



Cartway, St James Building, Manchester

Bundobust Noise Impact Assessment

dBx Acoustics Ltd
Beehive Mill
Jersey Street
Manchester
M4 6JG
0161 711 0320

20079-R01 Cartway, St James Building

Client: Bruntwood

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REVISION HISTORY

Revision	Date	Revision Details	Author	Checked
R01	8/10/2021	Original Issue	DocuSigned by:  45C749F61A3B42E... Matt Jones MEng AMIOA	DocuSigned by:  3E69257DCFC14C6... Susan Witterick BSc MIOA

1 INTRODUCTION

- 1.1 dBx Acoustics has been appointed by Bruntwood to carry out a verification noise survey and noise impact assessment for the newly operating bar/restaurant, Bundobust, at Cartway, St James Building, Manchester.
- 1.2 The intention of this report is to report on the noise survey carried out at the site, and to assess the impact of Bundobust on the nearby noise sensitive receptors.
- 1.3 A glossary of acoustic terminology has been supplied in Appendix A in order to assist the reader.

2 BASIS OF ASSESSMENT

- 2.1 The noise impact assessment is based on the following

Manchester City Council

- 2.2 The planning conditions associated with this application (ref 120730/FO/2018) requires that the development shall be carried out in accordance with dBx Acoustics' Noise Impact Assessment ref 18049 *St James Building R01A* dated 27th February 2019, and an assessment of noise affecting the nearby residential premises presented in dBx Acoustics' letter reference 18049 *St James Building L02* dated 16th May 2019.
- 2.3 Condition 6(a) requires that *entertainment noise shall be controlled to 10dB below the L_{A90} (without entertainment noise) in each octave band at the façade of the nearest noise sensitive location.*
- 2.4 Condition 6(b) requires a verification report to confirm compliance with the acoustic design and limits set within the noise impact assessment; this report is intended to discharge this condition.

Bruntwood Landlord's Requirements

- 2.5 There are tenanted office spaces overlooking the Cartway which are understood to be in occupation throughout the day and night. Bruntwood requires that noise from operations in the Cartway do not cause any disturbance to office tenants, who may have windows open for natural ventilation.

Assessment Criteria

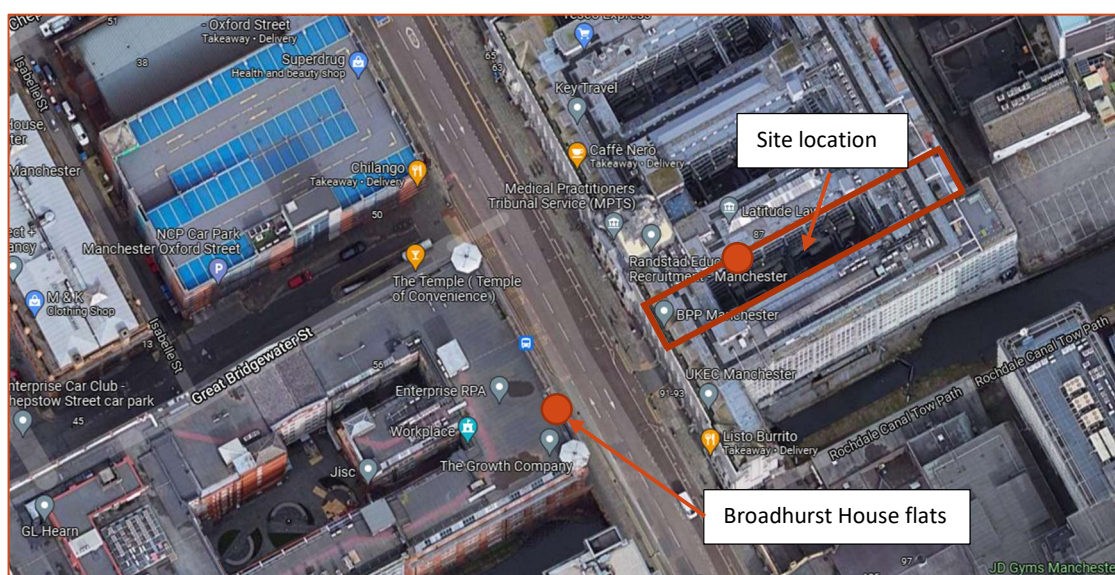
- 2.6 Based on the requirements both of the Local Authority and the Landlord, the Noise Impact Assessment and addendum determined that;
- Based on a limiting sound pressure level of 93dB L_{Aeq} within the Cartway, entertainment noise would not be audible at the nearest noise sensitive properties.
 - Based on this limiting sound pressure level and the acoustic specification of the glazed lantern, noise breakout from the Cartway should be limited to no more than 48dB $L_{Ar,Tr}$ at the nearest office window.
- 2.7 An assessment of noise arising from building services plant servicing the Cartway has been presented separately, in dBx Acoustics report reference 20079 *Cartway Plant Noise Assessment R01* dated 3 March 2021. This report concluded that plant noise emissions are compliant with the requirements of Manchester City Council.

