Part of the KP Acoustics Group

Anthropologie, 1-5 St Ann's Square Manchester

Acoustic Commissioning Report
Report 31272.AC.01

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Report 31272.AC.01 Revision History		
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1.0 INTRODUCTION

KP Acoustics Ltd has been commissioned by APT Design Ltd to undertake acoustic commissioning measurements of a plant unit installation serving the new commercial unit (Anthropologie) at 1-5 St Ann's Square, Manchester, M27 EF3.

This report presents commissioning measurements to demonstrate the plant unit installation complies with the emissions criteria at the closest noise-sensitive receivers. This report follows an earlier report, reference '31272.PCR.01 RevA', which assessed the impact of the plant and set noise emission limits at the nearest receptors.

2.0 PREVIOUS SURVEY

2.1 Site Description

As shown in Figure 2.1, the site is bounded by Old Bank Street and St Annes Square, on the southwestern corner of The Royal Exchange.

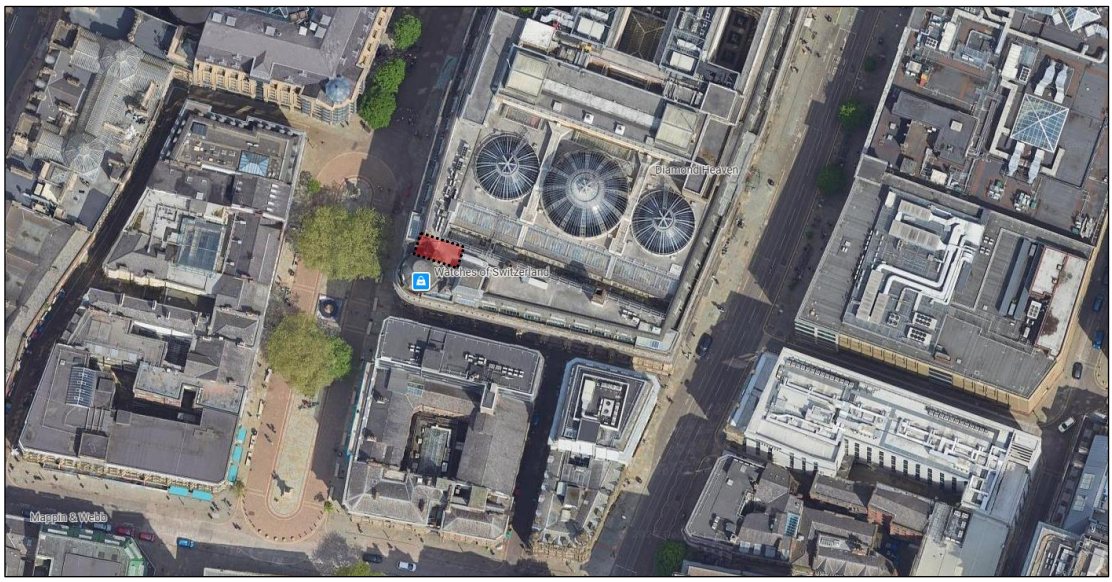


Figure 2.1 Site location plan (Image Source: Google Maps)

Initial inspection of the site revealed that the background noise profile at the monitoring location was typical of an urban cityscape environment, with the dominant source being road traffic noise from the surrounding roads.

2.2 Previous Assessment

A full study of the noise emissions was carried out and detailed in KP Acoustics report with reference 31272.PCR.01 RevA. The noise impact of the site was found to be acceptable with the proposed design.

2.3 Nearest Receptor

The proposed plant installation location and the closest noise sensitive receiver relative to the plant installation are described within Table 2.1 and shown within Figure 2.2.

Icon	Descriptor	Location Description
	Nearest noise sensitive receptor	Top floor windows of The Royal Exchange.
	Proposed plant installation location	Proposed plant installations are outlined in Section 4.0.

