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REVOLUCION DE CUBA, PETER STREET, MANCHESTER
ASSESSMENT OF FIXED PLANT NOISE

On behalf of:

Revolution Bars Group Plc

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ASSESSMENT OF FIXED PLANT NOISE

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1. INTRODUCTION

1.1 Hepworth Acoustics was commissioned by Revolution Bars Group Plc to carry out a noise impact assessment in connection with a planning application to reposition the existing air conditioning condensing units to within a louvred area of the Revolucion de Cuba premises in Manchester city centre.

1.2 The building is shown in Figure 1. The bar restaurant is located on Peter Street and trades until 02:00/03:00 hours Monday to Sunday. The existing air conditioning units are located within the premises to the rear of the building with a louvred façade on Jerusalem Place. It is proposed for the equipment to still remain within the building but be relocated within a smaller space still with a louvred opening onto Jerusalem Place. It is also proposed to install an external fan to improve air flow within the space.

1.3 The nearest dwellings are those within the still to be completed apartment development to the northeast off Bootle Street.

1.4 The noise assessment has included:

- An inspection of the site and environs;
- Measurement of noise levels during the trading hours; and
- Assessment of potential noise impact from air conditioning equipment.

1.5 The various acoustics indices referred to in this report are described in Appendix A. All noise levels in the text have been rounded to the nearest decibel as fractions of a decibel are imperceptible.

2. ACOUSTIC CRITERIA

NPPF:2024

2.1 Paragraph 198 of the National Planning Policy Framework (NPPF), December 2024, states that "*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 impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;*"

NPSE:2010

2.2 The Noise Policy Statement for England (NPSE) 2010, which is referred to the in NPPF, includes three aims:

I. Avoid significant adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.

II. Mitigate and minimise adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.

III. Where possible, contribute to the improvement of health and quality of life through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.

Local Policy

2.3 Manchester's Local Development Framework, Core Strategy, Development Plan was adopted in July 2012, where Policy DM1 Development Management, states that "*all development should have regard to the following specific issues... effects on amenity, including... noise*".

2.4 A Core Development Principle stated within the Framework is "*creating well designed places*" which for this restaurant would be to allow development of the night-time economy while protecting residential amenity.

Manchester City Council Planning & Noise Technical Guidance 2022

2.5 Manchester City Council Planning & Noise Technical Guidance 2022 provides guidance for assessing the potential impact from fixed plant and equipment which states:

"The development should be 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."

2.6 This design criterion has been derived to prevent 'noise creep', contribute to the enhancement of the area, improvement of people's health and quality of life. Where this criterion can not be achieved the various noise control measures and the achievable noise level should be stated.

BS 4142:2014+A1:2019

2.7 BS 4142 requires a 'rating' level ($L_{Ar,Tr}$) calculated from the operation of the noise source to be compared with the background sound level ($L_{A90,T}$) which is measured in the absence of the noise source. The noise is evaluated over a 1-hour period for daytime operations (i.e. 07:00 - 23:00 hours) and 15-minute period for night-time operations (i.e. 23:00 - 07:00 hours).

2.8 The rating level ($L_{Ar,Tr}$) is based on the 'specific' sound level ($L_{Aeq,Tr}$) attributed to the operating noise source, with 'character corrections' added for sound sources where "*certain acoustic features can increase the significance of impact*" when present at residential locations.

2.9 The acoustic character correction, where necessary, is applied to the specific sound level in order to obtain the rating level and can take into account tonality, intermittency, impulsivity and characteristics otherwise distinctive against the prevailing noise climate in the area.

2.10 An initial estimate of the potential noise impact from the operating noise source is determined by comparing the difference between the rating level and the background sound level.

2.11 Regarding the outcome of the initial estimate, BS 4142 states that:

- Typically, the greater this difference, the greater the magnitude of 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; and,
- The lower the rating level is relative to the measured background level, the less likely it is that the operation will have an adverse impact or a significant adverse impact. Where the rating level is does not exceed the background sound level, this is an indication of the specific sound source having low impact, depending on the context.

2.12 BS 4142 also states in respect of background sound levels that "*it is important to ensure that values are reliable and suitably represent the particular circumstances and periods of interest... the objective is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during particular time periods*".

2.13 BS 4142 states that all pertinent factors must be taken into account regarding the context in which the noise occurs, including but not limited to:

- The absolute level of sound.
- The character and level of the residual sound compared to the character of the specific sound; and,
- The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will incorporate design measures that ensure good internal and/or outdoor acoustic conditions such as acoustic screening.

2.14 The initial numerical assessment and the context are then both taken into account when determining the potential noise impact. It is noted that fixed plant design criterion as set out in the Council's guidance is based solely on the initial estimate and does not consider context which is an important part of the BS4142 assessment.