3 SITE DESCRIPTION

Site Description

- 3.1 The site is within the former Cartway on the ground floor of the St James Building, adjacent to Oxford Road. The neighbouring commercial units are *Robert and Victor* to the north and *Banh Mi Co Ba* to the south.
- 3.2 The nearest residential properties to the site are flats located in Broadhurst House, on the opposite side of Oxford Road.
- 3.3 Offices inside the St James Building overlook the Cartway. The Bundobust tenancy has a glazed lantern roof.
- 3.4 Figure 1, below, shows site location and the locations of the nearby noise sensitive receptors.

Figure 1: Site location and nearby noise sensitive receptors



4 ENVIRONMENTAL NOISE SURVEY

Methodology

- 4.1 The intent of these measurements was to assess the noise impact of Bundobust at the nearby noise sensitive receptors, i.e both offices within the St James Building overlooking the Cartway, and the nearby residential receptors at Broadhurst House.
- 4.2 The noise survey was carried out on Friday 1st October 2021.
- 4.3 Measurements were taken inside Bundobust at height of 1.5m above the ground between 19:00 and 21:00, which can be considered representative of the busiest periods of operation. These measurements can be considered to have been taken in the free-field.
- 4.4 External measurements were also taken within the Cartway, approximately 1m above the glazed lantern and 1m from the façade of the St James Building offices. These measurements were façade measurements. A -3dB correction has therefore been applied in reporting these measurements, to give a free-field equivalent.
- 4.5 Measurements were attempted at the façade of the residential receptor, Broadhurst House. This location was dominated by traffic and pedestrian noise from Oxford Road. No patron noise or music from Bundobust was audible at this location; it can therefore be concluded that there is no adverse impact at the residential receptors as a result of operation of the Bundobust tenancy.

Weather Conditions

- 4.6 Weather conditions during the measurement periods were 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

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

Table 1: Equipment Used in the Survey

Equipment	Manufacturer & Part No. (Internal/External)	Serial Number (Internal/External)
Sound Level Meter	Cirrus CR:171B/Cirrus CR:171C	G300741/ G300656
Microphone	MK:224/MK:224	211753D/ 211733D
Pre-Amplifier	MV:200F/Cirrus Pre-amp	9082F/ 9136F
Calibrator	Cirrus CR:515/Cirrus CR:515	211753D/ 211733D

- 4.8 The sound level meters were 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, with the exception of the calibrators, which had been calibrated not more than one year prior to the survey.

