Noise Impact Assessment

Site Address: Zapp Restaurant, Unit 3, The Lincoln, Brazennose Street, Manchester M2 5BP

Client Name: Inspire Design Consultancy

Project Reference: NP-012874

Authorisation and Version Control		
Revision	Reported By	Checked By
02	D J McCann, BSc	R Chamberlain, BSc, MIOA

Amendment History		
Revision	Date	Summary of Amendments
02	06/08/2025	Addition of southern receptor assessment.

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Contact Details

NOVA Acoustics Ltd,
Suite 13, Crown House,
94 Armley Road,
Leeds,
LS12 2EJ

0113 322 7977

www.novaacoustics.co.uk

technical@novaacoustics.co.uk

Delivering sustainable development by promoting good health and well-being through effective management of noise.

Contents

1. INTRODUCTION 4
1.1 Standards, Legislation, Policy & Guidance 4
1.2 Proposal Brief 4
1.3 Local Planning Authority & Background 5
2. ENVIRONMENTAL NOISE SURVEY 6
2.1 Measurement Methodology 6
2.1 Context & Subjective Impression 6
2.2 Context & Subjective Impression 7
2.3 Environmental Noise Survey Results 7
3. BS4142 NOISE IMPACT ASSESSMENT 10
3.1 Proposed External Fixed Plant & Specific Sound Levels 10
3.2 BS4142 Noise Impact Assessment 10
4. CONCLUSION AND ACTION PLAN 13
APPENDIX A – ACOUSTIC TERMINOLOGY 14
APPENDIX B – STANDARDS, LEGISLATION, POLICY, AND GUIDANCE 15
B.1 – National Planning Policy Framework (2024) 15
B.2 – Noise Policy Statement for England (2010) 15
B.3 – BS4142:2014+A1:2019 – 'Methods for rating and assessing industrial and commercial sound' 17
APPENDIX C – LOCATION PLANS 20
APPENDIX D – ENVIRONMENTAL SURVEY 21
D.1 – Time History Noise Data 21
D.2 – Surveying Equipment 21
D.3 – Meteorological Conditions 22
APPENDIX E – CALCULATIONS 23

List of Figures

Figure 1 – Proposed Development 5
Figure 2 – Measurement Locations and Site Surroundings 6
Figure 3 – MP1 Daytime Operational Hours Background Sound Level Analysis 8
Figure 4 – MP1 Night-time Operational Hours Background Sound Level Analysis 8
Figure 5 – MP1 Noise Survey Time History 21

List of Tables

Table 1 – Measurement Methodology 6
Table 2 – Measured Noise Levels at MP2 9
Table 3 – Calculated Specific Sound Level at NSR 9
Table 4 – Sound Power Levels of Plant Equipment 10

Table 5 – BS4142 Noise Impact Assessment – NSR1 11
Table 5 – BS4142 Noise Impact Assessment – NSR2 12
Table 6 – Meteorological Conditions 22

1. Introduction

NOVA Acoustics Ltd has been commissioned to prepare a noise impact assessment for the retrospective installation of plant ('the proposed development') at the Zapp Restaurant, Unit 3, The Lincoln, Brazennose Street, Manchester M2 5BP ('the site').

The applicant has received conditional approval for planning application No. 139718/FO/2024 ('the Application') from (Manchester City Council). This report has been prepared to address Condition 3a and 3b of the conditional approval imposed by the Local Planning Authority ('LPA').

A noise survey has been undertaken to establish the prevailing background sound levels at the closest Noise Sensitive Receptors ('NSR'). The report details the existing background sound climate and the predicted noise emissions associated with the proposed development. Measures required to mitigate noise impact from the proposed development have been recommended where necessary and 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:

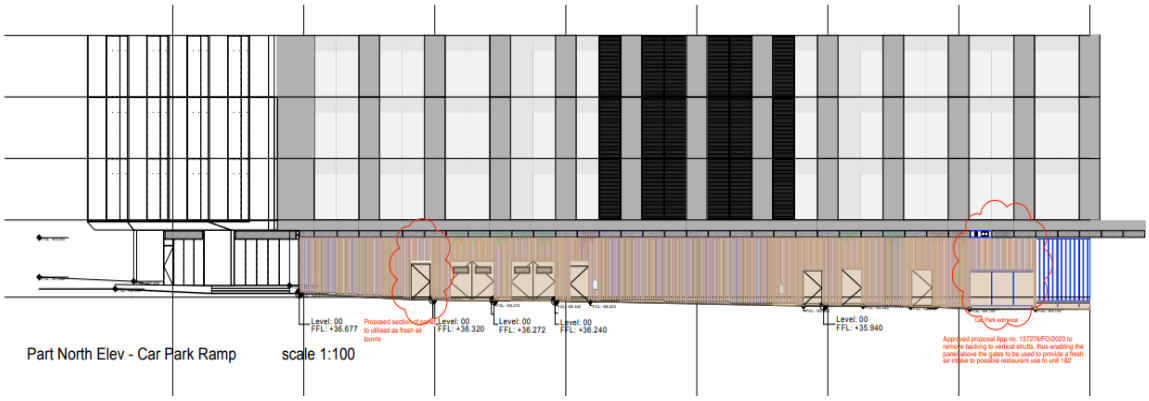
- The Local Planning Authorities (LPA) conditional approval; specifically, 'Condition 3a'.
- National Planning Policy Framework (2024).
- Noise Policy Statement for England (2010).
- British Standard BS4142:2014+A1:2019 – 'Methods for rating and assessing industrial and commercial sound'.
- Manchester City Council 'Planning and Noise Technical Guidance'.

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

1.2 Proposal Brief

The proposals have included for the installation of a mechanical extract system. There is a supply air intake louvre that has been installed over a service door on the northern elevation. The extract of the system is located at roof level. It is understood that there are defined operating hours for the equipment and so it has been assumed that it could operate 24 hours a day, seven days a week to form a worst-case scenario.

Figure 1 illustrates the proposed development layout.



Drawing Ref No. ZaaP/Manc/PP/ 201 Part Ground Floor Plan from 'Inspire: Design Consultancy'

Figure 1 – Proposed Development

1.3 Local Planning Authority & Background

The following planning condition imposed on application No. 139718/FO/2024 by the LPA requires discharging:

"3a) Externally mounted ancillary plant, equipment, and servicing or plant within or behind louvres shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location. Prior to commencement of the development hereby approved the scheme shall be submitted to and approved in writing by the City Council as local planning authority in order to secure a reduction in the level of noise emanating from the site. The scheme shall be implemented in full before the use commences."

In order to discharge the above, verification testing has been requested by Manchester City Council, as per Condition 3b).

"3b) Prior to the operation of the scheme a verification report shall be submitted to and approved in writing by the City Council as local planning authority to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved acoustic report. The report shall also undertake post completion testing to confirm that the noise criteria have 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 agreed noise criteria."

2. Environmental Noise Survey

2.1 Measurement Methodology

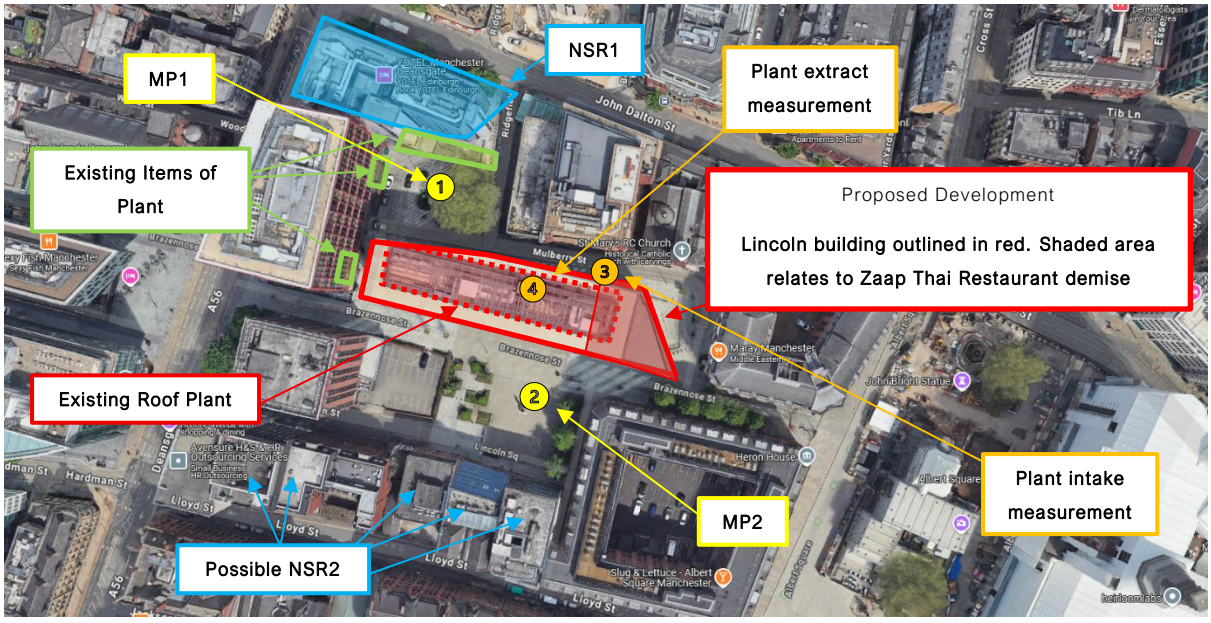
An unattended noise level survey was undertaken to determine the existing noise climate in the area adjacent to the NSR's that are located to the north-west. These were supported by attended spot measurements of the background sound level to the south of the site, and of individual measurements of the installed items of plant.

