime Sound Levels

Measurement Time	Residual Noise Level, dB, $L_{Aeq, 15\ min}$	Background Noise Level, dB $L_{A90, 15\ min}$	Measured Noise Level, dB $L_{AMax, 15\ min}$
07:00	N/A	N/A	N/A
08:00	N/A	N/A	N/A
09:00	N/A	N/A	N/A
10:00	N/A	N/A	N/A
11:00	N/A	N/A	N/A
12:00	37.7	33	55.2
13:00	37.6	33	57
14:00	37.4	32.9	55.2
15:00	37.5	32.9	53.9
16:00	37	32.6	54
17:00	39.9	32.5	54.8
18:00	36.9	32.5	55
Average/Max	**38**	**33**	**57**
19:00	35.8	32.4	53
20:00	36	32.4	55.1
21:00	35.4	32.1	50.4
22:00	35	31.7	50.7
Average/Max	**36**	**32**	**55**
23:00	32.8	30.2	50.3
00:00	33.7	30	54.7
01:00	32.5	31.1	49.9
02:00	N/A	N/A	N/A
03:00	N/A	N/A	N/A
04:00	N/A	N/A	N/A
05:00	N/A	N/A	N/A
06:00	N/A	N/A	N/A
Average/Max	**33**	**30**	**55**

4.0 DISCUSSION

4.1 Noise Sources Associated with the Development

4.1.1 Internal Patron Noise

The assessment will predict the noise impact of 60x persons (30x male, 30x female): the maximum proposed number of patrons. The predictions are based upon “The Noise Manual” (Berger 2003), which quotes the following typical sound level values associated with persons’ voices:

- 1x Male 58 / 65dB, L_{Aeq} (normal/raised);
- 1x Female 55 / 63dB L_{Aeq} (normal/raised).

Each of these values will be logarithmically multiplied by the number of male and female patrons to predict noise levels from patrons talking at 1 metre. Given the proposed nature of the development, predictions will be made for normal, unraised voices only. Table 4.1 summaries the predicted noise levels in the restaurant.

Table 4.1 Predicted Sound Pressure Level Associated with 60x Persons Talking in Unison

Male/Female	Number	SPL, Normal Voice, dB
Men	30	71
Women	30	69
Total	**60**	**73**

Table 4.2 summaries the predicted noise breakout based on 3x scenarios. Scenario One assumes closed window attenuation (window sound attenuation performance, $R_{,w}$: 32 dB). Scenario Two assumes open-window sound attenuation: 15 dB. Scenario Three assumes open external door, affording no noise attenuation. Breakout is calculated using Equation 4.1:

Equation 4.1 Internal-to-External Noise Breakout

$$SPL_2 = SPL_1 - R - 6$$

Where:

SPL2 = SPL immediately outside the partition

SPL1 = The Reverberant SPL inside the room, next to the partition

R = SRI of partition

Table 4.2 Internal-to-External Noise Breakout Predictions

Internal Noise Level, dB	Attenuation, dB	Predicted Noise Breakout, dB
73	32	35
73	15	52
73	0	67

The assessment will base its noise impact prediction upon a worse case scenario where the external door opening to allow customer access/egress is resulting in a sound level of 67 dB 1 metre outside the premises' eastern façade.

4.1.2 Patrons Using the Rooftop Terrace

Table 4.3 summarises the predicted noise level at 1 metre of 20x persons (10x male, 10x female) talking simultaneously on the proposed rooftop terrace. It is not known where the terrace is to be located. If is to be located on the premises' rear, north-facing façade, there will be negligible impact upon occupiers of 30 Emily Beavan Close. The assessment will assume a worse case scenario where the terrace is located on the front, south-facing façade.

