

Domestic Air Source Heat Pumps Professional Advice Note (2026)

Air source heat pumps (ASHPs) are essential for achieving the UK's net zero carbon emissions target by 2050. This guidance offers general acoustics advice and proportionate approaches to acoustic assessments that remove unnecessary barriers to domestic installations.

This advice note:

- ✓ Sets out clear guidance on noise assessment approaches that are suitable to support planning applications to enable heat pump installations as sustainable heating and cooling sources, while minimising cost and bureaucracy for installers.
- ✓ Offers intermediate options between the MCS 020a and BS 4142 assessment approaches.
- ✓ Offers general advice pertinent to installations.

This guidance provides alternative assessment options for proposed ASHP installations to which Permitted Development Rights (PDR) do not apply. The guidance provides defined pathways for Local Planning Authorities, Environmental Health Practitioners (EHPs)* and installers with simple compliance criteria provided for the majority of situations. It is expected that an installer will lead the PDR+ process, while an SQA* will lead a Level 1 assessment using a more sophisticated sound propagation calculation. Complex situations or sensitive locations may require a Level 2 assessment, led by an SQA. In Level 1 or 2 assessments, the assessor should justify the method and provide a list of supporting information, as listed in the table below.

	Method	When to apply
PDR+ Installer led	MCS 020a	Where PDR is unavailable for non-acoustic reasons and no greater caution is needed, the installer shall submit a calculation following MCS 020a.
Level 1 SQA led	Desktop calculations	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. Reporting should include a clear site plan, photos, calculations, assumptions and diagrams as supporting evidence.
Level 2 Full Assessment SQA led	Survey and predictions	Use Level 2 in exceptional circumstances only, e.g. designated tranquil areas ¹ or quiet areas, ² or 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. ³

The alternative approach is supported by:

- The fixed 37 dB(A) threshold already incorporates a margin for tonal characteristics. The exclusion of tone audibility correction is based on experience from Scotland and other European countries. This remains under constant review.⁴
- Established European and Scottish practice has not led to an increase in complaints.
- Appropriate sound propagation modelling by an SQA (which may include calculations using ISO 9613-2⁵) allows for more accurate calculations than MCS 020a.

Cumulative Impact

Multiple units in close proximity may cause cumulative impact from combined sound. Greater care is needed in high-density environments where multiple units are likely to be co-located. Multiple ASHPs installed over time could cause background creep, which may be relevant in Level 2 assessments and local planning policy. 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.⁶

*Suitably Qualified Acoustician (SQA) or Environmental Health Practitioner (EHP) means either a Corporate Member of the Institute of Acoustics with at least 3 years' relevant experience or Environmental Health Practitioner with at least 3 years of relevant experience of noise assessment and management, together with supporting qualifications.

[†] The sound level threshold of 37 dB(A) is an incident sound pressure level, calculated at 1 m in front of the centre of a window or door to a habitable room as described in MCS 020a. It excludes the effect of any reflections from the assessed façade.

ASHP Sound Power Level Selection

PDR+

The sound power level for use in a PDR+ assessment can be found on:

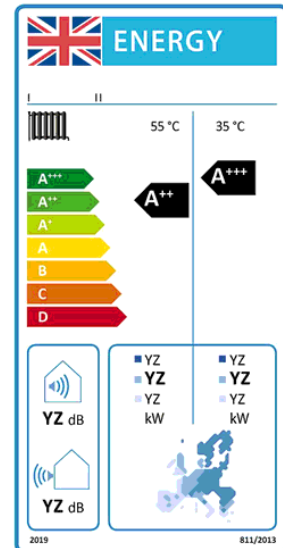
- the MCS product database (<https://mcs-certified.com/product-directory/>);
- the product energy efficiency label (ErP); or
- the product data sheets (which may include maximum sound power level).

The MCS 020a noise assessment procedure uses the sound power level shown on the product energy label (such as the example opposite). This value is measured under standard test conditions and represents repeatable and reproducible operation of an ASHP, but not necessarily its noisiest operating conditions. The sound power level in "low noise mode" **shall not be used**. More detail may be found in the Annex to this document.

Level 1

For Level 1 assessments, an SQA shall use the maximum sound power level where available. Where this data is unavailable, a +5 dB correction shall be applied to the energy label sound power level, in accordance with current technical guidance. (See Annex for additional details.)

Manufacturers may provide separate sound power levels for different water supply temperatures, typically reported as "A7/W35", "A7/W45" or "A7/W55", where the number after "A" is the air temperature and the number after "W" is the water temperature.



