

## TECHNICAL NOTE

**Land at Albany Drive, Copster Green BB1 9EH**

**Proposed erection of 26 affordable dwellings with associated access, gardens, parking and landscaping.**

**Air Source Heat Pumps – Cumulative Noise Impact Assessment**

|              |                                  |
|--------------|----------------------------------|
| Date         | 8 <sup>th</sup> August 2026      |
| Site Visited | N/A                              |
| Ref.         | 20260808 9958 Copster Green ASHP |
| RVBC Ref.    | 3/2026/0214                      |
| Prepared by: | M A Kenyon MSc BSc MIOA          |

### 1.0 Introduction

It is understood that the Environmental Health Officer of Ribble Valley Borough Council has requested that a noise impact assessment be prepared in relation to the above scheme.

The Planning Officer has stated *“I have also received comments from the EH Officer now and they request that you assess the cumulative impacts of ASHP. They note the following guidance New update to the Air Source Heat Pumps Professional Advice Note / The Association of Noise Consultants Joint-IOA-CIEH-Domestic-ASHP-Professional-Advice-Note-2026.pdf”*

This Technical Note considers the most appropriate standard for the cumulative assessment of ASHPs proposed for new properties on the residents of the existing properties, conducts the assessment and then presents the results. Acoustic terminology is at Appendix 1, the author's qualifications and experience appear at Appendix 2 and ASHP Specifications at Appendix 3.

## 2.0 Criteria

### 2.1 National Guidance

#### 2.1.1 MCS 020 a) Issue 1.1 "Air Source Heat Pump Sound Calculation"

MCS has issued "*MCS 020 a) Issue 1.1 - Air Source Heat Pump Sound Calculation*" which is used to assess noise from Air Source Heat Pumps when planning permission is being sought under permitted development rights, and if the predicted level is 37.0 LAeq or lower, the impact is deemed acceptable. It is important to note that this MCS noise criterion for the acceptability of ASHP noise was first set out in 2011, i.e. this is a long-standing test of acceptability.

The document applies to ASHP noise and **must** be used when the ASHP installation requires planning permission under permitted development rights; nowhere in the document is there any statement to the effect that the standard is **only** applicable to a 'permitted development' ASHP.

Indeed, **not** using the MCS standard to assess ASHP for both permitted development and 'regular' planning applications could lead to the contrary

finding that the noise impact of the same ASHP operating, in the same way, in the same location, varies depending on the type of planning application.

However, it is important to note that **not** meeting the MCS criterion does **not** mean that the noise impact would be unacceptable; for example, there are many locations where the general/background noise level is significantly higher than 37.0 LAeq, so that ASHP levels higher than 37.0 LAeq may not cause an issue and indeed may not even be audible depending on the circumstances.

### **2.1.2 BS4142:2014+A1:2019 – Method for Rating and Assessing Industrial and Commercial Sound**

The scope of the standard states that:

*“1.3... The standard is not intended to be applied to the rating and assessment of sound from...*

*h) other sources falling within the scopes of other standards or guidance.”*

BS4142:2014 states, *“Response to sound can be subjective and is affected by many factors, both acoustic and non-acoustic. The significance of its impact, for example, can depend on such factors as the margin by which a sound exceeds the background sound level, its absolute level, time of day and change in the acoustic environment, as well as local attitudes to the source of the sound and the character of the neighbourhood...This British Standard describes methods for rating and assessing sound of an industrial and/or commercial nature”.*

The Standard requires that the ambient noise ***(totally encompassing sound in a given situation at a given time, usually composed of sound from many sources***

**near and far)** including the “specific” sound from the source in question is measured in terms of the equivalent continuous sound level LAeq [see Appendix 1 for acoustic terms], which is then corrected for the residual sound (total LAeq excluding the “specific” sound).

