



Blackfriars House, Manchester

Plant Noise Verification Survey

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22047-R02 Blackfriars House

Client: Bruntwood

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REVISION HISTORY

Revision	Date	Revision Details	Author	Checked
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1 INTRODUCTION

- 1.1 dBx Acoustics has been appointed by Bruntwood to carry out a verification noise survey of the plant installed at the at the roof of Blackfriars House, Blackfriars Road, Manchester M3 2JA.
- 1.2 The intention of this report is to present the results of plant noise measurements carried out at the site, and to assess the impact of plant on the nearby noise sensitive receptors with reference to the relevant planning requirements to confirm compliance.
- 1.3 A glossary of acoustic terminology has been supplied in Appendix A in order to assist the reader.

2 BASIS OF ASSESSMENT

Manchester City Council

- 2.1 The noise impact assessment within this report is intended to satisfy Part B of Conditions 7 and 8 of planning permission reference 21979/FO/2018.
- 2.2 'Condition 7 of the planning permission states:

"7) a) Any externally mounted ancillary plant, equipment and servicing for the building shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (LAeq) below the typical background (LA90) level at the nearest noise sensitive location.

In order to achieve this the scheme hereby approved shall be implemented in accordance with the recommendations in the submitted dBx Noise Impact Assessment received 9th October 2019.

b) Upon completion of the development and before any of the external plant is first operational (excluding for testing purposes), a verification report will be required to validate that the work undertaken confirms to the above noise criteria. The report shall give the results of post-completion testing to confirm that the proposed noise limits are being achieved once the plant and any mitigation measures have been installed. Any instances of non-conformity with the above criteria shall be detailed along with any measures required to ensure compliance. These measures shall be approved in writing by the City Council as Local Planning Authority and the development shall be implemented in full in accordance with the approved details before the plant is first brought into use.
- 2.3 Condition 8 of the planning permission states:

"8) a) Notwithstanding the provisions of Condition 7, prior to occupation of the development a scheme for the acoustic insulation of any externally mounted ancillary equipment associated with the Rooftop Restaurant and Ground Floor Café (A3 uses) to ensure that it achieves a background noise level of 5dB below the existing background (La90) at the nearest noise sensitive location 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 equipment. The approved scheme shall be completed before the premises is occupied.

b) Upon completion of the development and before any of the external plant is first operational (excluding for testing purposes), a verification report will be required to validate that the work undertaken confirms to the above noise criteria. The report shall give the results of post-completion testing to confirm that the proposed noise limits are being achieved once the plant and any mitigation measures have been installed. Any instances of non-conformity with the above criteria shall be detailed along with any measures required to ensure compliance. These measures shall be approved in writing by the City Council as Local Planning Authority and the development shall be implemented in full in accordance with the approved details before the plant is first brought into use.

