



King's House Manchester

Planning Condition 6b – Verification Measurements

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24081-R02-BT-King's House

Client: Bruntwood

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TABLE OF CONTENTS

TABLE OF CONTENTS	2
REVISION HISTORY	2
1 INTRODUCTION	3
2 ASSESSMENT CRITERIA	3
LOCAL AUTHORITY REQUIREMENTS	3
BS 4142:2014 'METHODS FOR RATING AND ASSESSING INDUSTRIAL AND COMMERCIAL SOUND'	4
3 SITE DESCRIPTION	5
SITE DESCRIPTION.....	5
4 CRITERIA	6
5 INSTALLED PLANT	7
6 VERIFICATION NOISE SURVEY	8
7 ASSESSMENT	11
8 SUMMARY AND CONCLUSION	12
APPENDIX A – GLOSSARY OF ACOUSTIC TERMINOLOGY	13

REVISION HISTORY

Revision	Date	Revision Details	Author	Checked
R01	30/06/2025	Original Issue	Ben Tomlin BSc MIOA	Susan Witterick BSc MIOA

1 INTRODUCTION

- 1.1 dBx Acoustics Ltd has been appointed by Bruntwood to provide plant noise verification measurements to discharge Condition 6b of planning application reference 133409/FO/2022 relating to the installed plant at King's House at King St. West, Manchester, M3 2WY.
- 1.2 This report presents the results on a noise survey on site of the installed plant, and an assessment of the noise levels at the nearest noise sensitive receptor to discharge the planning condition.
- 1.3 A glossary of acoustic terminology is presented in Appendix A.

2 ASSESSMENT CRITERIA

Local Authority Requirements

- 2.1 The site falls under the jurisdiction of Manchester City Council (MCC).
- 2.2 Condition 6 of planning permission reference 22/01208/FUL states:

"6) a) Prior to the installation of the externally mounted ancillary equipment and ground level plant located behind the louvres, the equipment shall be acoustically insulated in accordance with a scheme 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.

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

b) Upon completion of the development and within 6 months of the equipment becoming operational, 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 above criteria is 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 noise criteria. This report shall be submitted to and approved in writing by the City Council as local planning authority within 6 months of the equipment becoming operational along with a timescale that confirms when any necessary changes will be implemented.

Reason - To safeguard the amenities of the occupiers of nearby residential accommodation, pursuant to saved policy DC26 of the Unitary Development Plan for the City of Manchester and policies SP1 and DM1 of the Core Strategy."
- 2.3 On this basis, the noise emissions from the plant should be controlled to no higher than 5dB lower than the typical background noise level at the NSRs.

BS 4142:2014 'Methods for Rating and Assessing Industrial and Commercial Sound'