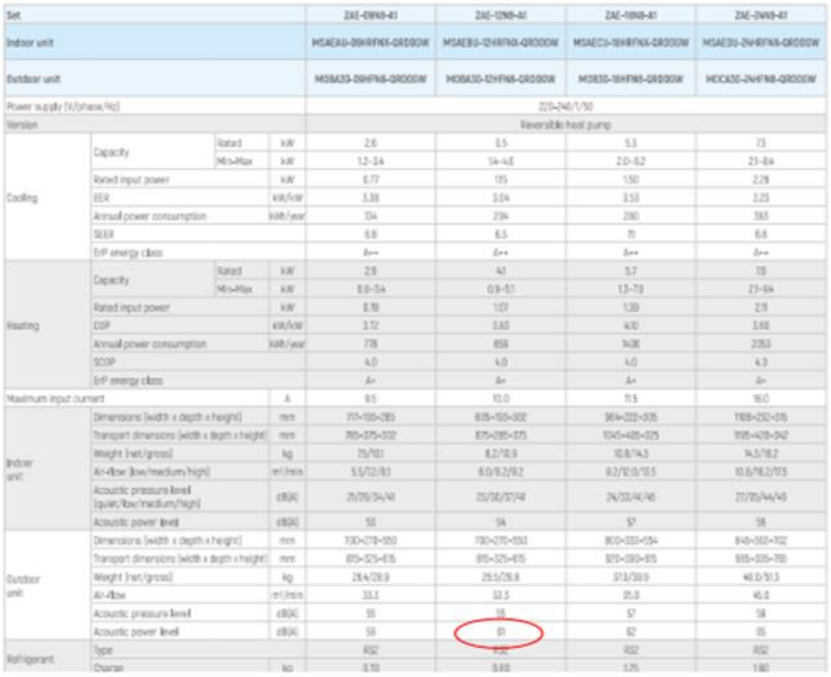
Table 4.3 Predicted Sound Pressure Level Associated with 20x Persons Talking in Unison

Male/Female	Number	SPL, Normal Voice, dB
Men	10	66
Women	10	64
Total	**20**	**68**

4.1.3 Condenser Unit Associated with Refrigeration

Plan 4.1 summarises the sound data associated with the MDV model ZAE 12N8-A1 condenser unit @ 1 metre: 61 dB (MDV 2024). A +3 dB correction is applied to account for wall reflection: 64 dB.

Plan 4.1: MDV ZAE 12N8-A1 Sound Data



It is not known where the unit is to be located. If is to be located on the premises' rear, north-facing façade, there will be negligible impact upon occupiers of 30 Emily Beavan Close. The assessment will assume a worse case scenario where the unit is located on the front, south-facing façade.

4.1.4 Kitchen Extraction Unit

The noise impact prediction is based upon the noise associated with 1x Helios GBW 450/4 multi-flow Gigabox centrifugal fan.

Table 4.4 summarises the sound data associated with the Helios GBW 450/4 multi-flow Gigabox centrifugal fan @ 1 metre from the flue termination point (Helios 2024, page 255).

Table 4.4: Helios 450/4 Sound Data

Frequency	Hz	Total	125	250	500	1K	2K	4K	8K
LWA	dB(A)	75	64	56	68	70	68	53	57

It is not known where the unit is to be located. If is to be located on the premises' rear, north-facing façade, there will be negligible impact upon occupiers of 30 Emily Beavan Close. The assessment will assume a worse case scenario where the unit is located on the front, south-facing façade.

4.1.5 Car Park

Table 4.5 summarises sample sound pressure levels associated with 1x vehicle's arrival/departure, as measured by Acoustic Solutions. It is anticipated that patrons will use between 30 x vehicles (approx.). This will result in a series of engine noise and car door closing noise events, as opposed to a single, cumulative noise event. For the purposes of the prediction calculation, a +3 dB Noise Intermittency Penalty, as published in BS4142+A1: 2019, will be applied.

Table 4.5 Vehicle Noise @ 1 Metre

Noise Source	Noise Level, dB	Intermittency Penalty, dB	Total, dB
Vehicle Arriving @1 metre	54.9	3	58
Door Closing @ 1 metre	66.9	3	70
Vehicle Departing @ 1 metre	54.9	3	58

The loudest vehicle-associated noise source, closing doors, will be used for the impact assessment.