The measurement dates and particulars are outlined in the following table. For all measurements, the equipment was fitted with its proprietary environmental kit, including a 130mm windshield. All equipment was field calibrated before and after measurements, and negligible drift was noted. Details of the equipment register, and meteorological conditions recorded during the survey can be found in Appendix D.

Location	Survey Dates	Measurement Particulars
MP1	12:15 hours, 23/06/2025 – 09:30 hours, 25/06/2025	Equipment mounted on a lamppost approximately 10m from NSR1. The microphone was located approximately 4m above the ground, in a free-field condition. The monitoring location is deemed representative of the background sound level of the NSRs' front windows.
MP2	10:00 – 10:15 hours, 23/06/2025 & 09:45 – 10:00 hours, 25/06/2025	Equipment mounted on a tripod at 1.5m above ground under free-field conditions within the courtyard located off Brazennose Street.

Table 1 – Measurement Methodology

The figure below outlines the site surroundings and measurement locations:



Imagery©2025 Google, Map data ©2025, Map data ©2025

Figure 2 – Measurement Locations and Site Surroundings

2.2 Context & Subjective Impression

The proposed items of mechanical plant serve the Zaap Thai Restaurant that is located in Manchester City centre. The site is located within the Lincoln Building. The works have included for new mechanical services plant that supplies fresh air intake at ground floor level (via a louvre fronting onto Mulberry Street to the north), and extracts from an existing rooftop plant compound.

Within Lincoln Building are various other commercial and retail units. Some of these also have items of plant located within the rooftop compound.

The nearest residential receptors located to the items of plant are approximately 35m away to the north-west. These are associated with the YOTEL Manchester Deansgate hotel. The hotel itself has several items of plant that are located to the north-west of the proposed items of plant. These have been highlighted on the above figure as NSR1. Also highlighted in this area are other items of plant serving surrounding commercial and retail units.

To the south of the site are several buildings, however, it is unclear whether any of these are residential in nature. These are identified as NSR2 on the figure above. For robustness, the closest of these buildings will be included for assessment.

The noise climate in the area is deemed to be moderate in level and is affected by typical inner city sources such as road traffic and distant construction noise. Noise from the nearby items of plant also impacts the noise climate.

2.3 Environmental Noise Survey Results

MP1 Background Sound Level Analysis

The following section outlines the measured background sound levels that have been used as the baseline for the subsequent BS4142 noise assessment. The figure below shows a histogram of the background sound levels measured during the day and night periods at MP1. As discussed in Section 2.2, construction site works were carried out between the 09:00 and 17:00 hours throughout the noise survey, and hence, the evening background sound levels between 17:00 and 23:00 hours will be used to determine the typical daytime background sound level.

The time history results can be found in Appendix D.

