

**Grange Moor Children's Centre  
Mechanical – Heat Pump Replacement  
CLA650015**



# **Grange Moor Children's Centre Noise Assessment Report**

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**Date 14/04/2026**

# Grange Moor Children's Centre

## Mechanical – Heat Pump Replacement

### CLA650015



## Introduction

Grange Moor Children's Centre already has a heat pump but is currently internal. It has now broken and they require a new one which will need to be located external as the internal units are no longer manufactured.

This assessment is prepared in accordance with MCS 020a, The Planning Standard for air source heat pumps. This is to establish that the proposed location of the air source heat pump(s) has a noise level lower than the permitted development noise limit of 37 dB (A).

The assessment was done in relation to the nearest habitable room at the neighbouring properties 17 and 16 Bedford Road, Grange Moor, WF4 4EL and 14 Back Lane, Grange Moor most likely to be affected by noise from the heat pump.

The report shows that that all assessment points/properties will experience sound pressure level below the permitted level of 37 dB (A).

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**Assessment Position 1**

Step	Instructions	Result
1	Date Calculation Undertaken	13/4/2026
2	Description of assessment position	Description of assessment position 17 Bedford Road , Grange Moor, WF4 4EL Ground floor  Nearest Window
3	From manufacturer's data, obtain the weighted sound power level of the heat pump	53 dB(A) (See Data Sheet Page 6)
4	Determine the directivity 'Q' of the heat pump noise	2 reflective surfaces – Q4 Against the ground and one Wall (See page 6)
5	Measure the distance from the heat pump to the assessment position in metres.	21.m (See Page 7)
6	Determine any barrier corrections between the heat pump and the assessment position.	No barrier
7	Calculate the sound pressure level from the heat pump at the assessment position.	21.6 dB(A) (See Calculation in information on page 8 )
8	Is the calculated sound pressure level at the assessment position equal to or lower than the permitted development noise limit of 37.0 dB(A)?	21.6 dB(A) Yes this is below the permitted development noise limit of 37.0 dB(A)

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**Assessment Position 2**

Step	Instructions	Result
1	Date Calculation Undertaken	13/4/2026
2	Description of assessment position	Description of assessment position 16 Bedford Road , Grange Moor, WF4 4EL Ground floor  Nearest Window
3	From manufacturer's data, obtain the weighted sound power level of the heat pump	53 dB(A) (See Data Sheet Page 6)
4	Determine the directivity 'Q' of the heat pump noise	2 reflective surfaces – Q4 Against the ground and one Wall. (See page 6)
5	Measure the distance from the heat pump to the assessment position in metres.	21.m (See Page )
6	Determine any barrier corrections between the heat pump and the assessment position.	No barrier
7	Calculate the sound pressure level from the heat pump at the assessment position.	21.6 dB(A) (See Calculation in information on page 8 )
8	Is the calculated sound pressure level at the assessment position equal to or lower than the permitted development noise limit of 37.0 dB(A)?	21.6 dB(A) Yes this is below the permitted development noise limit of 37.0 dB(A)

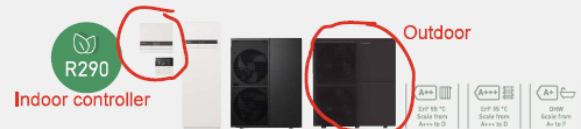
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**Assessment Position 3**

Step	Instructions	Result
1	Date Calculation Undertaken	13/4/2026
2	Description of assessment position	Description of assessment position 4 Back Lane , Grange Moor, WF4 4ET Ground floor  Nearest Window
3	From manufacturer's data, obtain the weighted sound power level of the heat pump	53 dB(A) (See Data Sheet on page 6)
4	Determine the directivity 'Q' of the heat pump noise	2 reflective surfaces – Q4 Against the ground and one wall. (See page 6)
5	Measure the distance from the heat pump to the assessment position in metres.	23.m (See page 7)
6	Determine any barrier corrections between the heat pump and the assessment position.	No barrier
7	Calculate the sound pressure level from the heat pump at the assessment position.	20.8 dB(A) (See Calculation in information on page 8 )
8	Is the calculated sound pressure level at the assessment position equal to or lower than the permitted development noise limit of 37.0 dB(A)?	20.8 dB(A) Yes this is below the permitted development noise limit of 37.0 dB(A)

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## Data Sheet (For Step 3)