4.1.6 Patrons Departing

Table 4.6 summarises the predicted noise level at 1 metre of 6x persons (3x male, 3x female) talking simultaneously as they exit the restaurant onto Clayton Lane.

Table 4.6 Predicted Sound Pressure Level Associated with 6x Persons Talking in Unison

Male/Female	Number	SPL, Normal Voice, dB
Men	3	61
Women	3	59
Total	**6**	**63**

4.2 4.2 BS4142+A1: 2019 External Noise Impact Prediction

Table 4.7 summarises the combined noise level associated with the condenser unit and the kitchen extraction unit serving 273 Clayton Lane, plus the noise associated with patron's cars.

Table 4.7 Combined Noise Levels

Noise Source	Measured Noise Level, dB
1x Condensor Unit	64
1x Kitchen Extraction Unit	75
Car Door Closing	70
Total Noise Sources	**79**

Table 4.8 summarises the predicted single-figure external daytime, evening and nighttime rating values. These values describes the combined noise impact at 30 Emily Beavan Close of the condenser unit and the kitchen extraction unit serving 273 Clayton Lane, plus the noise associated with

patron's cars. The combined noise levels, described in Paragraphs 4.1.3, 4.1.4 and 4.1.4 are corrected for distance attenuation using the calculation described in Equation 4.2.

Equation 4.2 Distance Attenuation of Sound

$$SPL2 = SPL1 - 20log, r\text{-}11$$

Where:

SPL1 is the sound pressure level outside 273 Clayton Lane;

SPL2 is the distance-attenuated sound pressure level outside 30 Emily Beavan Close;

r = Distance, 150 metres

Table 4.8 BS4142+A1: 2019 – predicted single-figure external daytime, evening and nighttime noise impact of the kitchen extraction unit serving 273 Clayton Lane

Background Noise, dB, $L_{A90,15}$	Specific Noise Level, dB, L_{Aeq}	Tonal Penalty (3-6)	Impulsive Penalty (3-9)	Intermittency Penalty (0-3)	Rating, dB	Rating Adjusted for Distance Attenuation, dB	Comments
33	79	0	3	0	49	-5	No Adverse Impact
32	79	0	3	0	50	-5	No Adverse Impact
30	79	0	3	0	52	-3	No Adverse Impact

4.3 Predicted Change of Noise Level

HS2 Phase 1 (Environment Statement) Change of Sound Levels: 2017

The noise impact prediction methodology prescribed by BS4142+A1: 2019 compares L_{Aeq} and L_{A90} parameters with one another to derive a single-figure impact predictor. The methodology employed by HS2 Phase 1 (Environmental Statement): 2017 uses a direct L_{Aeq}-to-L_{Aeq} model. By logarithmically adding the measured Residual Noise Levels at MP2 with the Specific Noise Level associated with the extraction unit, a cumulative noise level can be derived. By comparing measured Residual Noise Level to the predicted cumulative value, a Level Change can be derived. The short and long-term impacts of these changes can then be determined.

4.3.1 Change of Sound Levels - Noise Impact, at the boundary of 30 Emily Beavan Close

Table 4.9 summarises the combined noise level of all noise sources associated with the development at 273 Clayton Lane.

Table 4.9 Combined Noise sources Associated with 273 Clayton Lane

Noise Source	Measured Noise Level, dB
1x Condensor Unit	64
1x Kitchen Extraction Unit	75
Car Door Closing	70
Internal Patrons Break-Out Noise	67
Patrons on Roof Terrace	68
Patrons Leaving	63
Total Noise Sources	79
150 Metre Distance Attenuation, dB	-55
Combined Noise Level at 30 Emily Beavan Close, dB	**24**

Tables 4.10 and 4.11 summarise the comparison between the average measured Residual Noise Level, L_{Aeq}, outside 30 Emily Beavan Close, the combined Specific Noise Level associated with 273 Clayton Lane, their Sound Level Changes (calculated by logarithmically adding the residual and combined specific noise levels) and the short- and long-term noise impacts that will result from these changes.