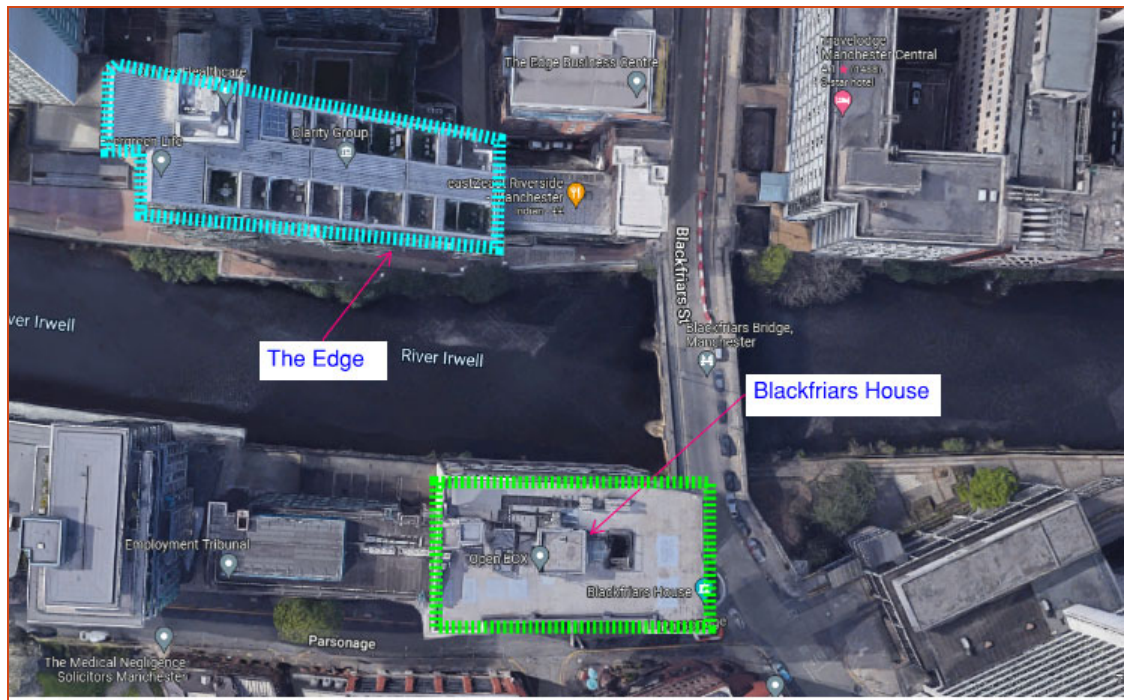
Reason - To secure a reduction in noise from equipment associated with the proposed uses in order to protect future occupiers and adjacent residents from noise nuisance, and ensure the proposed uses do not commence before the noise levels of the proposed plant has been assessed and approved pursuant to policies SP1 and DM1 of the Core Strategy and saved UDP Policy DC26."

- 2.4 Part A of these conditions was assessed in dBx Acoustics' report reference 22047 Blackfriars Revised NIA R01 dated 20 May 2022.

3 SITE DESCRIPTION

- 3.1 Blackfriars house is a multi-storey mixed purpose space comprising restaurants, office and retail units.
- 3.2 The building overlooks Parsonage Street and Blackfriars Street.
- 3.3 The surrounding premises consist of commercial and residential receptors. The nearest noise sensitive receptors identified to the site are residential properties (dwellings located at the Edge) approximately 50m to the north of the roof plant.