3. NOISE SURVEY

3.1 An environmental noise survey was carried out at a location that is representative of the nearest dwellings to the northeast on Bootle Street. The noise measurement location is shown in Figure 1.

3.2 An automated noise survey was carried out between approximately 14:00 hours on Monday 18 and 13:00 hours on Tuesday 19 August 2025.

3.3 Field-calibration checks were carried out both before and after the survey with no variance in levels observed. Frequency analysis and audio recordings were also undertaken to assist in identifying significant noise sources. Weather conditions during the survey were suitable for environmental noise measurements.

3.4 For the purposes of this assessment, the evening period (i.e. 19:00 to 23:00 hours), which is the quietest period of the day, and the night-time period into the early morning (i.e. 23:00 to 03:00 hours) when the premises will be open, have been considered.

3.5 The results of the noise survey are summarised in Table 1, the full results along with details of the equipment used and the weather conditions during the survey are shown in Appendix B.

Table 1: Summary of Measured Noise Levels (dB)

Period	$L_{Aeq,15mins}$	$L_{A90,15mins}$
Evening (19:00 – 23:00 hours)	68 – 71	68
Night-time (23:00 – 03:00 hours)	66 – 72	66

3.6 The noise climate of this busy area of the city centre was due to existing fixed plant from the surrounding buildings, road traffic, occasional pedestrians etc. There were also construction activities occurring at the apartment development to the northeast of the premises.

3.7 Excluding the noise from construction activities (which was significant during the morning of 19 August), the noise climate in the area is very steady due to the various items of building services equipment on surrounding buildings. For the purposes of this assessment, the representative background sound levels are based on the steady non-fluctuating measured level as shown in Table 2 below.

Table 2: Representative Background Sound Levels & Adopted Noise Limits (dB)

Period	Background $L_{A90,T}$	Noise Limit $L_{Aeq,Tr}$
Daytime (07:00 – 23:00 hours)	68	63
Night-time (23:00 – 07:00 hours)	66	61

3.8 In line with the guidance set out in BS 4142 these values have been adopted in our assessment described in Section 4.0.

Source Noise Measurements

3.9 An inspection of the current position of the air conditioning units was undertaken on Tuesday 19 August 2025, during which noise measurements were carried out.

3.10 The measured noise levels are in terms of $L_{Aeq,T}$ at 1 metre from the existing building louvres, the octave band levels for use in the assessment, are shown in Table 3 below.

Table 3: Measured Noise Levels for AC Units Operating (dB $L_{eq,T}$ at 1 metre)

Description	Octave band centre frequency (Hz)							A
	63	125	250	500	1k	2k	4k	
AC noise break-out 1m from louvre	85	87	83	78	79	77	73	84

3.11 These source noise levels have been used in calculations to determine the likely noise levels in terms of $L_{Aeq,T}$ outside the nearest dwellings resulting from operation of the equipment.

4. NOISE ASSESSMENT

4.1 It is proposed to reposition the AC equipment internally and install an external fan.

4.2 The following manufacturer's broadband noise emission data has been provided by M&E contractor, and are as follows:

- Addvent AVIPF550, 70 dB L_{pA} (sound pressure level) at 3 metres.

4.3 The noise from the proposed external fan and the existing AC equipment when operating will be of a steady continuous nature with no impulsive features, however it is likely to be tonal in nature (around 100 Hz frequency range), therefore a +4 dB acoustic feature penalty has been applied, in line with BS 4142 guidelines. Based upon the above, a numerical assessment of potential impact for the daytime/evening and night-time periods in line with the requirements of the planning condition is set out in Table 4, considering only attenuation of sound over distance:

Table 4: Assessment of equipment noise at the nearest dwellings (dB)

Description	Daytime/Evening	Night
Calculated Specific Sound Level outside dwelling	54	54
Character correction	+4	+3
Rating level at dwelling ($L_{Ar,Tr}$)	58	58
Adopted Noise Limit (background minus 5 dB)	63	61
Difference	-5	-3

4.4 The results in Table 4 show that the rating level from the equipment will be 3 to 5 dB below the adopted noise limits as set out in the planning condition.

4.5 It is worth noting that the existing air conditioning equipment is currently within a louvred space and it is only being repositioned a short distance from its current location, such that existing noise levels will not change. Furthermore, the proposed external fan proposed to improve air flow to the AC units will emit a noise level 5 dB below the existing noise from the AC units such that the total combined noise level will increase by 1 dB (i.e. 54 dBA).

Conclusion

4.6 It is concluded that potential noise impact from the relocated equipment and the proposed new fan would not result in any unacceptable harm to residential amenity by reason of noise disturbance.