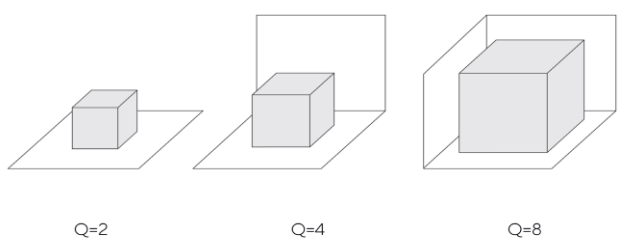
Indoor unit		Outdoor unit																
Hydraulic All in One	Backup heater capacity	DHW tank capacity	Electrical Anode	CN-CNT	Backup heater	Expansion vessel (l)	Additional functions	Heating capacity										
								Single phase		Three phase								
								9,0 kW	12,0 kW	9,0 kW	12,0 kW	16,0 kW	20,0 kW	25,0 kW	30,0 kW			
1ph	—	—	—	—	—	—	—	WH-ADC0316M3E5UK2	✓	✓	—	—	—	—	—	—	—	—
3ph	—	—	—	—	—	—	—	WH-CMES	✓	✓	—	—	—	—	—	—	—	—
Control module	—	—	—	—	Field supply	—	CZ-NS7P	WH-CMES	✓	✓	✓	✓	✓	—	—	—	—	—
3ph	—	—	—	—	—	—	—	WH-CMEBL	—	—	—	—	—	—	—	—	—	—
Remote controller with Wi-Fi adapter	—	—	—	—	—	—	—	CZ-RTW2TAW1C	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

heat out put and efficiency  
this is the worst case scenario

Outdoor unit	WH-	Aquaera TeCAP M Series				Big Aquaera TeCAP M Series			
		WXG07MES	WXG12MES	WXG09MES	WXG12MES	WXG16MES	WXG20MES	WXG25MES	WXG30MES
Heating capacity / COP (A -7 °C, W 35 °C)	kW / COP	9,00/5,23	12,00/5,08	9,00/5,23	12,00/5,08	16,00/4,89	20,00/4,66	25,00/4,40	30,00/4,36
Heating capacity / COP (A -7 °C, W 35 °C)	kW / COP	9,00/3,24	12,00/3,23	9,00/3,24	12,00/3,23	16,00/3,20	20,00/3,24	25,00/3,25	30,00/3,28
Heating capacity / COP (A -2 °C, W 35 °C)	kW / COP	9,00/3,81	12,00/3,54	9,00/3,81	12,00/3,54	16,00/3,30	20,00/3,37	25,00/3,21	30,00/2,98
Heating capacity / COP (A -2 °C, W 35 °C)	kW / COP	9,00/2,54	12,00/2,42	9,00/2,54	12,00/2,42	16,00/2,37	20,00/2,08	25,00/1,96	30,00/1,95
Heating capacity / COP (A -7 °C, W 35 °C)	kW / COP	9,00/2,34	12,00/3,00	9,00/3,45	12,00/3,00	16,00/2,53	20,00/2,48	25,00/2,25	30,00/2,32
Heating capacity / COP (A -7 °C, W 35 °C)	kW / COP	9,00/2,35	12,00/2,17	9,00/2,35	12,00/2,17	16,00/1,97	20,00/1,60	25,00/1,51	30,00/1,49
Cooling capacity / EER (A 35 °C, W 7 °C)	kW / EER	9,00/3,61	9,00/3,61	9,00/3,61	9,00/3,61	9,00/3,61	20,00/3,12	25,00/2,95	30,00/2,02
Cooling capacity / EER (A 35 °C, W 18 °C)	kW / EER	9,00/5,26	12,00/5,26	9,00/5,26	12,00/5,26	16,00/5,26	20,00/3,58	25,00/3,44	30,00/3,31
Heating average climate (W 35 °C / W 55 °C)	Seasonal energy efficiency (η <sub>s</sub> , %)	SCDP 4,94/3,57 (195/140)	5,00/3,44 (197/135)	4,94/3,57 (195/140)	5,00/3,44 (197/135)	5,88/4,09 (232/161)	4,01/3,50 (168/129)	3,78/3,30 (158/129)	3,55/3,10 (158/129)
Heating average climate (W 35 °C / W 55 °C)	Energy class <sup>1)</sup>	A+++ to D	A+++ / A+++	A+++ / A+++	A+++ / A+++	A+++ / A+++	A+++ / A+++	A+++ / A+++	A- / A-
Heating warm climate (W 35 °C / W 55 °C)	Seasonal energy efficiency (η <sub>s</sub> , %)	SCDP 6,47/4,34 (256/171)	6,47/4,34 (256/171)	6,47/4,34 (256/171)	6,47/4,34 (256/171)	5,88/4,09 (232/161)	4,01/3,50 (168/129)	3,78/3,30 (158/129)	3,55/3,10 (158/129)
Heating warm climate (W 35 °C / W 55 °C)	Energy class <sup>1)</sup>	A+++ to D	A+++ / A+++	A+++ / A+++	A+++ / A+++	A+++ / A+++	A+++ / A+++	A+++ / A+++	A- / A-
Heating cold climate (W 35 °C / W 55 °C)	Seasonal energy efficiency (η <sub>s</sub> , %)	SCDP 4,31/3,26 (169/127)	4,31/3,26 (169/127)	4,31/3,26 (169/127)	4,31/3,26 (169/127)	3,83/3,20 (150/125)	4,01/3,50 (168/129)	3,78/3,30 (158/129)	3,55/3,10 (158/129)
Heating cold climate (W 35 °C / W 55 °C)	Energy class <sup>1)</sup>	A+++ to D	A+++ / A+++	A+++ / A+++	A+++ / A+++	A+++ / A+++	A+++ / A+++	A+++ / A+++	A- / A-
Sound power <sup>2)</sup>	Heat	52	55	52	53	57	68	69	69
Dimension	H x W x D	mm 1520x1200 x430	1520x1200 x430	1520x1200 x430	1520x1200 x430	1645x1500 x460	1645x1500 x460	1645x1500 x460	1645x1500 x460
Net weight	kg	161	161	161	161	165	260	260	260
Refrigerant (R290) / CO <sub>2</sub> Eq. <sup>3)</sup>	kg / T	1,78/0,006	1,78/0,006	1,78/0,006	1,78/0,006	1,77/0,006	2,6/0,008	2,6/0,008	2,6/0,008
Operating range - outdoor ambient	Heat / Cool	°C +28 -+35 / +10 -+43	+28 -+35 / +10 -+43	+28 -+35 / +10 -+43	+28 -+35 / +10 -+43	+28 -+35 / +10 -+43	+25 -+35 / +10 -+43	+25 -+35 / +10 -+43	+25 -+35 / +10 -+43
Water outlet	Heat / Cool	°C 25 -75 / 5 -20	25 -75 / 5 -20	25 -75 / 5 -20	25 -75 / 5 -20	25 -75 / 5 -20	20 -75 / 5 -20	20 -75 / 5 -20	20 -75 / 5 -20