A correction for character is made if “**a tone, impulse or other characteristic occurs**”. For tonality, a correction of between +2dB and 6dB is considered acceptable and for impulsivity between 3 and 9dB. See table below.

| Character   | Just Perceptible | Clearly Perceptible | Highly Perceptible |
|-------------|------------------|---------------------|--------------------|
| Tonality    | +2dB             | +4dB                | +6dB               |
| Impulsivity | +3dB             | +6dB                | +9dB               |

*Where the specific sound features characteristics that are neither tonal nor impulsive, though otherwise are readily distinctive against the residual acoustic environment, a penalty of 3 dB can be applied.*

*Where tonal and impulsive characteristics are present in the specific sound within the same reference period then these two corrections can both be taken into account. If one feature is dominant, then it might be appropriate to apply a single correction. Where both features are likely to affect perception and response, the corrections ought normally to be added in a linear fashion.*

The final figure, including any character correction is known as the Rating level.

This Rating Level is then compared with the measured background [LA90] level. The greater this difference the greater the likelihood of “adverse impact” (See

Notes 1 & 2 from BS4142:2014 below).

**"NOTE 1**

*a) Typically, the greater this difference, the greater the magnitude of the impact.*

*b) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.*

*c) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.*

*d) The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.*

**NOTE 2**

*Adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact."*

It can be seen from Section 3.3 above that the conclusions to a BS4142 assessment also depend on the context and Section 11 of the British Standard states:

BS4142:2014 recognises that at night residents will be inside their properties

[BS4142 A.6.1 and A.6.3] and that consequently "*...the primary concern is the potential for disturbance of residents who could be sleeping with open bedroom windows.*" And "*Other guidance, such as BS 8233, might be applicable in this instance.*"

Also, BS4142 is directed primarily to the circumstances of a proposed or existing noise source affecting existing property, i.e. circumstances where insulating the property is impracticable. Therefore, BS4142 can't take into account circumstances where the properties have not yet been built and where noise control, such as acoustic glazing and ventilation, can be incorporated such to alleviate

Consequently, Martec uses BS 8233:2014 to assess night-time noise and performs daytime external noise impact assessments in the main amenity space which is generally the rear garden.

### **2.3 Local Authority**

Here the local authority has requested an assessment of the **cumulative** impact of the ASHPs on site using recently published guidance published jointly by the Institute of Acoustics and The Chartered Institute of Environmental Health "*Domestic Air Source Heat Pumps Professional Advice Note (2026)*".

The document sets out three types of noise assessment:

- PDR+ - Where PDR [Permitted Development Rights] is unavailable for non-acoustic reasons and no greater caution is needed, the installer shall submit a calculation following MCS 020a.

- Level 1 - Where PDR+ indicates a minor exceedance, compliance with the Level 1 37 dB(A) criterion can be demonstrated through appropriate sound propagation modelling carried out by an SQA [Suitably Qualified Acoustician].
- Level 2 - Use Level 2 in exceptional circumstances only , e.g. ...where there are multiple units with significant risk of cumulative impact. The BS 4142 methodology may be used to ensure the adverse impacts are minimised as far as is reasonable.

From the above it can be seen that a Level 2 assessment [where BS4142 may be used] should only be conducted in “*exceptional circumstances*” one of which is where there is a “*significant risk of cumulative impact*”. The document then provides guidance on cumulative impact:

*“Cumulative impact is unlikely to be a problem for detached, semi - detached and terraced properties based on recent research; it is only necessary to consider cumulative impact for courtyards or flats, depending on local context.”*

## 2.4 Summary to Criteria

In summary, whilst it is clear that ASHP noise levels of 37.0 LAeq or less are **universally** acceptable in terms of the MCS Standard, if predicted levels are higher than the MCS criterion, then the noise impact will depend on matters such as the preexisting background noise levels, at the time of day that the ASHP would operate and so on. Under these circumstances a BS4142 type assessment may be appropriate.

Similarly, a Level 2 assessment is only required in “*exceptional circumstances*” because there is a “*significant risk of cumulative impact*”. Here the development itself and the surrounding dwellings are all “*detached, semi - detached and terraced properties*”; consequently, “*Cumulative impact is unlikely to be a problem*”. Therefore, it is proposed to conduct a Level 1 assessment, which would progress into a Level 2 assessment, if predicted noise levels at adjacent dwellings were to be in excess of 37.0 LAeq.

### **3.0 Predictions**

The ASHP Guidance also states “*Appropriate sound propagation modelling by an SQA (which may include calculations using ISO 9613 - 2) allows for more accurate calculations than MCS 020a.*”

Accordingly, ISO 9613 predictions have been conducted for the 4kW Logic Air ASHPs [See Appendix 3] located on the rear facades of the dwellings shown in the site layout plan [MCK Drawing 24-133/PL01] and based on other data from Google Earth.

