

Noise Calculations

Summary: The proposed heat pump satisfies the MCS noise requirements for two different methods as stated in MCS_020 and the MCS_020 a). We use the updated guidance in MCS_020 a) that provide clarity around assessment position. No other neighbouring houses have windows with line of sight to the heat pump. It should also be noted that there are high levels of ambient noise created by proximity to the main road that far exceeds the noise that can be generated by the heat pump. The homeowner has also chosen a heat pump that is one of the best in class in terms of noise.

MCS_020

Note, if partial view instead of no view is chosen, the result is still a pass.

MCS 020 Planning Standard - Air Source Heat Pump calculation procedure	
Instruction	Result
1. From manufacturer's data, obtain the A-weighted sound power level of the heat pump. See 'Note 1: Sound power level'. The highest sound power level specified should be used (the power in "low noise mode" should not be used).	54
2. Use 'Note 2: Sound pressure level' and 'Note 3: Determination of directivity' below to establish the directivity 'Q' of the heat pump noise.	2
3. Measure the distance from the heat pump to the assessment position in metres (rounded down, maximum 30 metres) - Assessment position means a position one metre external to the centre point of any door or window to a habitable room of a neighbouring property as measured perpendicular to the plane of the door or window. - Habitable room means a room other than a bathroom, shower room, water closet or kitchen. - Neighbouring property. Means any building used for any of the purposes of Class C of the Town and Country Planning (Use Classes) Order 1987 (as amended) (includes dwellinghouses, hotels, residential institutions and houses in multiple occupation). In instances where the air source heat pump would be installed on block of flats, neighbouring property includes flats within the same block of flats (excluding the flat of the "owner(s)" of the air source heat pump.	3
4. Use table in 'Note 4: dB distance reduction' below to obtain a dB reduction.	-17
5. Establish whether there is a solid barrier between the heat pump and the assessment position using 'Note 5: Barriers between the heat pump and the assessment position' and note any dB reduction. - For a solid barrier (e.g. a brick wall or a fence) that completely obscures an installer's vision of an assessment position from the top edge of the air source heat pump attenuation of -10 dB may be assumed. - Where a solid barrier completely obscures an installer's vision of an assessment position from the top or side edges of the air source heat pump, but moving a maximum distance of 25 cm in any direction to the air source heat pump allows an assessment position to be seen, attenuation of -5 dB may be assumed. - If it is possible for an installer to see any part of an assessment position from the top or side edges of the air source heat pump no attenuation may be assumed.	-10
6. Calculate the sound pressure level (see 'Note 2: Sound pressure level') from the heat pump at the assessment position using the following calculation: (STEP 1) + (STEP 4) + (STEP 5)	27
7. Background noise level. For the purposes of the MCS Planning Standard for air source heat pumps the background noise level is assumed to be 40 dB(A) Lp. For information see 'Note 6: MCS Planning Standard for air source heat pumps background noise level'.	40
8. Determine the difference between STEP 7 background noise level and the heat pump noise level using the following calculation: (STEP 7) – (STEP 6)	13
9. Using the table in 'Note 7: Decibel correction' obtain an adjustment figure and then add this to whichever is the higher dB figure from STEP 6 and STEP 7. Round this number up to the nearest whole number.	40
10. Is the FINAL RESULT in STEP 9 equal to or lower than the permitted development noise limit of 42 dB(A)? If YES - the air source heat pump will comply with the permitted development noise limit for this assessment position and may be permitted development (subject to compliance with other permitted development limitations/conditions and parts of this standard). NOTE - Other assessment positions may also need to be tested. If NO – the air source heat pump will not be permitted development. This installation may still go ahead if planning permission is granted by the local planning authority.	YES

MCS_020 a)