4.7 Furthermore, 'significant adverse impacts' would be avoided and any 'adverse impacts' would be mitigated/minimised, bringing the development in line with the aims of the Noise Policy Statement for England (NPSE) 2010 and Local Policy/Guidance.

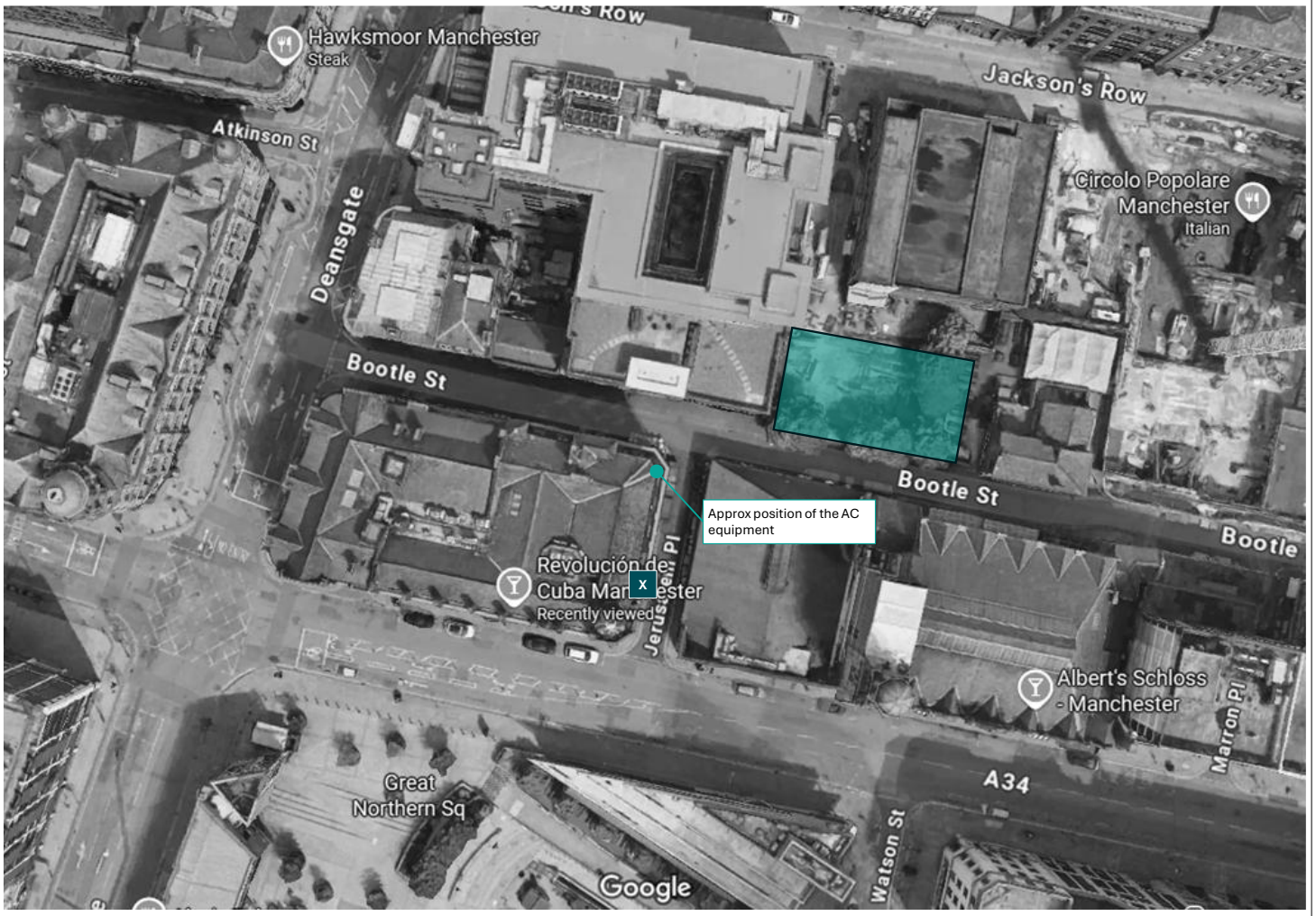
5. SUMMARY

5.1 Hepworth Acoustics was commissioned by Revolution Bars Group Plc to carry out a noise impact assessment in connection with a planning application to reposition the existing air conditioning condensing units to within a louvred area of the Revolucion de Cuba premises on Peter Street, in Manchester city centre. The proposals also include addition of a new fan to assist with ventilation of the louvred area.

5.2 The results of a background noise survey, along with source noise data for the repositioned has been used to assess the potential noise impact of the equipment in its new position.

5.3 Noise calculations have been carried out for the proposed new fan and the repositioned AC equipment which demonstrates that, noise levels will meet the Manchester City Council guidance for fixed plant at the nearest dwellings.