Note: The sound power level shown in the bottom left of the energy label may not be the appropriate value to use for predictions (see Annex for additional information)

Level 2

For Level 2 assessments, the SQA will need to obtain more information about the ASHP to ensure an appropriate character correction is applied. The ASHP manufacturer is likely to provide 1/3rd octave band sound data for standard test conditions that will assist with this.

Where the design operating condition differs from the standard test condition used for the energy label, using the appropriate value may result in a more accurate prediction. The sound power level closest to the design water supply temperature for the installation should be used where this approach is adopted.

Where data is provided for cooling or defrost modes, these should also be considered within a Level 2 assessment as an alternative to the energy label value; however, these numbers are not directly comparable with each other because there is no standard test condition. *It should be noted that manufacturers rarely provide sound power level data for these conditions.*

Acoustic Design Considerations

Good acoustic design addresses noise at source and through careful site planning. Key strategies include:

- ✓ Occupant of the applicant's property: Good design practice should include consideration of noise exposure for those living at the installation address, who may be tenants rather than the planning applicant. Habitable rooms and outdoor amenity spaces should be afforded reasonable consideration.
- ✓ Location: Position units as far as practicable from sensitive receptors while balancing thermal efficiency requirements and constraints on proximity to windows or doors.
- ✓ Unit selection: Choose ASHPs with lower sound power levels, if necessary, but remember noise is not the only consideration and a balance may need to be struck between other constraints and noise levels. Some units are located internally; consider placement of internal units and any external or ducted components.
- ✓ Barriers: Barriers (minimum 10 kg/m² imperforate) can effectively reduce sound transmission if they break line of sight from the receptor (a window for example) and the unit. Maintain manufacturer clearances to avoid airflow restrictions.
- ✓ ASHPs rigidly fixed to buildings can transmit vibration into structures, causing noise to re-radiate inside the property. This can be annoying even at relatively low sound levels. Use vibration isolation mounts and pipe connections to prevent structure-borne sound transmission.
- ✓ Enclosures: Manufacturer-approved enclosures can reduce sound but risk air recirculation and reduced thermal performance. Use only as a last resort.

Planning Conditions

Planning conditions relating to noise will not typically be necessary for heat pump installations as the submitted noise assessment should be an approved document within the planning decision notice. Where particular concerns make a planning condition necessary and justified, it should be simple and precise.

For Level 1 installations an example planning condition could be:

The sound pressure level emitted from the approved unit will not exceed 37 dB $L_{Aeq,15min}^{\ddagger}$ free-field equivalent, 1 m in front of the window or door to a habitable room of a neighbouring property. Where it is not possible to measure at the assessment location, appropriate corrections will be applied to data measured at an alternative location.[§] Measurements should be made under normal operating conditions in the temperature range 7 – 25°C.

For Level 2 installations an example planning condition (with 'X' defined from the assessment) could be:

The sound pressure level emitted from the approved unit will not exceed a rating level of X dB $L_{Ar,15min}^{\parallel}$ free-field equivalent, 1 m in front of the window to a habitable room of a neighbouring property. The feature correction and rating level will be determined in accordance with BS 4142:2014+A1:2019. Where it is not possible to measure at the assessment location, appropriate corrections will be applied to data measured at an alternative location.[‡]

The Institute of Acoustics (IOA) is the UK's professional body for those working in acoustics, noise and vibration. www.ioa.org.uk. The Chartered Institute of Environmental Health (CIEH) is the professional voice for environmental health practitioners. www.cieh.org.

This document has also been prepared in collaboration with The Association of Noise Consultants (ANC), a trade association for acoustic, noise & vibration consultancy practices in the UK. www.association-of-noise-consultants.co.uk



About this Professional Advice Note

This note replaces previous guidance and has been produced by a joint working group of noise specialists, representing members of the Institute of Acoustics and the Chartered Institute of Environmental Health, with acknowledgement to:

- Peter Rogers, Sustainable Acoustics Ltd | B Corp™ (Chair of IOA working group, Renewable Energy Advisory Group)
- Somayya Yaqub, Chair of the CIEH Noise Satellite Panel
- Colin Cobbing, Pinnacle Acoustics, CIEH Noise Satellite Panel and
- Toby Lewis, WSP, representative on the CIEH Noise Satellite Panel and of the ANC.
- Ian Andrews, CIEH
- Jack Harvie-Clark, Apex Acoustics Ltd, IOA working group
- Rebecca Hogg, BSRIA Ltd, IOA working group
- Matt Torjussen, University of Salford, IOA working group
- Richard Perkins, Mott MacDonald (Chair of the IOA Renewable Energy Advisory Group)

1. Ministry of Housing, Communities and Local Government (2024) *National Planning Policy Framework*. London: MHCLG. Available [here](#). (Accessed: 4 April 2026).