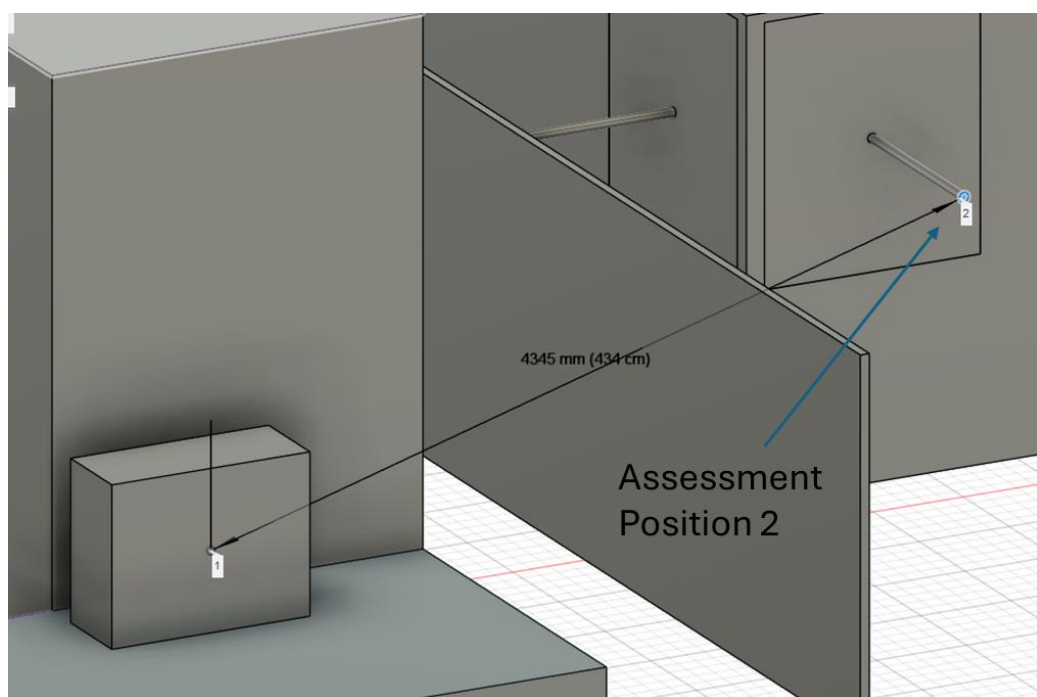
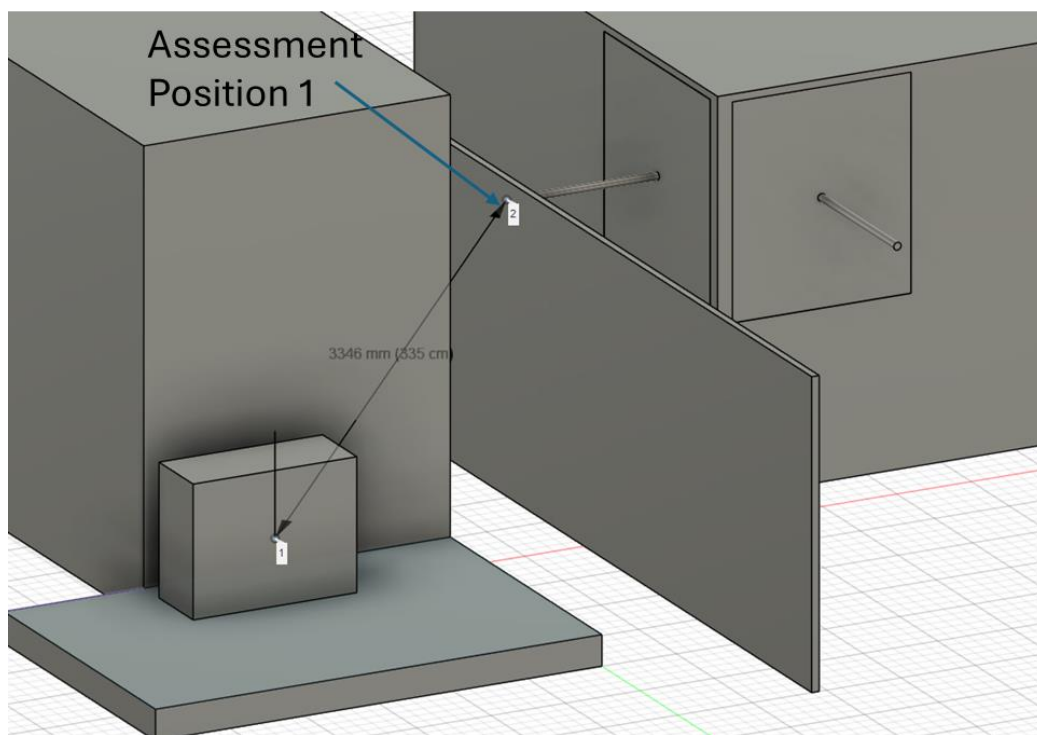
Updated calculation methodology. Note, if partial view instead of no view is chosen, the result is still a pass.