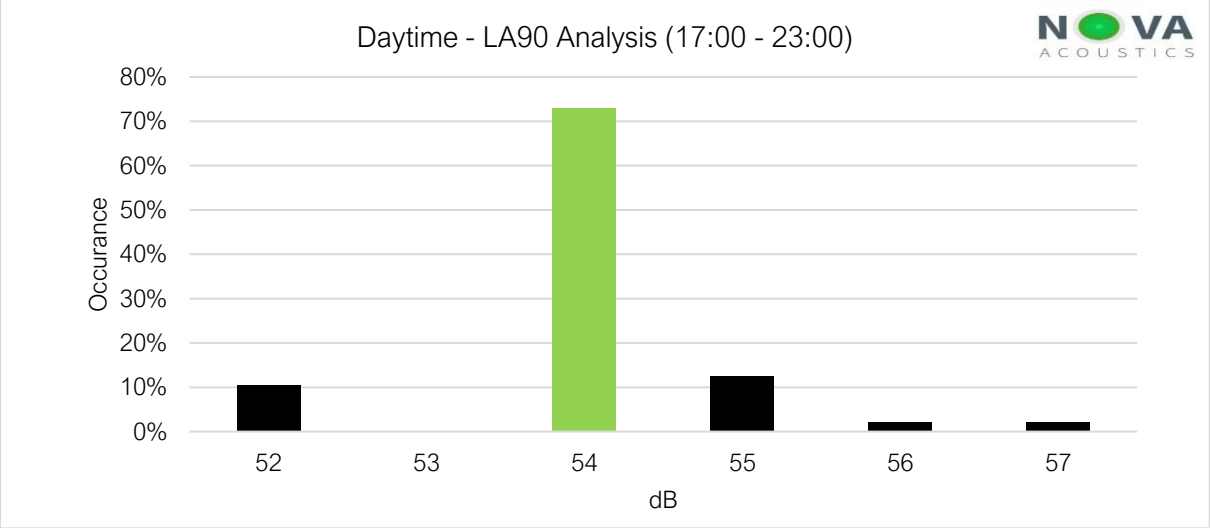


Figure 3 – MP1 Daytime Operational Hours Background Sound Level Analysis

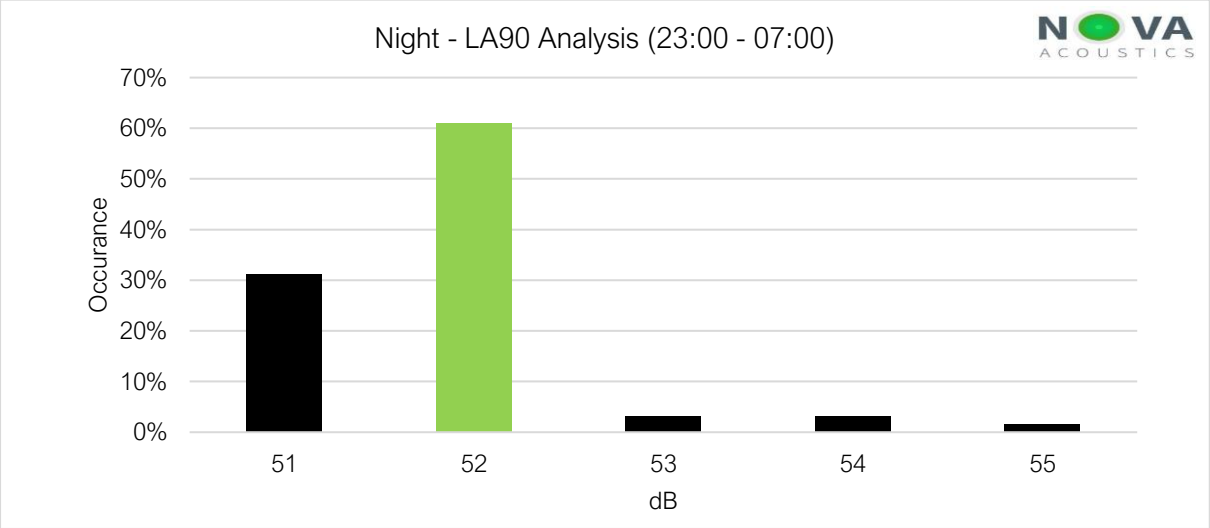


Figure 4 – MP1 Night-time Operational Hours Background Sound Level Analysis

The 'lowest typical' $L_{A90,15min}$ values are considered to be 54dB and 52dB during the daytime and night-time, respectively.

For context, the overall daytime background sound levels between 09:00 and 23:00 hours were also 54dB $L_{A90,15min}$.

MP2 Spot Measurement Results Summary

Presented in the table below are the measured ambient and background sound levels measured at MP2.

Period	Octave Band (Hz, L_{eq} dB)								Overall (dBA)	
	63	125	250	500	1k	2k	4k	8k	$L_{eq,T}$	$L_{90,T}$
10:00 – 10:15 hours, 23/06/2025	58	56	53	53	50	46	41	35	55	52
09:45 – 10:00 hours, 25/06/2025	59	55	53	51	49	47	46	46	55	49

Table 2 – Measured Noise Levels at MP2

Based on the above, it can be considered that the background sound levels within the area around the Lincoln Building are broadly consistent. As a result, it would be deemed appropriate to use the long-term background sound levels measured at MP1 to form the basis of the assessment for NSR1.

For NSR2, the lowest measured recorded at MP2 will be used and to predict the night-time background sound level at this location, the difference in the daytime to night-time background sound levels recorded at MP1 will be accounted for (-2dB).

Plant Items - Spot Measurement Results Summary

Ambient measurements were conducted with the plant equipment operating at the maximum permitted capacity. Further residual measurements were conducted with the plant equipment switched off. Logarithmically subtracting the measured residual sound levels from the measured ambient sound levels has allowed specific sound levels to be calculated. Presented in the table below are the measured ambient and residual sound levels and the subsequent specific sound levels. All measurements were undertaken at 1m from the sound source.