Given that there would be 26 ASHPs on the site, it is unlikely that all units would ever operate simultaneously; however, the predictions assume that all units operate continuously and simultaneously [worst case assumption]. Similarly, fences and walls have been assumed to have a zero barrier effect [worst case assumption].

In Figure 1 at the rear of this Technical Note is the set of ISO 9613 calculations for the closest existing properties to the development site. The location of the

receivers and the ASHPs are as shown in Figure 1 below.

#### 4.0 Conclusion

For the reasons stated above, it is considered that MCS 020a is the most appropriate standard to assess the cumulative impact of Air Source Heat Pump noise on the existing properties and that a Level 2 assessment is not required.

From the ISO 9613-2 predictions in Figure 1 of this Technical Note, it can be seen that the highest predicted **cumulative** noise from the Air Source Heat Pumps would be 33 LAeq at the existing properties which is within the MCS 020a noise limit of 37.0dBA , i.e. the cumulative impact of the ASHPs should be acceptable.

## APPENDIX 1

### EXPLANATION OF ACOUSTIC TERMS

The dB or the decibel, is the unit of noise. The number of decibels or the level, is measured using a sound level meter. It is common for the sound level meter to filter or 'weight' the incoming sound so as to mimic the frequency response of the human ear. Such measurements are designated **dB(A)**.

**A doubling** of the sound is perceived, by most people, when the level has increased by 10 dB(A). The least discernible difference is 2 dB(A). Thus most people cannot distinguish between, say 30 and 31 dB(A).

**The Background level** of noise is most commonly represented by the level which is exceeded for 90% of the time i.e. the LA90.

If a noise varies over time then the **equivalent continuous level, or LAeq**, is the notional constant level of noise which would contain the same amount of acoustic energy as the time varying noise.

The following table gives an approximate indication of the comparative loudness of various noises expressed in terms of the A weighted scale:

| Source of noise                | dB(A) | Nature of Noise |
|--------------------------------|-------|-----------------|
| Inside Quiet bedroom at night  | 25-30 | Very Quiet      |
| Quiet office                   | 40-45 |                 |
| Rural background noise         | 35-45 |                 |
| Normal conversational level    | 55-65 |                 |
| Busy restaurant                | 65-75 |                 |
| Inside suburban electric train | 70-80 |                 |
| Hand clap @ 1m                 | 75-85 |                 |
| HGV accelerating @ 5m away     | 85-90 | Very Loud       |

## **APPENDIX 2**

### **QUALIFICATIONS AND EXPERIENCE OF M. A. KENYON**

My full name is Melville Alexander Kenyon. I am the principal of the firm of Martec Environmental Consultants Ltd, a consultancy company that specialises in environmental noise assessment and control. I graduated in 1982 with a Bachelor's degree in Engineering and subsequently a Master's degree in Environmental Acoustics. I have been a corporate member of the professional body for noise and vibration specialists, the Institute of Acoustics, since 1988, and have sat on the British Standards Committee dealing with noise in buildings [BS.8233:1999].

I have lectured at Liverpool John Moores University on the Diploma of Acoustics course and at Manchester Metropolitan University on their Environmental Health degree course.

The firm of Martec Environmental Engineering was formed in the 1970's and joined The Association of Noise Consultants in 1996. It is now known as Martec Environmental Consultants Ltd.

Since its formation, Martec has advised many groups of both residents and developers about the problems of noise and vibration in the environment.