Step		Assessment Position 1	Assessment Position 2
1	Date calculation undertaken		
2	Description of assessment position		
3	A-weighted sound power level, dB(A)	54	54
4	Determination of directivity (Q) - select number of reflective surfaces	two reflective surfaces	two reflective surfaces
5	Distance from heat pump to assessment positions, in m	3.3	4.3
6	Determination of barrier correction - select barrier type	close board fence (<18mm thick boards)	close board fence (<18mm thick boards)
	Determination of barrier correction - select line of sight	no view	no view
7	Calculate sound pressure level	33.7	31.4
8	Pass/fail noise limit of 37.0 dB(A)	pass	pass

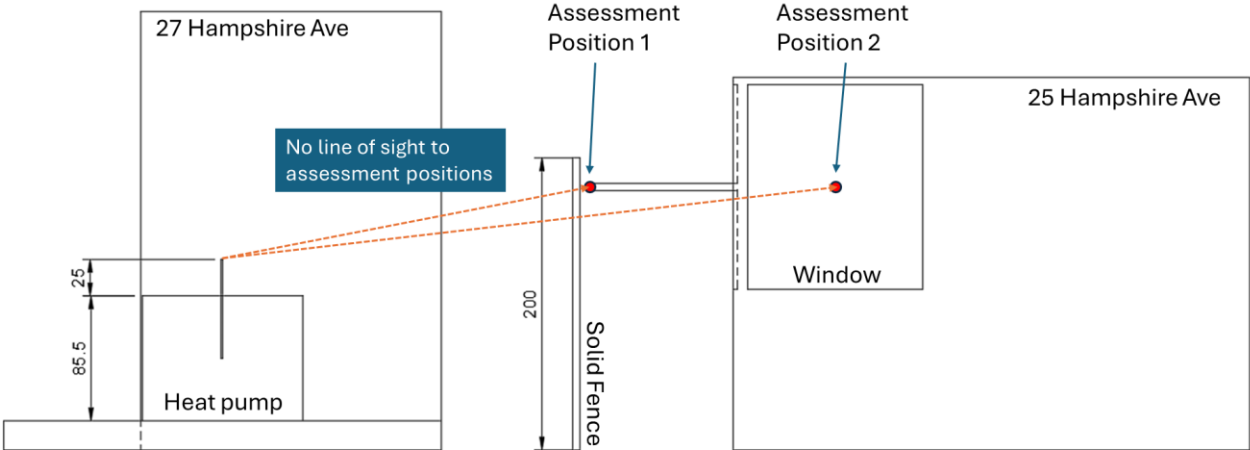
Assessment Position Location

Distances from heat pump to assessment position

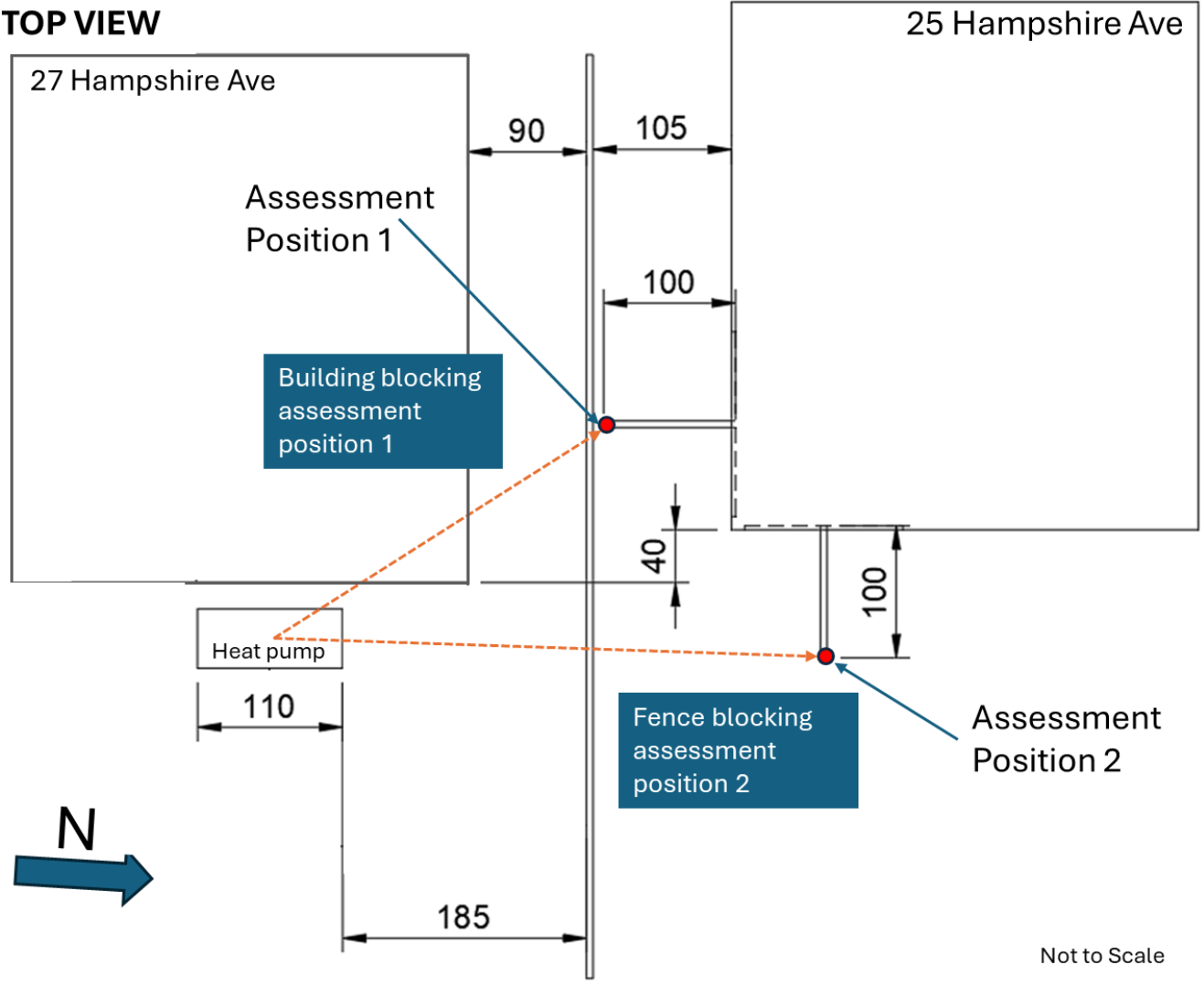
	Assessment Position 1	Assessment Position 2
MCS 020	3m	4m
MCS 020 a)	3.3m	4.3m



FRONT VIEW



TOP VIEW



Location Representation

The approx. location and size of the heat pump is shown for additional context.



Local Noise