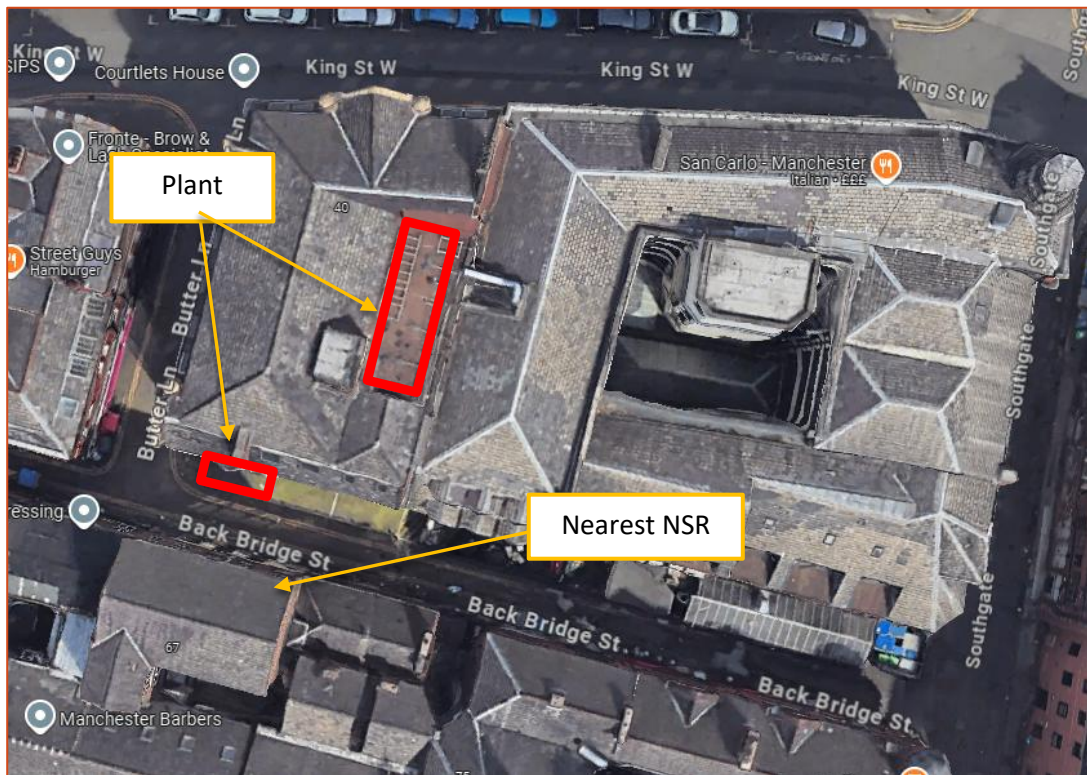
- 2.4 BS 4142:2014 sets out a procedure for assessing noise impact whereby a Noise Rating is determined and compared with the existing local Background Sound Level.
- 2.5 The Rating Level ($\text{dB } L_{Ar,Tr}$) is evaluated from the Specific Noise Level by including several, cumulative corrections to account for factors such as distinguishable tone, impulse, intermittency or other readily distinguishable sound characteristics.
- 2.6 The assessment of the impact depends upon the margin by which the Rating Level of the specific sound source exceeds the Background Sound Level. An initial estimate of the impact of the specific sound is made by subtracting the Background Sound Level from the Rating Level, while considering the following points:
- a) Typically, the greater this difference, the greater the magnitude of the impact.
 - b) A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.
 - c) A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.
 - d) 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.

3 SITE DESCRIPTION

Site Description

- 3.1 The application site is King's House, located on King Street West, Manchester, M3 2WY.
- 3.2 Figure 1 below shows the location of the site and the nearby noise sensitive receptors (NSRs).
- 3.3 The nearest NSRs are apartments and offices on Back Bridge Street, approximately 6m to the south of the proposed ground floor external plant area and 15m to the south of the proposed roof plant area.