## APPENDIX 3

### TECHNICAL SPECIFICATIONS OF ASHPs



# Logic Air.

MONOBLOC AIR SOURCE HEAT PUMP

A+++

EFFICIENCY RATING



Quiet Mark  
certified



SCOP rating  
up to 519%



Easy to install  
and service



Intuitive smart weather  
compensating controls

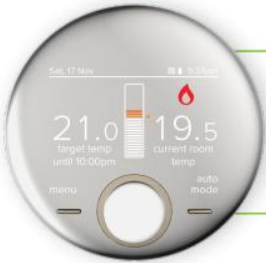


364 days a year  
UK customer  
service



Fully pre-plumbed  
and pre-wired  
cylinders





idealheating.com

| 35°C                                                                                  | A+++                                                                                  | 55°C                                                                                  |
|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
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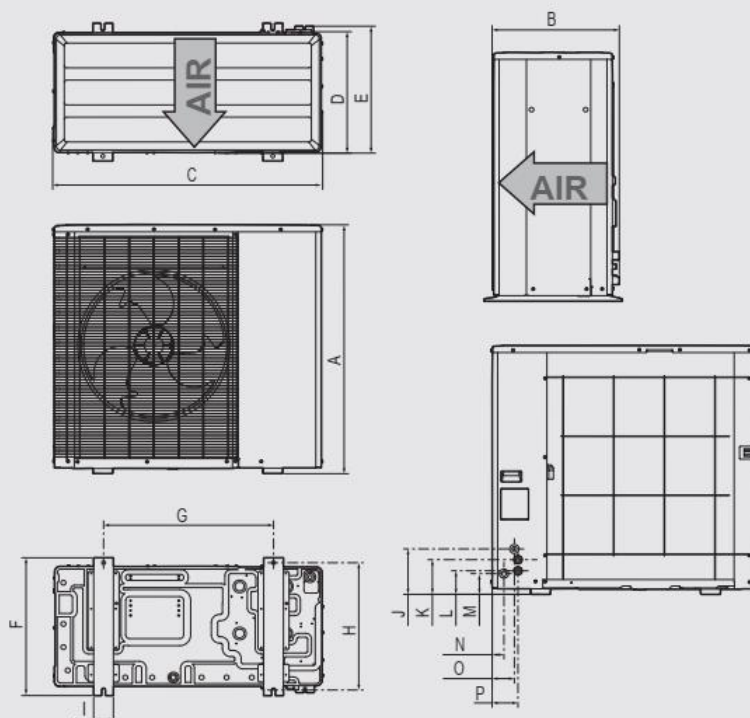
## The Logic Air.

Our flagship range of heat pumps, the Logic Air combines our European market leading heat pump manufacturing with our over 100 years of UK heating innovation to deliver a quiet, efficient and easy to install range of monobloc air source heat pumps.

Along with our range of pre-plumbed cylinders and Halo Air thermostats, the Logic Air is the complete renewable heating package backed by our teams of expert trainers, engineers and system designers, ready to help the UK in the transition towards low carbon heating.

### DIMENSIONS

|   | 4kW & 5kW | 8kW & 10kW |
|---|-----------|------------|
| A | 798       | 1008       |
| B | 518       | 518        |
| C | 1095      | 1095       |
| D | 499       | 499        |
| E | 518       | 518        |
| F | 558       | 558        |
| G | 688       | 688        |
| H | 516       | 516        |
| I | 80        | 80         |
| J | 184       | 184        |
| K | 140       | 140        |
| L | 95        | 95         |
| M | 84        | 84         |
| N | 48        | 48         |
| O | 90        | 90         |
| P | 103       | 105        |



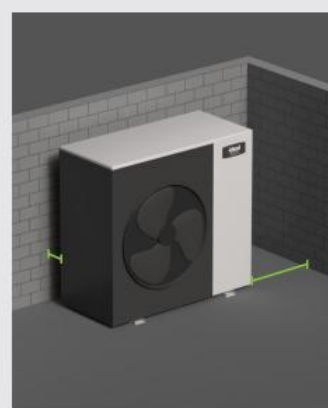
### CLEARANCES



100mm to the rear.



100mm to the rear.  
100mm to the left.



100mm to the rear.  
500mm to the right.

The heat pump should be mounted at least 50mm over the ground. For full clearance details and diagrams, please refer to the Logic Air installation manual.