Table 2.1 Measurement position and descriptions

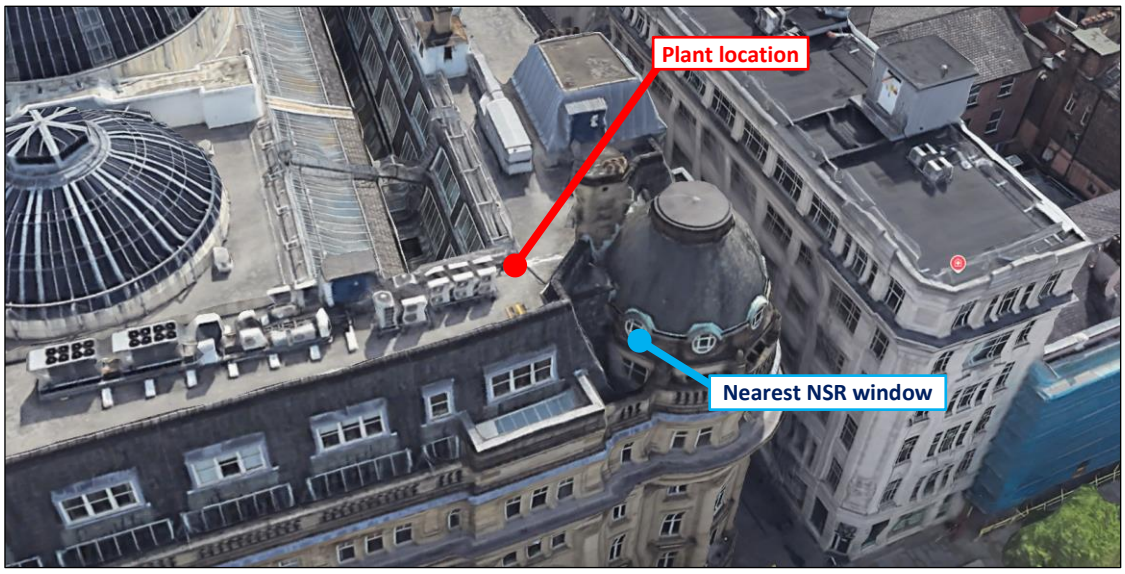


Figure 2.2 Site measurement position (Image Source: Google Maps)

2.4 Resulting Limits

The plant noise emission limits for the new plant installation were set as per below, as agreed by Manchester City Council.

Time Period	Plant Noise Emission Limits
Daytime (07:00-23:00)	43 dB L_{Ar1h}
Night-time (23:00-07:00)	38 dB $L_{Ar,15m}$

Table 2.3 Plant noise emission limits

3.0 NOISE ASSESSMENT GUIDANCE

3.1 Local Authority Guidance

The proposed development falls within the jurisdiction of Manchester City Council (MCC). Guidance on the assessment of noise affecting and associated with new developments is provided in Manchester City Council's 'Planning and Noise' Technical Guidance Document (October 2022), the relevant extracts of this guidance are presented below.

Fixed Plant Noise Emissions

'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 5 dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location'.

3.2 BS4142: 2014 '*Methods for rating and assessing industrial and commercial sound*'

British Standard BS4142:2014 '*Methods for rating and assessing industrial and commercial sound*' describes a method for rating and assessing sound of an industrial and/or commercial nature, which includes:

- Sound from industrial and manufacturing processes
- Sound from fixed installations which comprise mechanical and electrical plant and equipment
- Sound from the loading and unloading of goods and materials at industrial and/or commercial premises, and
- Sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes.

This Standard compares the Rating Level due to the noise source/s under assessment for a one-hour period during the daytime (07:00 – 23:00 hours) and a fifteen-minute period during the night-time (23:00 – 07:00 hours) with the existing background noise level in terms of an L_{A90} when the noise source is not operating.

It should be noted that the Rating Level is the Specific Sound Level in question ($L_{Aeq,\ Tr}$), including any relevant acoustic feature corrections, as follows:

- **Tonality** – '*For sound ranging from not tonal to prominently tonal the Joint Nordic Method gives a correction of between 0dB and +6dB for tonality. Subjectively, this can be converted to a penalty of 2dB for a tone which is just perceptible at the noise receptor, 4dB where it is clearly perceptible, and 6dB where it is highly perceptible'*

- **Impulsivity** – '*A correction of up to +9dB can be applied for sound that is highly impulsive, considering both the rapidity of the change in sound level and the overall change in sound level. Subjectively, this can be converted to a penalty of 3dB for impulsivity which is just perceptible at the noise receptor, 6dB where it is clearly perceptible, and 9dB where it is highly perceptible'*
- **Intermittency** – '*If the intermittency is readily distinctive against the residual acoustic environment, a penalty of 3dB can be applied'*
- **Other sound characteristics** – '*Where the specific sound features characteristics that are neither tonal nor impulsive, though otherwise are readily distinctive against the residual acoustic environment, a penalty of 3dB can be applied'*

Once the Rating Level has been obtained, the representative background sound level is subtracted from the Rating Level to obtain an initial estimate of the impact, as follows:

- Typically, the greater this difference, the greater the magnitude of the impact
- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context
- A difference of around +5 dB could 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 there will be an adverse impact or significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound having a low impact, depending on the context

NOTE: Adverse impacts may include but not be limited to annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact.

The initial estimate of the impact may then be modified by taking consideration of the context in which the sound occurs.

4.0 PLANT INSTALLATION

The plant installation is comprised of the following units:

- 1 No. Toshiba RAV-SP1604AT8-E condenser **(SWL - 70 dBA)**
- Removal of 1 No. existing condenser

The installation location for the plant is at rooftop level, as shown (highlighted **red**) in Figure 4.1 below.