Indoor unit	WH-	ADC0316M3E5UK2		
Dimension	H x W x D	mm 1642 x 597 x 602		
Net weight	kg	89		
Water volume	L	185		
Maximum DHW temperature	°C	65		
Material inside tank		Stainless steel		
Pipe length range std. / max.	m	5/30		
Elevation difference (in / out)	m	3/0		
Electric backup heater	kW	3,00		
Domestic Hot Water energy efficiency				
Indoor unit	WH-	ADC0316M3E52	ADC0316M9E82	
Outdoor unit	WH-	WXG09MES/8	WH-WXG16ME8	
Tapping profile according EN16147		L	L	
DHW tank ERP	Average climate	η <sub>hw</sub> % / COP <sub>DHW</sub>	123/3,00/A+	117/2,85/A+
η / COP <sub>DHW</sub>	Warm climate		132/3,30/A+	128/3,20/A+
efficiency <sup>1)</sup>	Cold climate		88/2,20/A	84/2,10/A
1) Scale from A- to F, ** This product is designed to comply with the European drinking water standard (EU) 2020/2184. The lifespan of the product is not guaranteed in the case of the use of groundwater, such as spring water or well water, the use of tap water when salt or other impurities are contained, nor in areas of acidic water quality. Maintenance and warranty costs related to these cases are the customer's responsibility.				
Indoor unit	WH-CMES	WH-CME8	WH-CMEBL	
Dimension	H x W x D	mm 450 x 450 x 117	450 x 450 x 117	450 x 450 x 117
Net weight	kg	7	7	7
Field supply electrical backup heater	kW	Up to 3 kW	Up to 9 kW	