Location	Description	Octave Band (Hz, L_{eq} dB)								Overall (dBA)
		63	125	250	500	1k	2k	4k	8k	
MP3 (Fresh Air Intake)	Ambient Sound Level	62	68	54	49	47	46	41	36	55
	Residual Sound Level	54	53	53	48	46	41	37	29	51
	Specific Sound Level	61	68	48	41	40	44	39	35	53
MP4 (Rooftop Extract)	Ambient Sound Level	76	71	62	56	55	53	48	44	62
	Residual Sound Level	62	59	55	52	51	46	43	42	55
	Specific Sound Level	76	71	61	54	52	51	46	40	61

Table 3 – Calculated Specific Sound Level at NSR

3. BS4142 Noise Impact Assessment

In the following section of the report, the impact of the noise emissions generated by the proposed louvred panel is assessed.

3.1 Proposed External Fixed Plant & Specific Sound Levels

The following table shows the 1/1 octave frequency band sound power levels of the measured fresh air intake at ground floor level and the rooftop extract. Full calculations are shown in Appendix E. The spectrum data was obtained from the following:

- The specific sound levels and measurement distances presented in Table 3,
- Point source behaviour,
- The relevant Q factors depending on the source location.

Description	1/1 Octave Frequency Band (Hz, L_W dB)								Overall (dBA)
	63	125	250	500	1k	2k	4k	8k	
Ground Floor Fresh Air Intake	69	76	56	49	48	52	47	43	61
Rooftop Extract	84	79	69	62	60	59	54	47	69

Table 4 – Sound Power Levels of Plant Equipment

3.2 BS4142 Noise Impact Assessment

The calculations and BS4142 noise impact assessment at each NSR are presented in the table below.

Please note that only a comparison against the night-time background sound level is presented below as this represents a more onerous criterion to the daytime which has a higher background sound level. Provided the night-time limits are met, the daytime limits would inherently be achieved.

NSR1 – Noise Impact Assessment

Description	1/1 Octave Frequency Band (Hz, dB)								Overall (dBA)
	63	125	250	500	1k	2k	4k	8k	
GF Fresh Air Intake (L_w)	69	76	56	49	48	52	47	43	61
Propagation Loss to NSR1	-36 (35m – Q4)								--
Specific Sound Level at NSR1	**33**	**40**	**20**	**13**	**12**	**17**	**11**	**7**	**26**
Rooftop Extract (L_w)	84	79	69	62	60	59	54	47	69
Propagation Loss to NSR1	-37 (40m – Q4)								--
Specific Sound Level at NSR1	**42**	**37**	**27**	**15**	**13**	**12**	**2**	**0**	**25**
Cumulative Specific Sound Level	**43**	**42**	**28**	**18**	**16**	**18**	**12**	**9**	**28**

Description	1/1 Octave Frequency Band (Hz, dB)								Overall (dBA)
	63	125	250	500	1k	2k	4k	8k	
Acoustic Feature Correction	*A +2 dB penalty has been applied to account for the 'just perceptible' low frequency hum present in the noise emissions generated by the units.*								+2
Rating Sound Level ($L_{Ar,Tr}$)	Specific Sound Level + Rating Penalties								30
Background Sound Level	MP1 Night-time $L_{A90,15min}$ – Figure 4.								52
Exceedance	**$L_{Ar,Tr} - L_{A90,15min}$.**								**-22**
BS4142 Assessment Outcome	'Low impact', depending on context.								

Table 5 – BS4142 Noise Impact Assessment – NSR1

As outlined above, the calculated rating level is 22dB below the night-time background sound level and also remains 24dB below the daytime background level. Given that the NSR's are already exposed to existing plant noise, the proposed installation does not introduce a new significant noise source into the local environment.

The substantial margin below background levels suggests the new plant is likely to be inaudible and thus unlikely to affect the acoustic character of the area. This considerable difference also provides a buffer for any residual uncertainty in the assessment, which has been minimised as far as practicable.

Taking the acoustic context into account, the outcome of the assessment remains unchanged. In accordance with BS4142, the impact of the installed plant is predicted to be 'low'. This aligns with the 'No Observed Adverse Effect Level' (NOAEL) as defined by the NPSE and NPPF.

NSR2 – Noise Impact Assessment

For the assessment to NSR2, due to large screening provided by the Lincoln Building itself, only the noise breakout from the rooftop plant is assessment. The distance to the nearest building to the rear is approximately 20m.

