MEMO

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Ref: P24-196-M01v1

Project: Approved Grab & Go Food Facility, Loreto College, Manchester

Date: 25 September 2025

To: Stephen Roberts, Carefoot Plc

From: David Thurstan BSc MIOA – Principal Consultant

Subject: **External Fixed Plant Noise Verification Assessment**

1. This memo sets out the findings of a verification assessment of noise from external plant, which is to provide comfort cooling within the new building Loreto College Campus in Manchester.

2. The verification of the external fixed plant noise is required in relation to condition 7b of Manchester City Council planning permission ref. 140784/JO/2024 dated August 2024. The condition states:

   "Prior to the operation of the scheme a verification report shall be submitted to and approved in writing by the City Council as local planning authority to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved acoustic report. The report shall also undertake post completion testing to confirm that the noise criteria have been 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 agreed noise criteria."

Adopted Noise Limits

3. The typical background noise levels were determined from the results of a 24-hour noise survey as detailed in Hepworth Acoustics Report P24-196-R01v1.

4. The approved equipment will operate in the daytime/evening only, with no operation at night. The representative background noise level was 45 dB $L_{A90,T}$ for the worst-case evening period. Therefore, based on requirements of the condition 7a (i.e. 5 dB below the background sound level) the adopted noise limit is 40 dB $L_{Aeq,T}$ for the daytime/evening outside the nearest dwellings. The nearest dwellings are considered to be those on Maher Gardens opposite the site, approximately 12 metres from the equipment compound.

Measurement of Equipment Noise Emission Levels

5. A site visit was undertaken in the daytime on Tuesday 23 September 2025. The purpose of the visit was to carry out noise measurements to establish the noise emissions from the VRF equipment.

6. The noise measurements were carried out using a NTi Audio XL-2 'Class 1' sound level meter (s/n: A2A-20361-E0). Calibration checks were carried out both before and after the measurement periods with no variance in levels observed. The noise measurements were taken in 'façade' conditions (i.e. semi-enclosed by the plant compound) and at a microphone height of approximately 1.7 metres above the ground in line with the vertical fan on top of the unit.

7. One Samsung VRF Condenser model AM080AXVGGR/EU has been installed on site. During the noise survey it is understood the unit was operating at its typical capacity.

8. The equipment operates at a low, steady noise level, therefore the noise measurements were taken as multiple short-term periods in terms of $L_{eq,T}$ at 1 metre from the equipment. The results are presented in Table 1 below:

Table 1: Measured noise emission levels from equipment, at 1m

Description	Octave band centre frequency (Hz)							A
	63	125	250	500	1k	2k	4k	
VRF operating	57	52	60	55	46	44	45	57

Resulting Noise Levels at Nearby Dwellings

9. The measured source noise levels have been used to calculate the corresponding noise level outside the first-floor window (i.e. 4m above ground) of the nearest/most exposed dwelling (on Maher Gardens), taking account of attenuation of sound over distance and the barrier attenuation provided by the 2.3m acoustic fence that surrounds the plant compound. Based upon our observations, the main source of noise from the units is considered to be the fan mounted at the top of the unit (i.e. 1.7m above ground), therefore given the proximity of the units to the acoustic fence, a calculation of barrier attenuation using the Fresnel method has been included.

10. The noise produced by the equipment is steady in nature with no tonality or impulsivity associated with its operation. Also, because each unit will operate on demand intermittently, there will be no distinctive or abrupt on/off change in noise. On this basis, no acoustic feature corrections have been applied.

11. The assessment of noise from the VRF fixed plant is shown in Table 2 along with the adopted noise limit.

Table 2: Assessment of VRF noise at the nearest dwellings (dB)

Description	Daytime
Calculated specific sound level outside dwelling	24
Acoustic feature correction	0
Rating level of sound at dwelling	24
Adopted noise limit	40
Difference	-16

12. The results in Table 2 show that the rating noise levels at the nearest dwellings are well within the adopted noise limit during the daytime period.

Conclusion

13. It is therefore concluded that the noise from the VRF equipment is within the noise limits as required by the planning condition without the need for any specific additional noise mitigation measures.