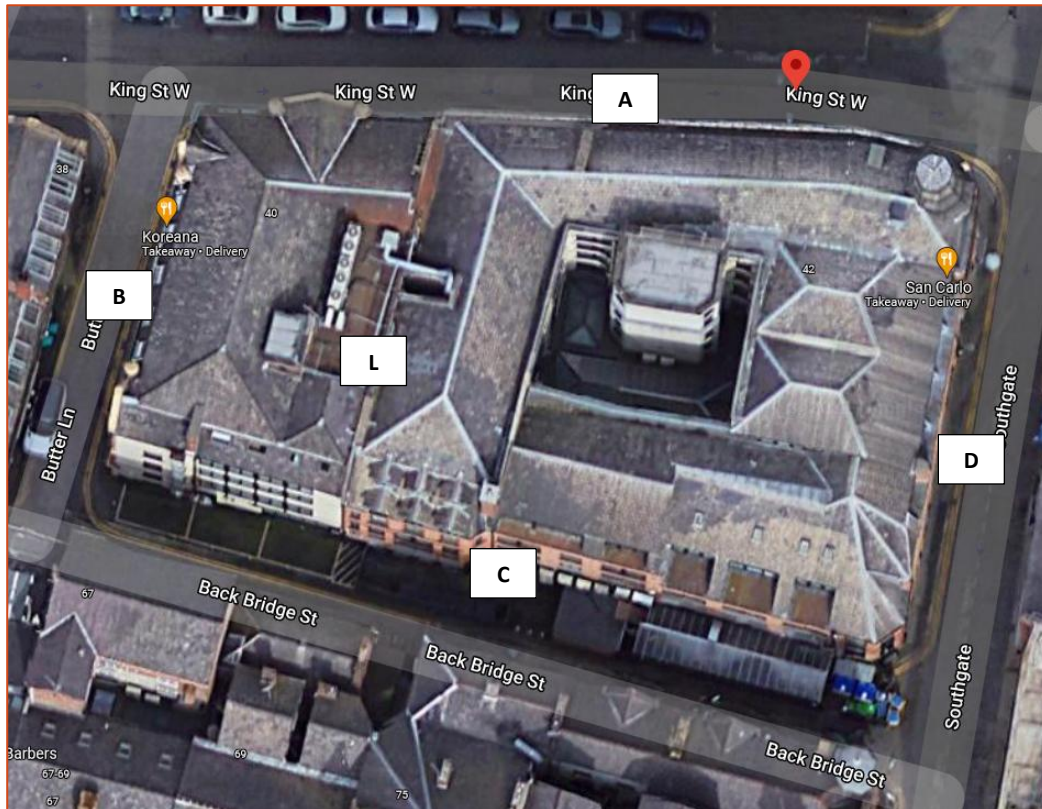
Figure 1: Site and Nearby NSRs



4 CRITERIA

- 4.1 In order to assess the pre-existing external noise levels, a noise survey was undertaken on Wednesday 3rd November 2021.
- 4.2 Noise levels were measured at four locations around the building, as indicated in Figure 2, below.
- 4.3 In addition, unattended noise levels were measured with a noise logger at Location L, shown in Figure 2, between Friday 12th and Monday 15th November 2021.

Figure 2: Measurement Locations



- 4.4 All measurements were undertaken in accordance with BS 7445-1:2003 *Description and Measurement of Environmental Noise*.
- 4.5 Full details of the survey are provided in dBx Acoustics' report ref 24081-R01-JT, dated 17/10/2024, but in summary, the lowest measured background noise level at the NSRs on Back Bridge Street is 55dBL_{A90,T} in the day. Noise levels were dominated by numerous plant serving nearby shops and offices and road traffic.
- 4.6 The installed plant will only operate in the daytime period.
- 4.7 On this basis the plant noise emission criterion is 50dBL_{A,r,Tr}.

5 INSTALLED PLANT

- 5.1 The installed plant items and associated noise data are summarised in Table 1, below. The noise levels for MVHRs, AHU and toilet extract fan at the duct terminals are inclusive of various duct losses and the relevant attenuator insertion losses.