Figure 1: Site Location and Nearby Noise Sensitive Receptors

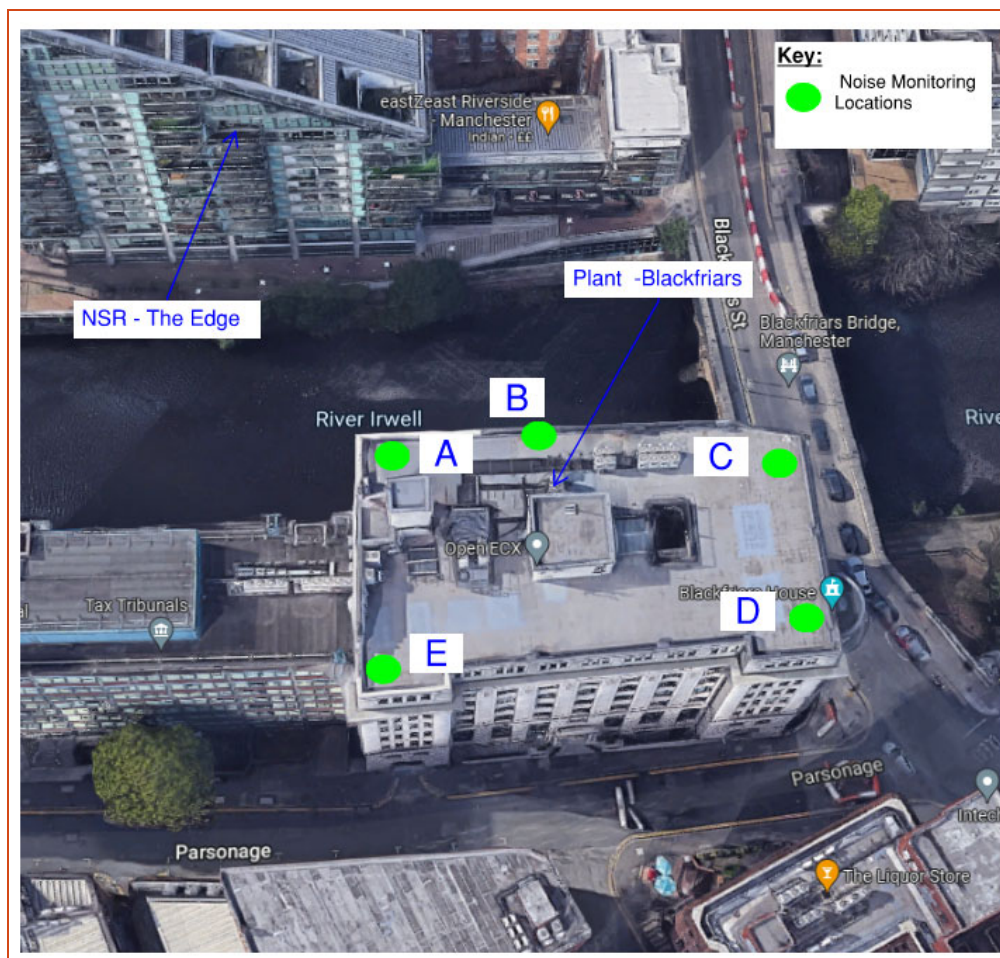


4 ENVIRONMENTAL NOISE SURVEY

Methodology

- 4.1 A noise survey was carried out on Friday 25th November 2022, the intent of which was to assess the noise impact of the plant installed at the at the roof of Blackfriars House.
- 4.2 Measurements were taken on the roof with the plant both running and switched off.
- 4.3 The noise monitoring locations are presented in Figure 2 below.

Figure 2: Noise Monitoring Locations



Weather Conditions

- 4.4 Weather conditions during the measurement period was generally cloudy and dry. Wind speeds were within suitable parameters for the measurement of environmental noise (i.e., generally under 5 ms⁻¹). All microphones were protected with a windshield for the duration of the survey.

Equipment

- 4.5 The equipment used in the survey is detailed in Table 1, below;

Table 1: Equipment Used in the Survey

Equipment	Manufacturer & Part No.	Serial Number
Sound Level Meter	Norsonic NOR 140	1405619
Microphone	Norsonic NOR 1209	168247
Pre-Amplifier	Norsonic NOR 1225	15526
Calibrator	Norsonic NOR 1251	33827

- 4.6 The sound level meter was calibrated before and after measurements, with no significant drift recorded. An accredited laboratory calibrated the equipment not more than two years prior to the measurements being made, except for the calibrator, which had been calibrated not more than one year prior to the survey.

5 MEASUREMENT RESULTS

5.1 A summary of the measurements undertaken at various locations is presented in Table 2, below;

Table 2: Measured Noise Levels

Location (Figure 2)	Plant On or Off	Time,h	Duration	Ambient Noise Level (dBL _{Aeq,T})
A (North West)	ON	15:53	00:30	53
		15:54	00:30	53
		15:55	00:30	52
	OFF	16:53	00:30	52
		16:54	00:30	51
		16:54	00:30	52
B (1m from plant acoustic louvre)	ON	15:56	00:30	56
		15:57	00:30	56
	OFF	16:55	00:30	54
		16:56	00:30	54
C (North East)	ON	15:58	00:30	52
		16:00	00:30	52
		16:00	00:30	52
	OFF	16:57	00:30	52
		16:58	00:30	51
		16:58	00:30	51
D (South East)	ON	16:02	00:30	54
		16:03	00:30	55
		16:04	00:30	55
	OFF	16:59	00:30	54
		17:00	00:30	53
		17:01	00:30	53
E (South West)	ON	16:06	00:30	57
		16:07	00:30	57

Location (Figure 2)	Plant On or Off	Time,h	Duration	Ambient Noise Level (dBL _{Aeq,T})
E (South West)		16:07	00:30	56
	OFF	17:02	00:30	56
		17:03	00:30	56
		17:03	00:30	56

- 5.2 It can be seen that there was no significant variation in the measured noise levels between the 'plant on' and 'plant off' conditions at any of the measurement locations. This is a positive indication that, when assessed at the roof edge, noise from the building services plant is at least 10dB below the prevailing ambient noise level.