Description	1/1 Octave Frequency Band (Hz, dB)								Overall (dBA)
	63	125	250	500	1k	2k	4k	8k	
Rooftop Extract (L_w)	84	79	69	62	60	59	54	47	69
Propagation Loss to NSR2	-31 (20m – Q4)								--
Specific Sound Level at NSR2	**53**	**48**	**38**	**31**	**29**	**28**	**23**	**17**	**38**
Acoustic Feature Correction	*A +2 dB penalty has been applied to account for the 'just perceptible' low frequency hum present in the noise emissions generated by the units.*								+2
Rating Sound Level ($L_{Ar,Tr}$)	Specific Sound Level + Rating Penalties								40
Background Sound Level	MP2 $L_{A90,15min}$ – Table 2.								47

Description	1/1 Octave Frequency Band (Hz, dB)								Overall (dBA)
	63	125	250	500	1k	2k	4k	8k	
Exceedance	$L_{Ar,Tr} - L_{A90,15min.}$								-7
BS4142 Assessment Outcome	'Low impact', depending on context.								

Table 6 – BS4142 Noise Impact Assessment – NSR2

As outlined above, the calculated rating level is 7dB below the night-time background sound level.

The substantial margin below background levels suggests the new plant is likely to be inaudible and thus unlikely to affect the acoustic character of the area. This considerable difference also provides a buffer for any residual uncertainty in the assessment, which has been minimised as far as practicable.

Taking the acoustic context into account, the outcome of the assessment remains unchanged. In accordance with BS4142, the impact of the installed plant is predicted to be 'low'. This aligns with the 'No Observed Adverse Effect Level' (NOAEL) as defined by the NPSE and NPPF.

Accordingly, the noise criteria specified in the planning conditions set by Manchester City Council have been met.

4. Conclusion and Action Plan

The proposed development has been assessed against the requirements of Condition '3a', BS4142 and NPPF & NPSE.

The BS4142 assessments show that the rating sound level from the installed items of plant did not exceed the background sound levels during the daytime or night-time periods. This is classed as 'low impact' when assessed in accordance with BS4142 and is classed as 'No Observed Adverse Effect Level' ('NOAEL') in line with NPPF & NPSE.

Additionally, the requirements set out by Manchester City Council, to ensure that the rating level from the items of plant is controlled to 5dB below the background noise level, have been met. As such, no additional mitigation measures are considered necessary.

It is recommended that the findings of this assessment be submitted to Manchester City Council for review.

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 $p0$ is the reference sound pressure (20 µPa)
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 $p0$ is the reference sound pressure (20 µPa)
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 (2024)

Government policy on noise is set out in the National Planning Policy Framework (NPPF), published in 2024. 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 187e, 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 198 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 198 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 – BS4142:2014+A1:2019 – 'Methods for rating and assessing industrial and commercial sound'

Overview

BS4142:2014 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 BS4142:2014 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 BS4142:2014 describes how the rating sound level should be derived from the specific sound level, by deriving a rating penalty.

BS4142:2014 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 BS4142:2014, 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."

BS4142:2014 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 +2 dB is applicable for a tone which is "just perceptible", +4 dB where a tone is "clearly perceptible", and +6 dB where a tone is "highly perceptible".

b) Impulsivity

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

c) Other Sound Characteristics

BS4142:2014 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 +3 dB can be applied."

d) Intermittency

BS4142:2014 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 +3 dB 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

BS4142:2014 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.