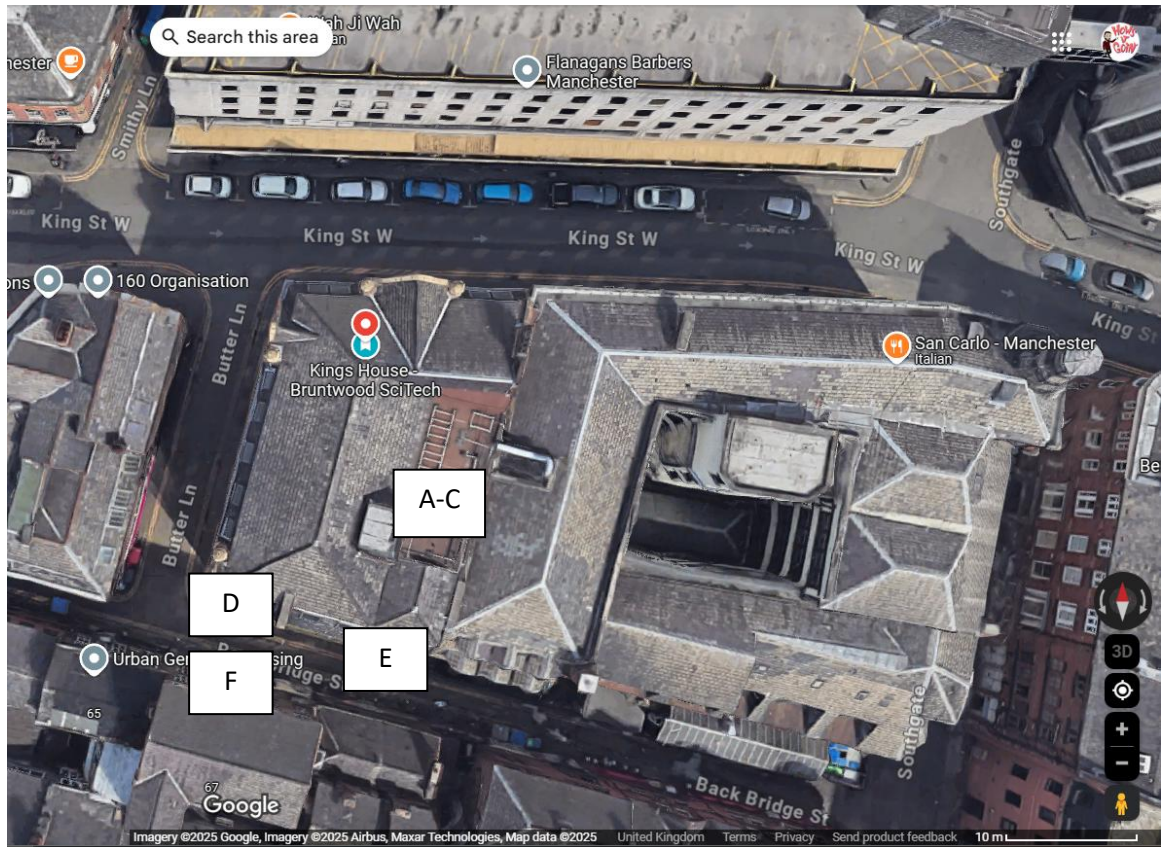
Table 1: Building Services Plant items

Plant Item	Quantity	Make/Model Number	Location	Component	Sound Pressure Level @1m dB _L Aeq,T	
ODU-4-12-1	1	Mitsubishi PUZ-ZM50VKA2	Roof Plant Area	-	46	
ODU-1-4-1 ODU-2-6-1 ODU-3-8-1 ODU-4-10-1	4	Mitsubishi PURY-P300YNWA1			67	
ODU-4-11-1	1	Mitsubishi PURY-P400YNWA				69
ODU-1-5-1 ODU-2-7-1 ODU-3-9-1	3	Mitsubishi PURY-P600YSNWA				70
Toilet Extract Fan	1	STD200-1EC				Outlet
				Breakout	53	
MVHR	7	Mitsubishi Lossnay LGH100RVXE		Grilles terminating at Roof Level	Discharge	43
MVHR	2	Mitsubishi Lossnay LGH50RVXE			Fresh Air	43
					Discharge	62
			Fresh Air		62	
MVHR	6	Mitsubishi Lossnay LGH100RVXE	Grilles terminating at Central Courtyard Area	Discharge	44	
				Fresh Air	44	
ODU-0-3-1	1	Mitsubishi PUZ-ZM50VKA2	Ground Floor Plant Area	-	46	
ODU-0-2-1	1	Mitsubishi PUMP-P140YKM			53	
ODU-0-1-1	1	Mitsubishi PURY-P200YNWA2			59	
MVHR	1	Mitsubishi Lossnay LGH200RVXE	Grilles terminating at Ground Floor Level	Discharge	51	
				Fresh Air	51	
AHU	1	n/a		Discharge	45	
				Fresh Air	48	

6 VERIFICATION NOISE SURVEY

- 6.1 Plant noise levels were measured at six locations on Thursday 26th June 2025, indicated in Figure 3, below.