6 BUILDING SERVICE NOISE EMISSIONS

Manchester City Council Requirements

- 6.1 Planning Condition 7 and Planning Condition 8 detailed within planning application 21979/FO/2018 requires that external plant items should be designed to a rating noise level of no higher than 5dB below existing background noise levels.
- 6.2 As discussed in dBx Acoustics' report reference 22047 *Blackfriars Revised NIA R01* dated 20 May 2022, this assessment has been carried out with reference to the measured night time background sound level at the NSRs of $48\text{dB}_{\text{LA90,15min}}$.

Calculations

- 6.3 A review of the data in Table 2 indicates that there no significant variation in ambient noise levels at the measurement locations between the 'plant on' and 'plant off' conditions. This therefore suggests that the plant noise level is at least 10dB below the measured ambient noise level.
- 6.4 Nonetheless, in order to present a worst-case assessment of noise emissions to the residential receptors at The Edge, the noise level of $56\text{dB}_{\text{LAeq,T}}$ measured at 1m from the plant enclosure has been used in this assessment.
- 6.5 Distance attenuation of 34dB has been applied, based on the distance between the plant and NSR of approximately 50m.
- 6.6 Table 3, below, presents a BS4142 assessment of plant noise impact at The Edge.

Table 3: Plant Noise Impact Assessment

Item	Noise Level (dB)
Measured night-time background sound level ($\text{LA}_{90, \text{T}}$)	48
Specific sound level ($\text{LA}_{\text{eq}, \text{T}}$)	$56 - 34 = 22$
Acoustic feature correction	0
Rating level ($\text{LA}_{\text{r}, \text{Tr}}$) at the Edge	22
Difference between rating level and background sound level	-26

- 6.7 It can therefore be seen that rating noise level at The Edge is comfortably within the limits required by MCC and therefore compliance with Conditions 7 and 8 is demonstrated.

7 CONCLUSIONS

- 7.1 dBx Acoustics has been appointed by Bruntwood to carry out a verification noise survey of the plant installed at the at the roof of Blackfriars House, Blackfriars Road, Manchester M3 2JA.
- 7.2 Measurements made at the roof edge with the plant both on and off demonstrate that noise from the plant has no significant effect on ambient noise levels.
- 7.3 A worst-case assessment with reference to the tpical night time background noise level of $48\text{dBL}_{A90,15\text{min}}$ shows that the rating level of the plant when assessed at the nearest noise sensitive receptor is 26dB below the background level.
- 7.4 These measurements therefore comfortably demonstrate compliance with Condition 7 and Condition 8 of planning permission reference 21979/FO/2018.

APPENDIX A – GLOSSARY OF ACOUSTIC TERMINOLOGY

Decibel, dB	A unit of level derived from the logarithm of the ratio between the value of a quantity and a reference value. For sound pressure level (L_p) the reference quantity is 2×10^{-5} N/m ² . The sound pressure level existing when microphone measured pressure is 2×10^{-5} N/m ² is 0 dB, the threshold of hearing.
L	Instantaneous value of Sound Pressure Level (L_p) or Sound Power Level (L_w).
Frequency	Number of cycles per second, measured in hertz (Hz), related to sound pitch.
A weighting	Arithmetic corrections applied to values of L_p according to frequency. When logarithmically summed for all frequencies, the resulting single "A weighted value" becomes comparable with other such values from which a comparative loudness judgement can be made, then, without knowledge of frequency content of the source.
$L_{eq,T}$	Equivalent continuous level of sound pressure which, if it actually existed for the integration time period T of the measurement, would possess the same energy as the constantly varying values of L_p actually measured.
$L_{Aeq,T}$	Equivalent continuous level of A weighted sound pressure which, if it actually existed for the integration time period, T, of the measurement would possess the same energy as the constantly varying values of L_p actually measured.
$L_{n,T}$	L_p which was exceeded for n% of time, T.
$L_{An,T}$	Level in dBA which was exceeded for n% of time, T.
$L_{max,T}$	The instantaneous maximum sound pressure level which occurred during time, T.
$L_{Amax,T}$	The instantaneous maximum A weighted sound pressure level which occurred during time, T.

22047-JT-R02 Blackfriars House Plant Noise Verification Assessment FIN

Final Audit Report

2022-12-06

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