Table 4.10 Long and short-term noise impacts associated with change of noise levels

Long Term Impact	Short Term Impact	Sound Level Change, dB, LAeq,T
Negligable	Negligable	=/>0 to <1
	Minor	=/>1 to <3
Minor	Moderate	=/>3 to <5
Moderate	Major	=/>5 to <10
Major		=/>10

Table 4.11 Daytime, Evening and Nighttime Impacts

Time	Existing Noise Level, dB	Predicted Noise Level, dB	Change, dB	Long Term Impact	Short Term Impact
Daytime	38	38	0	Negligable	Negligable
Evening	36	36	0	Negligable	Negligable
Nighttime	36	36	0	Negligable	Negligable

5.0 CONCLUSIONS

5.1

Pursuant of a planning application for the proposed development, reference, 141276/FO/2024: Creation of a restaurant (Class E) to the first floor, erection of a single storey side extension, elevational alterations and creation of roof terrace with associated balustrade at 273 Clayton Lane, a daytime, evening and nighttime noise impact assessment has been carried out at 273 Clayton Lane and at the nearest noise sensitive dwelling to this premises, 30 Emily Beavan Close.

5.2

The existing noise daytime, evening and nighttime noise levels at 273 Clayton Lane and 30 Emily Beavan Close have been measured.

5.3

Noise levels associated with the development have been predicted.

5.4

Using BS4142+A1: 2019 and HS2 Phase 1 methodology**,** these predicted noise levels have been used to predict the daytime, evening and nighttime noise impact at 30 Emily Beavan Close. It is predicted that the noise impact at this location will be negligible at all times of day.

5.5

This being the case, no noise attenuation measures, as proposed by Manchester City Council, are necessary.

Appendix 1
Glossary of Acoustic Terms

Sound Pressure Level (L_p)

The basic unit of sound measurement is the sound pressure level. As the pressures to which the human ear responds can range from 20 µPa to 200 Pa, a linear measurement of sound levels would involve many orders of magnitude. Consequently, the pressures are converted to a logarithmic scale and expressed in decibels (dB) as follows:

$L_p = 20 \log_{10}(p/p_0)$

Where L_p = sound pressure level in dB; p = rms sound pressure in Pa; and p0 = reference sound pressure (20 µPa).

A-weighting Network

A frequency filtering system in a sound level meter, which approximates under defined conditions the frequency response of the human ear. The A-weighted sound pressure level, expressed in dB(A), has been shown to correlate well with subjective response to noise.

Equivalent continuous A-weighted sound pressure level, $L_{Aeq, T}$

The A-weighted 'equivalent continuous noise level' which is an average of the total sound energy measured over a specified period of time. In other words, L_{Aeq} is the level if a continuous noise which has the same total (A-weighted) energy as the real fluctuating noise, measured over the same time period. L_{Aeq} is increasing being used as the preferred parameter for all forms of environmental noise.

$L_{A90, T}$

The A-weighted sound pressure level of the residual noise in decibels exceeded 90% of a given time interval, T. L_{A90} is typically taken as representative of background noise.

$L_{A\ max}$

The maximum A-weighted noise level recorded during the measurement period.

Hz

The unit of frequency. The number of cycles (in the context of acoustics, the number of complete sound waves generated) per second.

Appendix 2

Location Plan and Noise Monitoring Positions

MP1: 273 Clayton Lane

MP2 30 Emily Beavan Close



Appendix 3

Equipment Used

Noise measurements were undertaken using a precision grade sound level meter:

Norsonic Nor145 Model integrating sound level meter.
Serial Number 14529307
Certificate Number U35939/U35940
Last Laboratory Calibrated 17/10/24

B & K 4230 Model calibrator
Serial Number 724157
Last Laboratory Calibrated 13/2/24

The Sound Level Meter was calibrated before and after both measurement periods, with no significant change in calibration. All calibrations took place at the measurement position.

The SLM met the requirements of BS EN 60651: 1994 and BS EN 60804: 2001 IEC 60804: 2000. It was capable of simultaneously measuring Leq and Ln values. Batteries for the SLM and calibrator were checked prior to all measurements.