Figure 3: Plant Noise Measurement Locations



- 6.2 Noise levels were measured at 1m from the plant, to minimise the influence of other sources.
- 6.3 Measurements on the roof were made at three locations (A-C) around the plant enclosure.
- 6.4 At ground level, noise levels were measured at location D (1m from the condenser units) and E (1m from the AHU louvres).
- 6.5 Ambient noise levels on Back Bridge Street (existing plant and road traffic) were very high and affected the measured noise levels, even at 1m from the plant. At the NSRs, plant noise was inaudible (location F).
- 6.6 Noise levels were therefore measured with plant both on and off, in order that the specific sound level of the plant alone can be determined.
- 6.7 A summary of the noise levels measured is shown as Table 2, below.

Table 2: Summary of Noise Levels Measured

Location	Plant On/Off	Sound Pressure Level @ 1m, dBL _{Aeq,T}	Average SPL, dBL _{Aeq,T}
A	On	60	62
		59	
		60	
63			
64			
63			
C		62	
		65	
		62	
D	On	66	65
		65	
		64	
	Off	63	63
		63	
		63	
E	On	61	61
		61	
		61	
	Off	60	60
		60	
F	On	62	62
	Off	63	63
		63	

- 6.8 As can be seen, measurements at Locations D and E were significantly affected by the existing ambient noise levels, and plant did not affect noise levels at Location F.
- 6.9 Noise levels at Location D were $65\text{dB}_{\text{L}_{\text{Aeq,T}}}$ with plant on, and $63\text{dB}_{\text{L}_{\text{Aeq,T}}}$ with plant off. By logarithmic subtraction, it can be seen that the specific noise level for the plant only is around $61\text{dB}_{\text{L}_{\text{Aeq,T}}}$. At Location E, the specific noise level is around $55\text{dB}_{\text{L}_{\text{Aeq,T}}}$.

7 ASSESSMENT

- 7.1 As detailed above, the roof plant is around 62dBL_{Aeq,T} at 1m. The plant is around 15m from the nearest window, and is completely screened by the roof itself. The plant at ground floor is between 6m and 8m from the plant, and is not screened.
- 7.2 On this basis, a calculation of the sound pressure level (SPL) at the nearest NSR is shown in Table 3, below.

Table 3: Calculation of Sound Pressure Level at NSR.

Plant	Specific Sound Level, dBL _{Aeq,T}	Distance, m	Distance Correction, dB	Screening	SPL @ NSR, dBL _{Aeq,T}
Roof	62	15	-24	-15	23
Condensers	61	6	-16	0	45
AHU	55	6	-16	0	39
TOTAL					46

- 7.3 As can be seen from Table 3, the specific noise level at the NSR is 46dBL_{Aeq,T}.
- 7.4 There was no evidence of tonality in the data measured. Even allowing a +3dB correction for potential intermittency, the rating level would be no higher than 49dBL_{Ar,Tr}, and hence meets MCC's criterion.
- 7.5 As evidenced on site, plant was completely inaudible outside the NSR, based on typical ambient noise levels with plant switched off of around 63dBL_{Aeq,T}.
- 7.6 This demonstrates compliance with Planning Condition 6a, and condition 6b can therefore be discharged.

8 SUMMARY AND CONCLUSION

- 8.1 This report provides details of plant noise verification measurements at King's House at King St. West, Manchester, M3 2WY, in order to discharge Condition 6b of planning permission 133409/FO/2022.
- 8.2 Based upon plant noise levels measured by dBx Acoustics, the worst case rating level is around 6dB lower than the existing background noise level, and the requirements of Condition 6b of planning permission 133409/FO/2022 can therefore be discharged.

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_{Fmax}	The instantaneous maximum sound pressure level which occurred during the measurement. F indicates that the fast time-weighting is used.
L_{AFmax}	The instantaneous maximum A weighted sound pressure level which occurred during the measurement. F indicates that the fast time-weighting is used.
$L_{Ar,Tr}$	The rating level: the equivalent continuous A-weighted sound pressure level of the noise, plus any adjustment for the characteristic features of the noise.
Insertion Loss, IL	The reduction of noise level due to the presence of a noise control device such as an attenuator, excluding any regeneration noise created by its presence.
NR	The Noise Rating level . This is a single figure value derived by plotting a noise spectrum against a set of curves. The curve under which the spectrum fits is the resulting NR level.

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