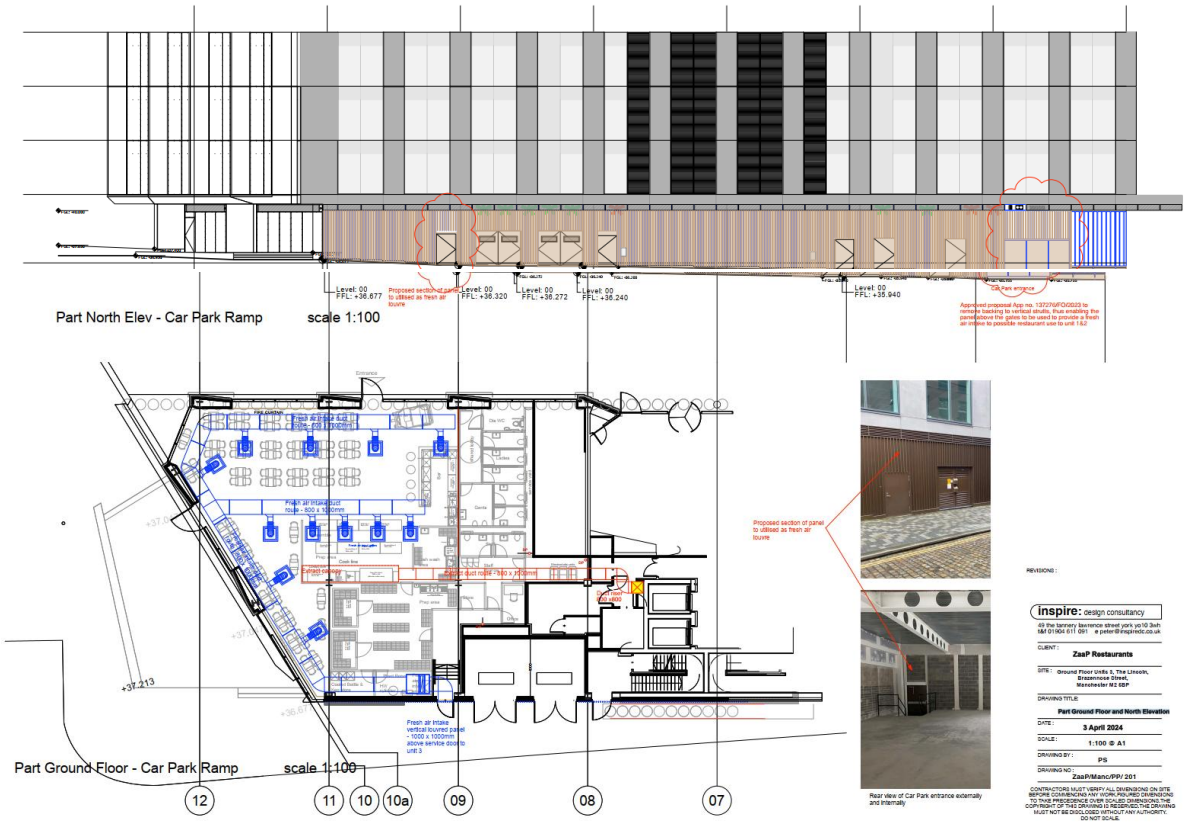
Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context."

Interpreting the guidance given in BS4142:2014, 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 +10 dB above the background sound level is likely to be an indication of a Significant Observed Adverse Effect Level;
- A rating sound level that is +5 dB 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 low impact and would therefore classified as No Observed Adverse 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 – Location Plans