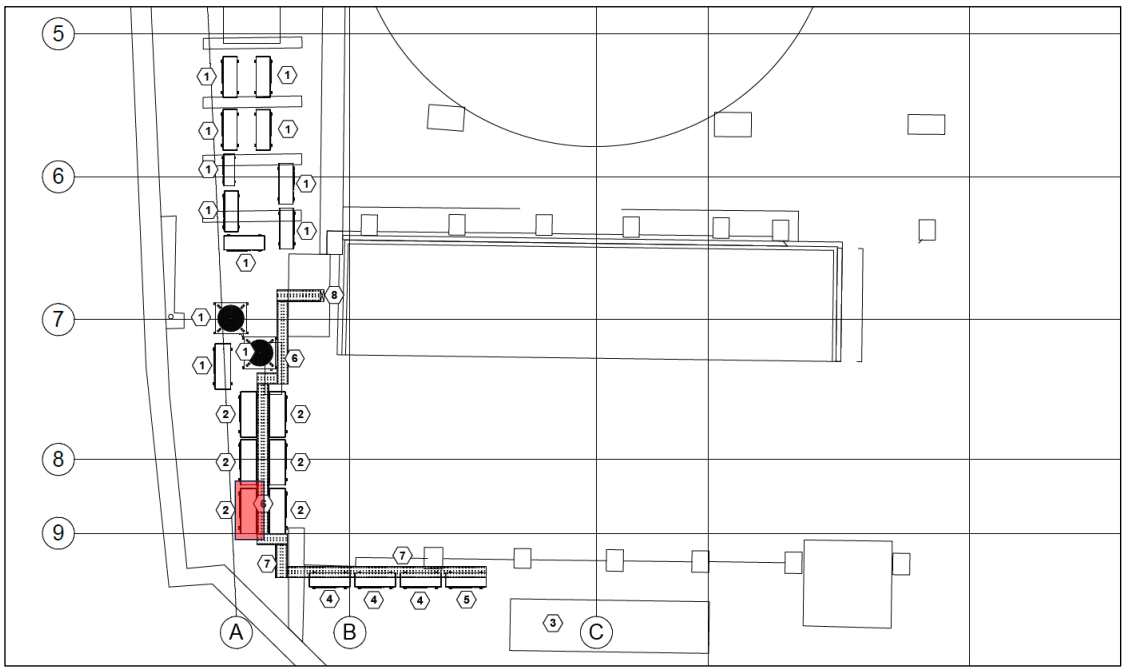


Figure 4.1 Plant installation

The rooftop has an approx. 1.5m parapet brick wall surrounding the rooftop which provides substantial screening to the nearest receptors.

5.0 COMMISSIONING MEASUREMENTS

5.1 Procedure

The site was attended on 06 February 2026 to undertake commissioning measurements. Measurements were undertaken at 1 m from the condenser.

Noise was only audible from the condenser above the general background noise climate when stood within a few metres of the plant itself.

Weather conditions during the survey were generally dry with light winds, and were therefore considered suitable for noise measurement.

5.2 Equipment

The equipment calibration was verified before and after use and no abnormalities were observed. The equipment used is described below.

Measurement Instrumentation	Manufacturer and Type	Serial Number
SLM4 Precision integrating sound level meter & analyser	NTi Audio, XL2-TA Calibration No: UCRT25/2203 Calibration Date: 01/09/2025 Calibration Due: 31/08/2027	A2A-09207-E0
CAL3 – KP North Calibrator 3	Larson Davies CAL200 Calibration No: UCRT25/2200 Calibration Date: 01/09/2025 Calibration Due: 31/08/2026	8932

Table 5.1 Measurement instrumentation

5.3 Results

The measured source noise level data is provided below.

Source	Sound Pressure Level (dB) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
1m from Condenser	65	61	58	57	54	52	48	51	60
Background	55	56	53	49	47	45	43	50	54

Table 5.2 Measured source noise level data

Subjectively, there was no tonality or impulsivity perceptible from the equipment

6.0 ASSESSMENT

6.1 Noise Sensitive Receiver

The worst-case noise sensitive receptor to the proposed installation location has been identified as being the top floor window of The Royal Exchange, located no less than 6 metres from the proposed unit, as shown in Figure 2.2. The receptor is understood to be an office window, however the night-time criteria have also been considered to present a robust assessment that demonstrates compliance to all nearby receptors (residential or offices).

6.2 Calculations

Taking all acoustic corrections into consideration and based on the source noise measurements undertaken in Section 5.0, the calculated noise level contribution expected at the closest receiver from the plant would be as shown in Table 6.1.

The subjective impression on site was that the source noise was constant and free of acoustic features such as tonality or impulsivity. It should also be noted that the measured noise levels

also do not indicate tonality when assessed objectively in accordance with the guidance of BS 4142:2014. Whilst the need for character corrections should be assessed based on the noise level at the receivers, this is a positive indication that no corrections are required.

Description	Receptor – The Royal Exchange
Measured Sound Pressure Level at 1 m from Plant	60 dB $L_{Aeq,15min}$
Distance Correction to 6 m	-16 dB
Screening Correction	-10 dB
Rating Level at Receptor	34 dB $L_{Ar,15min}$
Limit	**38 dB $L_{Ar,15min}$**

Table 5.2 Measured noise level and criterion at nearest noise sensitive location

As shown above, the above indicates compliance with the requirements of the Local Authority.

7.0 CONCLUSION

Using measured source noise data of the installed plant unit installation, noise levels have been predicted at the nearby noise sensitive receiver for compliance with local planning requirements.

The assessment has shown that noise emissions from the plant unit installation meet the requirements of Manchester City Council.