Logic Air

# Technical Specification.

|                                                |                                      | Logic Air<br>4kW      | Logic Air<br>5kW      | Logic Air<br>8kW      | Logic Air<br>10kW     |
|------------------------------------------------|--------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Ideal Product Code                             |                                      | AH750664              | AH750665              | AH750666              | AH750667              |
| MCS Certification No.                          |                                      | KIWA<br>00027/024 HP  | KIWA<br>00027/023 HP  | KIWA<br>00027/021 HP  | KIWA<br>00027/022 HP  |
| PCDB Index number                              | Flow Temp 35°C                       | 107447                | 107235                | 106762                | 106754                |
|                                                | Flow Temp 45°C                       | 107446                | 107234                | 106761                | 106753                |
|                                                | Flow Temp 55°C                       | 107445                | 107233                | 106760                | 106752                |
| ENA Connect Direct Reference                   |                                      | IDEAL<br>05903/V1     | IDEAL<br>03234/V1     | IDEAL<br>07823/V1     | IDEAL<br>09937/V1     |
| Heat Pump Space<br>Heating [35°C] <sup>1</sup> | ErP Rating                           | A+++                  | A+++                  | A+++                  | A+++                  |
|                                                | ηs                                   | 195                   | 200                   | 203                   | 205                   |
|                                                | SCOP (EN14825)                       | 4.96                  | 5.07                  | 5.16                  | 5.19                  |
| Heat Pump Space<br>Heating [55°C] <sup>1</sup> | ErP Rating                           | A++                   | A++                   | A++                   | A++                   |
|                                                | ηs                                   | 136                   | 143                   | 145                   | 146                   |
|                                                | SCOP (EN14825)                       | 3.48                  | 3.65                  | 3.7                   | 3.73                  |
| Sound Power Level <sup>2</sup>                 | dB(A)                                | 52                    | 52                    | 55                    | 55                    |
| Hydraulic Information                          | Pipework Connection Sizes            | 1" BSP                | 1" BSP                | 1" BSP                | 1" BSP                |
|                                                | Design Flow Rate (L/min)             | 11.5                  | 14.3                  | 22.9                  | 28.7                  |
|                                                | Minimum Flow Rate (L/min)            | 8.5                   | 8.5                   | 14.5                  | 14.5                  |
|                                                | Available Pump Head (m) <sup>2</sup> | 8.1                   | 7.9                   | 6.8                   | 5.4                   |
|                                                | Open System Volume (L) <sup>3</sup>  | 24                    | 24                    | 40                    | 40                    |
| Electrical Information                         | Electrical Supply                    | 230V 50Hz/1~          | 230V 50Hz/1~          | 230V 50Hz/1~          | 230V 50Hz/1~          |
|                                                | Maximum Current (A)                  | 12                    | 12                    | 22                    | 22                    |
|                                                | Fuse Rating (A)                      | 16                    | 16                    | 32                    | 32                    |
|                                                | Fuse Type                            | Type C                | Type C                | Type C                | Type C                |
|                                                | RCD Type                             | F or B                | F or B                | F or B                | F or B                |
|                                                | Minimum ODU Power Cable              | 3G 2.5mm <sup>2</sup> | 3G 2.5mm <sup>2</sup> | 3G 4mm <sup>2</sup>   | 3G 4mm <sup>2</sup>   |
|                                                | IDU Power and Comms Cable            | 4x 1.5mm <sup>2</sup> | 4x 1.5mm <sup>2</sup> | 4x 1.5mm <sup>2</sup> | 4x 1.5mm <sup>2</sup> |
| Dimensions<br>Outdoor Unit (mm)                | Width                                | 1095                  | 1095                  | 1095                  | 1095                  |
|                                                | Depth                                | 518                   | 518                   | 518                   | 518                   |
|                                                | Height                               | 798                   | 798                   | 1008                  | 1008                  |
|                                                | Volume (m <sup>3</sup> )             | 0.45                  | 0.45                  | 0.57                  | 0.57                  |
|                                                | Weight (kg)                          | 86                    | 86                    | 110                   | 110                   |
| Refrigerant Charge                             | R32 (kg)                             | 0.88                  | 0.88                  | 1.47                  | 1.47                  |

- <sup>1</sup> Performance data in accordance with EN14825:2016, EN 12102-1:2022, EN 14511:2018. Actual performance may differ relative to the specific design and environmental conditions.
- <sup>2</sup> Primary "available" pump head after appliance losses at design flow rate. Based on pure water circulation. For Glycol, please refer to the Logic Air installation manual.
- <sup>3</sup> Minimum open system volume required for defrost cycles. Radiators with TRVs or underfloor heating manifolds with actuators cannot be counted toward open system volume.



Installation  
manual



Power  
chart



Schematics

[idealheating.com](http://idealheating.com)



