MEMO

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Ref: P25-257-M02v1

Project: Approved Care Home at Yew Tree Lane, Northern Moor

Date: 11 September 2025

To: Craig Collishaw, LNC Property Developments Ltd

From: David Thurstan BSc MIOA – Principal Consultant

Subject: **Air Source Heat Pump Noise Verification Assessment**

1. This memo sets out the findings of a verification assessment of noise from air source heat pump (ASHP) equipment installed at the approved care home development at Yew Tree Road, Northern Moor.

2. The verification of the ASHP noise is required in relation to condition 16 of Manchester City Council planning permission ref. 141842/JO/2025 dated February 2025. The condition states:

   "Prior to the first operation of the approved 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 in relation to externally mounted plant, equipment and servicing conforms to the recommendations and requirements in the approved acoustic report approved under condition 13 of this planning permission. The report shall also undertake post completion testing to confirm that the noise criteria have been met. Any instances of nonconformity 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 condition 13 states:

   "Externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with the approved Noise Impact Assessment prepared by BWB Consulting ref 220454 as received by the City Council as local planning authority under condition discharge reference CDN/23/0159 on the 7th March 2023 and shall be implemented in full before the use commences."

4. We understand that the BWB Consulting report to which the condition refers sets out noise limits for the plant/equipment of 42 dB $L_{Aeq,T}$ for the daytime (07:00 – 23:00) and 34 dB $L_{Aeq,T}$ at night (23:00 – 07:00) outside the nearest dwellings. The noise limits refer to rating levels as defined by BS 4142:2014+A1:2019 and hence include acoustic feature corrections where appropriate. The nearest dwellings are considered to be the dwellings to the rear on Barry Road, approximately 13 metres from the ASHP compound.

Measurement of Equipment Noise Emission Levels

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

6. The noise measurements were carried out using a B&K 2250 'Class 1' sound analyser (s/n: 3011706). Calibration checks were carried out both before and after the measurement periods with no variance in levels observed. The noise measurements were taken in 'free-field' conditions and at a microphone height of approximately 1.4 metres above the ground.

7. Four Mitsubishi air source heat pumps model CAHV-R450YA-HPB have been installed on site. During the noise survey all units were operating.

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 3 metres from the ASHP units. The results are presented in Table 1 below:

Table 1: Measured noise emission levels from equipment, standardised to a distance of 3m

Description	Octave band centre frequency (Hz)							A
	63	125	250	500	1k	2k	4k	
4 no ASHP – all operating	58	56	53	51	53	45	37	56

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 Barry Road), taking account of attenuation of sound over distance and the barrier attenuation provided by the 2.1m 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 considering Fresnel numbers corresponding to wavelength.

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 ASHP fixed plant is shown in Table 2 along with the adopted noise limits for each period are also shown.

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

Description	Daytime	Night-time
Calculated specific sound level outside dwelling	34	34
Acoustic feature correction	0	0
Rating level of sound at dwelling	34	34
Adopted noise limit	42	34
Difference	-8	0

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

Conclusion

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