5.4 Therefore, it is concluded that noise from the operation of the proposed repositioned equipment would not result in any unacceptable impact, protecting residential amenity.



Do not scale from this figure

Key:

X - Noise Measurement Position

- Apartment development (currently being constructed)

Project: P25-347

Ref: **Figure 1**

Title: Site location & noise measurement position

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APPENDIX A: ACOUSTICS UNITS & INDICES

Sound and the decibel

A sound wave is a small fluctuation of atmospheric pressure. The human ear responds to these variations in pressure, producing the sensation of hearing. The ear can detect a very wide range of pressure variations. In order to cope with this wide range of pressure variations, a logarithmic scale is used to convert the values into manageable numbers. Although it might seem unusual to use a logarithmic scale to measure a physical phenomenon, it has been found that human hearing also responds to sound in an approximately logarithmic fashion. The dB (decibel) is the logarithmic unit used to describe sound (or noise) levels. The usual range of sound pressure levels is from 0 dB (threshold of hearing) to 120dB (threshold of pain).

Due to the logarithmic nature of decibels, when two noises of the same level are combined together, the total noise level is (under normal circumstances) 3 dB(A) higher than each of the individual noise levels e.g. 60 dB(A) plus 60 dB(A) = 63 dB(A). In terms of perceived 'loudness', a 3 dB(A) variation in noise level is a relatively small (but nevertheless just noticeable) change. An increase in noise level of 10 dB(A) generally corresponds to a doubling of perceived loudness. Likewise, a reduction in noise level of 10 dB(A) generally corresponds to a halving of perceived loudness.

The ear is not equally sensitive to sound at all frequencies. It is less sensitive to sound at low and very high frequencies, compared with the frequencies in between. Therefore, when measuring a sound made up of different frequencies, it is often useful to 'weight' each frequency appropriately, so that the measurement correlates better with what a person would actually hear. This is usually achieved by using an electronic filter called the 'A' weighting, which is built into sound level meters. Noise levels measured using the 'A' weighting are denoted dB(A) or dBA.

Frequency and Hertz (Hz)

As well as the loudness of a sound, the frequency content of a sound is also very important. Frequency is a measure of the rate of fluctuation of a sound wave. The unit used is cycles per second, or hertz (Hz). Sometimes large frequency values are written as kiloHertz (kHz), where 1 kHz = 1000 Hz.

Young people with normal hearing can hear frequencies in the range 20 Hz to 20 kHz. However, the upper frequency limit gradually reduces as a person gets older.

Glossary of Terms

When a noise level is constant and does not fluctuate, it can be described adequately by measuring the dB(A) level. However, when the noise level varies with time, the measured dB(A) level will vary as well. In this case it is therefore not possible to represent the noise climate with a simple dB(A) value. In order to describe noise where the level is continuously varying, a number of other indices can be used. There are also a number of ways to describe sound insulation performance.

The indices used in this report are described below:

$L_{Aeq,T}$ **A-weighted Equivalent Continuous Sound Level:** An average of the total sound pressure measured over a specified time period (T). In other words, $L_{Aeq,T}$ is the level of a steady sound which has the same total A-weighted sound pressure as the real fluctuating noise, measured over the same time period. It is increasingly being used as the preferred parameter for most forms of environmental noise.

L_{Amax} **Maximum A-weighted Sound Level with Fast Time-weighting:** The maximum A-weighted sound pressure level during the measurement period, using the Fast time-weighting of 125ms. L_{Amax} used in this report refers throughout to L_{AFmax} with the Fast time weighting, denoted L_{AFmax} or $L_{Amax,f}$ in other documents but L_{Amax} in BS 8233:2014 standard notation.

$L_{A90,T}$ **A-weighted 90 Percentile Level:** The A-weighted sound level exceeded for 90% of a measurement time period (T). $L_{A90,T}$ is generally used as a measure of Background Sound Level.

$L_{Ar,Tr}$ **Rating Level:** An A-weighted value most commonly used in BS 4142 assessments, which is the sound level of the noise source under assessment, at the assessment location, evaluated over the reference assessment period (T_r) and includes numerical adjustments for the characteristic features of the sound.

APPENDIX B: NOISE SURVEY RESULTS

Date(s)	Monday 18 – Tuesday 19 August 2025
Equipment	NTi Audio XL3-TA 'Class 1' sound analyser (s/n: A3A-01451-F0) with associated calibrator(s) and tripod(s)/environmental outdoor monitoring kit(s)
Weather	Daytime: 17 – 19 °C, partially overcast, dry, E wind <3 m/s Night-time: 16 – 17 °C, partially overcast, dry, E wind <3 m/s

Chart(s) overleaf

Location : 2nd Floor Eastern elevation

