TECHNICAL MEMO

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Project: New Sound-Video Editing Suites, Samuel Alexander Building, UoM

Date: 29 June 2026

To: Greg Farmer, The University of Manchester

From: Samuel Oates BSc MSc MIOA – Senior Consultant

Subject: **Desktop Assessment of Potential Noise Impact of New Rooftop Plant**

1. As part of a refurbishment of the fourth floor of the Samuel Alexander Building, The University of Manchester (UoM) are proposing to install new air handling and condenser plant on the roof of the building and have received the following request from Manchester City Council (MCC):

   > *An acoustic study regarding the noise output from the units, including the cumulative impact of all the units operating simultaneously, and any acoustic attenuation measures you are proposing to install to limit the breakout of noise from the units. You should also provide details of the ambient noise levels during the daytime, night and weekends and assess how noise from the units will impact on ambient noise levels.*

2. Following discussions between UoM and MCC regarding the need for a noise impact assessment due to the ~150m distance been the proposed roof plant and the nearest residential dwellings above Sainsburys and Costa Coffee on the corner of Oxford Road and Grafton Street, the following updated request was provided by MCC:

   > *An acoustic assessment/note is still required and should demonstrate the condensers will not have an undue impact on neighbouring amenity at the nearest noise sensitive receptors.*

3. Based on the revised scope of planning submission requirements regarding noise, Hepworth Acoustics was commissioned by The University of Manchester to carry out a desktop assessment of the potential noise impact from the plant.

Relevant Guidance

4. Plant noise is normally assessed in line with British Standard 4142:2014+A1:2019 (BS 4142), which is a relative assessment methodology whereby the noise source under assessment is compared against the existing prevailing background sound levels. MCC's usual plant noise control criterion requires the rating level of sound from all new plant combined to be controlled to at least 5 dB below the representative background noise level.

5. The approach in BS 4142 requires a noise survey; however, given this is a desktop assessment and the distances involved, it is considered suitable in this case to evaluate the potential noise impact from the rooftop plant based on the absolute sound levels, with reference to relevant guidance.

6. British Standard 8233: 2014 'Guidance on sound insulation and noise reduction for buildings' (BS 8233), provides guidance on design targets for acceptable noise levels within residential accommodation for the daytime (07:00-23:00) and night-time (23:00-07:00) periods, as summarised in **Table 1**.

Table 1: BS 8233 Recommended Acoustic Design Targets for New Dwellings

Activity	Location	Indoor Noise Levels	
		Daytime (07:00-23:00)	Night-time (23:00-07:00)
Resting	Living room	35 dB $L_{Aeq,16h}$	-
Dining	Dining room / area	40 dB $L_{Aeq,16h}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16h}$	30 dB $L_{Aeq,8h}$

7. BS 8233 clarifies that the guidance and noise levels in **Table 1** relate to noise without specific character (e.g. noise that does not have a distinguishable, discrete and continuous tone, is irregular enough to attract attention, or has strong low-frequency content) and that where such characteristics are present, lower noise limits might be appropriate. However, no specific lower guideline values are provided for noise with specific characteristics.

8. It should be understood that BS 8233 is guidance for appropriate acoustic conditions for new residential developments rather than assessment of plant noise sources. Nevertheless, BS 8233 has been referenced in this report to provide the most relevant context for the absolute noise levels.