Appendix D – Environmental Survey

D.1 – Time History Noise Data

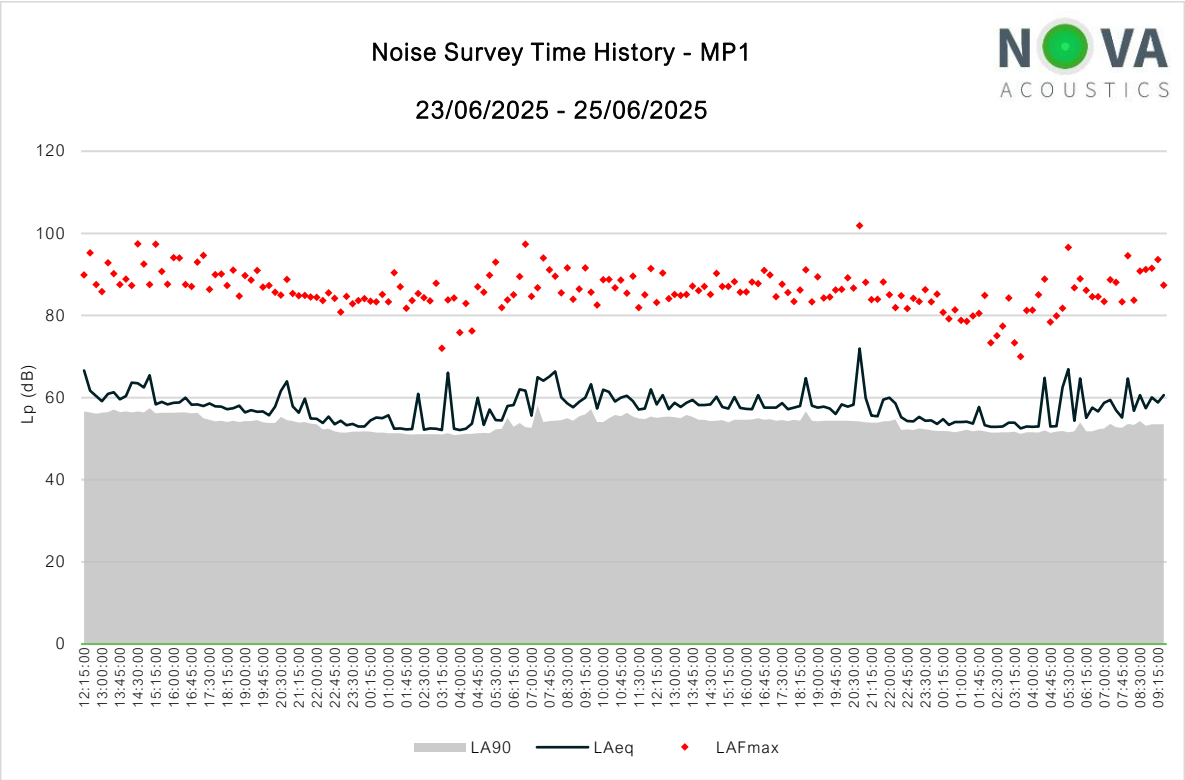


Figure 5 – MP1 Noise Survey Time History

D.2 – Surveying Equipment

Piece of Equipment	Serial No.	Calibration Deviation
Svantek SV971A Class 1 Sound Level Meter	143564	≤0.1
Svantek SV33B Class 1 Calibrator	106876	

Table 4 – Surveying Equipment

All equipment used during the survey was field calibrated at the start and end of the measurement period with a negligible deviation. 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 carried out over a long un-manned period no localised records of weather conditions were taken. However, all measurements have been compared with met office weather data of the area, specifically the closest weather station, and the data from the weather station is outlined in the table below. When reviewing the time history of the noise measurements, any scenarios that were considered potentially to be affected by the local weather conditions have been omitted. The analysis of the noise data includes statistical and percentile analysis and review of minimum and maximum values, which aids in the preclusion of any periods of undesirable weather conditions. The weather conditions were deemed suitable for the measurement of environmental noise in accordance with BS7445 Description and Measurement of Environmental Noise. The table below presents the average temperature, wind speed and rainfall range for each 24-hour period during the entire measurement.

Weather Conditions – Chorlton (Approx. 6.2km SW of Site)				
Time Period	Air Temp (°C)	Rainfall (mm/h)	Prevailing Wind Direction	Wind Speed (m/s)[1]
23/06/25: 00:00 – 23:59	11.5 – 18.4	0.0	SW	0.0 – 1.6
24/06/25: 00:00 – 23:59	14.2 – 22.2	0.0 – 1.8 [1]	S	0.0 – 1.5
25/06/25: 00:00 – 23:59	14.9 – 23.4	0.0 – 1.8 [1]	S	0.0 – 1.0

Notes:

A 130mm diameter windshield was fitted to the microphone. It is efficient up to 8 m/s (according to manufacturer's data sheet).

[1] Whilst rainfall did occur for short periods, it did not affect the time history of the measurements at MP1. Therefore, no noise data has been excluded from the assessment.

Table 7 – Meteorological Conditions

Appendix E – Calculations

Description	Item	Source Term	Parameter	dBA	1/1 Octave Frequency Band (Hz, dB) 63	125	250	500	1k	2k	4k	8k
Model / Unit	Air Intake	Octave-Band Lp	Lp at 1m, Q factor (Q=2)	53	61	68	48	41	40	44	39	35
No. of	1											
Data Type	Manufacturers Data		Total Lw	61	69	76	56	49	48	52	47	43
Source Mitigation	No											
Description												
Time Corrected Lw of Fixed Plant	On-Time (min)	Time Period	Correction (dB)									
	60	Day	0	61	69	76	56	49	48	52	47	43
Propagation Loss to NSR1 (Point Source)	Distance (m)	Q Factor	Loss (dB)		Shielding (dB)							No
	35	4	-36									
Specific Sound Level at NSR1				26	33	40	20	13	12	17	11	7

Description	Item	Source Term	Parameter	dBA	1/1 Octave Frequency Band (Hz, dB) 63	125	250	500	1k	2k	4k	8k
Model / Unit	Rooftop Extract	Octave-Band Lp	Lp at 1m, Q factor (Q=2)	61	76	71	61	54	52	51	46	40
No. of	1											
Data Type	Manufacturers Data		Total Lw	69	84	79	69	62	60	59	54	47
Source Mitigation	No											
Description	e.g. Caice Enclosure											
Time Corrected Lw of Fixed Plant	On-Time (min)	Time Period	Correction (dB)									
	60	Day	0	69	84	79	69	62	60	59	54	47
Propagation Loss to NSR1 (Point Source)	Distance (m)	Q Factor	Loss (dB)		Shielding (dB)							No
	40	4	-37									
Specific Sound Level at NSR1				25	42	37	27	15	13	12	2	-5

Specific Sound Levels at NSR1

Description	dB(A)	63	125	250	500	1k	2k	4k	8k
Air Intake	26	33	40	20	13	12	17	11	7
Rooftop Extract	25	42	37	27	15	13	12	2	-5
Cumulative Specific Sound Level	**28**	**43**	**42**	**28**	**18**	**16**	**18**	**12**	**9**


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