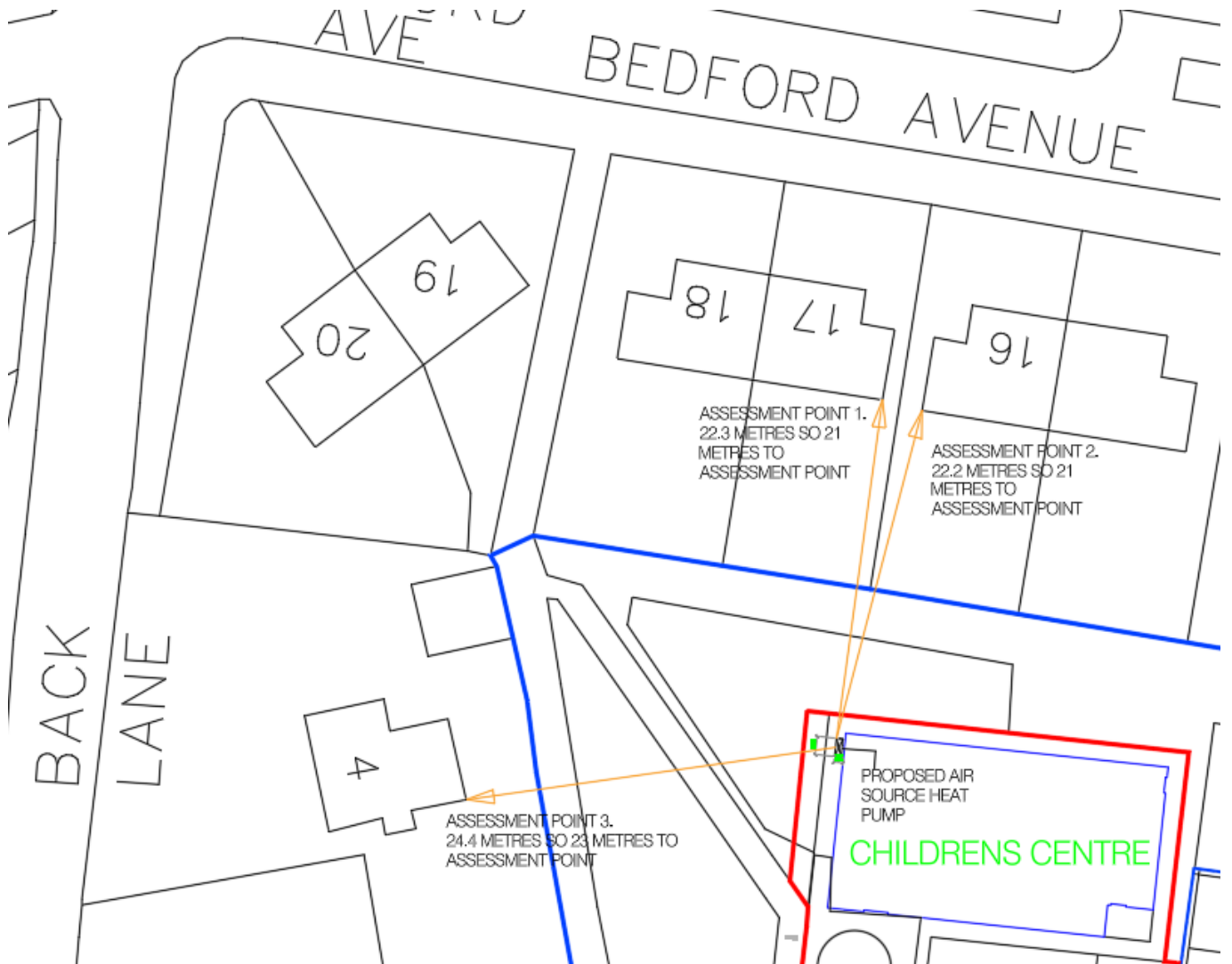
## Determining the directivity 'Q' of the heat pump noise (For Step 4)



Q = 4 for this property as there are 2 reflective surfaces against the ground and one wall

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**Measurement (For Step 5)**



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**Calculation (For Step 7)**

The sound pressure level at the assessment position shall be calculated using the following formula

$$L_p = L_w + 10 \cdot \log\left(\frac{Q}{4 \cdot \pi \cdot r^2}\right) - A_B$$

Where:

LP = sound pressure level, in dB(A)

LW = sound power level, in dB(A) = Step 3 as 53 dB(A)

Q = Directivity factor = Step 4 as 53 dB(A)

r = distance from heat pump to assessment position, in metres = Step 5 as 21m

AB = barrier attenuation, in dB(A)

**Assessment Position 1**

$$L_p = 53 + 10 \cdot \log(4 / (4 \times \pi \times 21^2)) - 0$$

$$L_p = 21.584 \text{ dB(A)}$$

**Assessment Position 2**

$$L_p = 53 + 10 \cdot \log(4 / (4 \times \pi \times 21^2)) - 0$$

$$L_p = 21.584 \text{ dB(A)}$$

**Assessment Position 3**

$$L_p = 53 + 10 \cdot \log(4 / (4 \times \pi \times 23^2)) - 0$$

$$L_p = 20.7939 \text{ dB(A)}$$

**Conclusion**

The report establishes that the proposed location of the air source heat pump has a noise level lower than the permitted development noise limit of 37 dB (A) for all 3 assessment positions/properties.