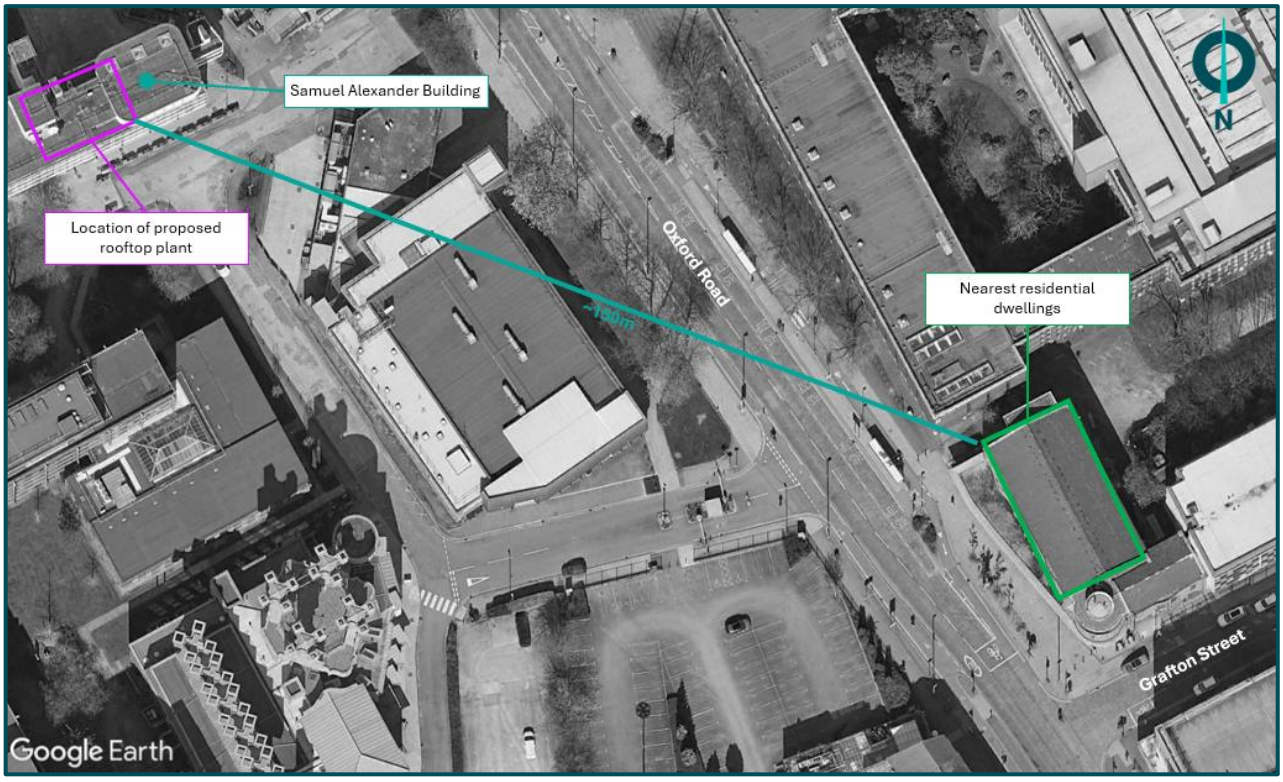
Proposals

9. The proposals are to install the following plant equipment:

- 1 x AHU Fläkt Group AHU-X TW – 54 dB L_{wA} – Fan casing breakout noise levels.
- 4 x Mitsubishi Electric Power Inverter Heat Pump (PIHP) (example PUZ-ZM250YKA2) – 70 dB L_{wA}.

10. The location of the proposed plant is indicated in **Figure 1.**

Figure 1: Aerial View with Annotations



Calculations & Assessment

11. Based on the attenuation of sound over distance only, the combined noise levels from all of the proposed rooftop plant operating simultaneously is anticipated to be no higher than 24 dB $L_{Aeq,T}$ outside the nearest dwellings above Sainsburys and Costa Coffee on the corner of Oxford Road and Grafton Street.

12. On this basis, as long as the representative background sound level outside the nearest dwellings is 29 dB L_{A90} or higher then MCC's usual noise control criterion will be achieved. In our view, it is highly likely that existing background sound levels are significantly higher than this and so it is highly likely that the MCC noise control criterion will be achieved.

13. Furthermore, based on a nominal 10-15 dB reduction in noise level due to the loss through a partially open window, the highest indoor plant noise levels inside the nearest dwellings are expected to be 9-14 dB $L_{Aeq,T}$, which are low levels of noise. For context BS 8233 guidelines for indoor noise levels are 30 dB $L_{Aeq,T}$ inside bedrooms during the night-time.

14. The BS 8233 design targets are for noise without a specific character such as transportation noise and it should be acknowledged that AHU and condenser noise may be more noticeable.

15. However, the highest plant noise levels are predicted to be at least 16 dB below the BS 8233 design targets and newly installed and properly maintained AHUs and condensers are not expected to exhibit any noticeable tonal, or impulsive noise characteristics that would increase sensitivity to the noise, especially within the context of the very low absolute noise levels.

Conclusion

16. Based on the findings in this memo, no adverse noise impacts are anticipated from the proposed rooftop plant, no special noise mitigation measures are warranted and there is no noise-related reason why planning permission should not be granted.