5 ENVIRONMENTAL NOISE SURVEY RESULTS

5.1 A summary of the internal measurements is displayed in Table 2, below;

Table 2: Summary of Internal Measurements

Time	Duration	Ambient Noise Level (dBL _{Aeq,T})	Maximum Noise Level (dBL _{AFmax})	Background Noise Level (dBL _{A90})
01/10/2021 19:40	00:05:05	80	86	78
01/10/2021 19:46	00:05:46	84	89	81
01/10/2021 20:36	00:10:27	82	88	79

5.2 A summary of the logged measurements is shown in Table 3, below;

Table 3: Summary of External Measurements

Start Time	End Time	Average Ambient Noise Level (dBL _{Aeq,T})	Highest Maximum Noise Level (dBL _{AFmax})
01/10/2021 16:00	01/10/2021 21:00	53	73

5.3 The full measured external noise levels are shown in Appendix B.

5.4 The logged external measurements have been corrected by -3 dB as they were taken as façade measurements. A further -7 dB distance correction has been applied to allow for the distance between the measurement location and the overlooking office windows.

5.5 This leads to the free field noise levels impacting on the office façade used in the assessment, which are displayed in Table 4, below, along with the typical noise levels measured within Bundobust.

Table 4: Noise Levels Used in the Assessment

Average Ambient Noise Level Outside Offices (dBL _{Aeq,T})	Average Internal Ambient Noise Level (dBL _{Aeq,T})
43	82

6 ASSESSMENT OF MEASURED NOISE LEVELS

- 6.1 Based on the requirements both of the Local Authority and the Landlord as detailed above, the Noise Impact Assessment and addendum determined that;
- Based on a limiting sound pressure level of $93\text{dBL}_{\text{Aeq}}$ within the Cartway, entertainment noise would not be audible at the nearest noise sensitive properties.
 - Based on this limiting sound pressure level and the acoustic specification of the glazed lantern, noise breakout from the Cartway should be limited to no more than $48\text{dBL}_{\text{Ar,Tr}}$ at the nearest office window.

Noise Level within Cartway / Noise to Residential Receptors

- 6.2 Table 6, below, presents the limiting sound pressure level within Bundobust determined during the design stage, and the actual measured internal levels on the evening of Friday 1st October 2021.

Table 5: Limiting and Actual Levels within Bundobust

Level Type	Internal Ambient Noise Levels ($\text{dBL}_{\text{Aeq,T}}$)								
	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	Overall
Design Limit	75	82	82	90	90	83	76	65	93
Typical Measured Internal Ambient Noise Level	68	77	76	83	78	76	72	55	82

- 6.3 It can be seen that the typical noise levels generated within Bundobust are lower than those allowed for during the acoustic design stage. Therefore, compliance with the acoustic design limits at both the office windows and the residential properties can be expected.
- 6.4 The surveyor attended the residential premises on the far side of Oxford Road and found, as expected, that no noise from Bundobust was audible.
- 6.5 Therefore the requirements of Manchester City Council with regard to internal noise levels within the Cartway, and noise impact at the residential receptors, have been complied with.

Noise to Offices

- 6.6 Allowing for a distance correction between the measurement location and the nearest office window, the free-field noise level outside the offices was measured as $43\text{dBL}_{\text{Aeq,T}}$.
- 6.7 The noise climate within the Cartway was observed by the surveyor to be affected by both noise from Bundobust, and from nearby building services plant, with no one source dominating.
- 6.8 The noise impact assessment determined that noise breakout from the Cartway should be limited to no more than $48\text{dBL}_{\text{Ar,Tr}}$ at the nearest office window. No acoustically distinctive characteristics were observed by the surveyor. The rating noise level for noise from Bundobust is therefore considered to be no more than $43\text{dBL}_{\text{Ar,Tr}}$ (likely lower if corrected for the contribution from plant) and is therefore compliant with the noise impact assessment and the requirements of Manchester City Council.

7 CONCLUSIONS

- 7.1 dBx Acoustics have been appointed by Bruntwood to undertake a verification survey for the noise emissions of Bundobust at Cartway, St James Building, Manchester.
- 7.2 A noise survey measuring internal and external noise levels was conducted on Friday 1st October 2021.
- 7.3 The assessment shows that the internal ambient noise levels in and the noise emissions from Bundobust are compliant with the requirements of Planning Condition 6a and with the Landlord's requirements. No adverse noise impact at either the residential or commercial premises is anticipated.

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.

APPENDIX B – LOGGED EXTERNAL NOISE LEVELS