2. European Parliament and Council of the European Union (2002) Directive 2002/49/EC of the European Parliament and of the Council of 25 June 2002 relating to the assessment and management of environmental noise. Official Journal of the European Union, L 189, pp. 12–26. Available [here](#). (Accessed: 4 April 2026).

3. BSI (2019) BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound. London: BSI.

4. Harvie-Clark, J., Hill, J., Dobinson, N., Hinton, R., Rogers, P., Lamacraft, A. and Torjussen, M. (2025) 'A risk-based framework for acoustic assessment of domestic ASHPs - reducing the barriers to rollout', Proceedings of the Institute of Acoustics, 47(2). Available [here](#).

5. BSI (2024) BS EN ISO 9613-2:2024 Acoustics – Attenuation of sound during propagation outdoors – Part 2: Engineering method for the prediction of sound pressure levels outdoors. London: BSI.

6. Hill, J. and Harvie-Clark, J. (2024) *ASHP cumulative noise impact – noise modelling study*. Report No. 11520.3D. Apex Acoustics Ltd, prepared for Nesta. Available [here](#). (Accessed: 4 April 2026).

7. Association of Noise Consultants, Technical Note V1.0 March 2020. Available [here](#). (Accessed 1 June 2026).

8. German Heat Pump Association, Sound Calculator tool. Available [here](#). (Accessed 2 June 2026)

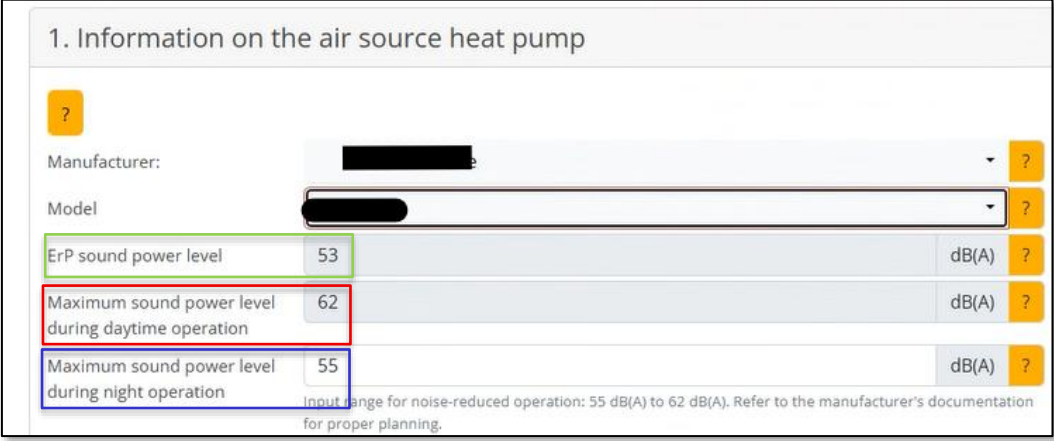
‡ The Local Planning Authority may choose to adopt a different value, to allow a margin for prediction error for example.

§ Guidance on measurements and measurement-based predictions is provided in BS 4142:2014+A1:2019 and the ANC Technical Note to BS 4142.⁷

∥ The rating level limit should be specified in the condition and will typically be based on the background sound levels quantified in the application noise assessment (as per adopted Local Planning Authority policy).

Annex: Alternative information on Heat Pump Sound Output⁸

All heat pumps sold in the UK must publish an ErP sound power level, both on the energy label and in the product data. Some manufacturers also publish "maximum" sound power levels. The German Heat Pump Association (Bundesverband Wärmepumpe, BWP e.V.) hosts an online sound calculator that lists up to three sound power levels for each registered heat pump, as shown in the example below:



Parameter	Value	Unit
ErP sound power level	53	dB(A)
Maximum sound power level during daytime operation	62	dB(A)
Maximum sound power level during night operation	55	dB(A)

Input range for noise-reduced operation: 55 dB(A) to 62 dB(A). Refer to the manufacturer's documentation for proper planning.

Example from the BWP website

- **ErP (green)** – the energy-label value;
- **Maximum, daytime (red)** – normal daytime operation; and
- **Maximum, night-time (blue)** – a reduced "quiet mode" value.

For a Level 1 or Level 2 assessment, use the maximum (daytime) sound power level, as this best represents the unit's normal operating output. For some manufacturers this matches the ErP value; for others it is higher. Around a third of MCS-certified heat pumps also appear on the BWP website, so maximum (daytime) data is available for those models. The ErP value can be used to confirm that the BWP entry matches the unit published in UK product data. The night-time value reflects a quiet mode, which is often user-selectable and should not be taken as the operating level.