

# Consultation Response findings: MCS Planning Standard for Permitted Development Installations of Air Source Heat Pumps (MCS 020)

## Introduction and overview

To enable homeowners to install heat pump technology in their homes, air source heat pumps (ASHP) are deemed Permitted Development. Permitted Development Rights allow development to be carried out without a planning application, subject to meeting certain limitations and conditions. Planning is devolved so conditions differ across England, Wales, Scotland and Northern Ireland; however, all four include a requirement for any air source heat pump to be compliant with MCS 020 (or an equivalent Standard).

MCS 020 includes a calculation methodology which is designed to allow installers to establish clearly whether an air source heat pump installation is compliant with the Permitted Development noise limit of 42 dB(A). Since MCS 020 was first issued in August 2011 and last updated in June 2019, there have been significant improvements in heat pump technology. Installers and consumers have raised concerns that current Permitted Development Rights are a barrier to the installation of air source heat pumps.

For example, Permitted Development Rights within Wales currently require air source heat pumps to be installed on domestic premises at least three metres from the site boundary and in England the rule is one metre. These requirements are considered a potential barrier to the uptake of heat pumps, especially in a terraced housing context.

In response to these concerns, the UK Government Department for Energy Security and Net Zero (DESNZ) and the Welsh Government both commissioned independent reviews of air source heat pump noise emissions, planning guidance and regulations. The DESNZ review, published in November 2023, recommended changes to Permitted Development Rights in England and to MCS 020.

At the Chancellor's Autumn Statement on 23 November 2023, it was announced that the UK Government will consult on changing Permitted Development Rights that apply in England, including removing the one metre boundary rule. The Welsh Government anticipates a subsequent update to Permitted Development Rights for air source heat pumps in Wales.

Working closely with the Department of Energy Security and Net Zero (DESNZ), in December 2023, MCS consulted on the MCS 020 sound calculation methodology associated with meeting the noise limit as defined by Permitted Development Rights. This consultation closed on the 26<sup>th</sup> January 2024, having received responses from a wide range of organisations.

MCS would like to thank those who provided responses to the consultation.

The consultation received a total of **55 responses** from all areas of the industry, including:

- Heat Pump installers
- Heat Pump manufacturers
- Acoustic consultants
- Local authorities
- Energy suppliers
- Public health
- Certification bodies
- Professional bodies
- Local government and councils

## Key outcomes

Below is a summary of the key outcomes of the consultation. These outcomes align with the confirmed changes to the Permitted Development Rights. For further detail and justification for change, please see the specific consultation question response in this document.

- MCS will split the MCS 020 standard into two: one for air source heat pumps and one for wind turbines. These will be named as **MCS 020 (a) – Air Source Heat Pump Sound Calculation** and **MCS 020 (b) – Small Wind Turbine Sound Calculation**. An update to the sound calculation for small wind turbines has not yet been scheduled and all requirements remain the same.
- MCS will remove the current requirement in MCS 020 for the installer completing the installation, and the product used, to be MCS certified. MCS certified installers will still be required to use MCS certified products and comply with MCS 020 (a) when intending to install under Permitted Development, and as a result, they and their customers can still rely on an MCS certificate as a statement of compliance to MCS 020 (a) and Scheme requirements which will be acceptable to local Planning Authorities. For installations without an MCS certificate, Planning Authorities will need to consider how to enforce claims of compliance to MCS 020 (a).
- MCS will make a change to listings of MCS certified products in the MCS Product Directory to display the A-Weighted sound power level needed for the MCS 020 (a) calculation. This figure is to be determined by manufacturers at the same conditions as the Eco Design Directive. MCS will issue guidance to clarify what those conditions are.
- MCS will clarify the below in the update to MCS 020 (a):
  - What can and cannot be considered a solid barrier.
  - How to determine the assessment position.
  - What can and cannot be considered a reflective surface.
  - The definition of a habitable room.
- MCS will not proceed with the proposal of differentiating between rural and urban areas and therefore not implement the use of the postcode look up tool. Instead, MCS will remove steps 7,8 and 9 of the current MCS 020 – this includes the step of the assumed background noise level. This creates a corresponding overall limit of 37dB(A).
- MCS will provide installers with options for completing the assessment which will include the current paper-based method and an Excel tool. Following the publication of MCS 020 (a), MCS will develop a web-based tool / mobile app.
- Working with DESNZ and other industry stakeholders, MCS will develop a guidance document for installers on installation sound mitigation measures for air source heat pumps.
- MCS will introduce a methodology for including up to two air source heat pumps into the MCS 020 (a) sound calculation.
- MCS will include in the Excel tool the capability of completing the sound calculation for up to four air source heat pumps in the case of benefitting for those installing under full Planning Permission.
- All feedback relating to the requirements of Permitted Development Rights has been shared with DESNZ.

- MCS will publish MCS 020 (a) in December.
- Due to timescales to publish this update, there were certain considerations that were raised in this consultation that will not be included in this update but will be reviewed for any future updates. This includes, but not limited to:
  - Tonality.
  - Cumulation of air source heat pumps in a neighbourhood.
  - Measured sound pressure.
- An impact assessment was conducted for this update of MCS 020 (a). The details of this are found later in the document.

### **In-depth overview of the consultation responses**

Here is a summary of feedback to the individual questions asked in the consultation. These responses were used to support in determining the requirements of MCS 020 (a).

#### **QUESTION 1.1: Are there any circumstances (e.g. distance to nearest property) that could mean a noise assessment is not necessary to meet the conditions in Permitted Development Rights?**

##### Summary

Total number of respondents: 47

Agree = 29

Disagree = 11

Not answered question directly/neutral response = 7

In general, most respondents agree that there are circumstances where a noise assessment is not necessary. The majority of those who believe a noise assessment is not always necessary explained this could be determined by the distance between the air source heat pump and the assessment position which would depend on the sound power of the air source heat pump (i.e. the higher the sound power of the air source heat pump, the larger the distance would need to be). Thresholds would need to be defined in this instance.

However, further feedback highlighted that if the calculation is simple enough, then there isn't a need for determining whether your installation falls within the threshold for when a calculation is not necessary. Some considered the process of determining whether your installation fits within the threshold would add additional complexity.

##### Conclusion

An MCS 020 (a) sound calculation will be mandatory for all installations intending to comply with Permitted Development, despite the distance to a neighbouring property. The simplification of the calculation will help to reduce the burden of this.

**QUESTION 1.2: Contractors are required to obtain the A-weighted sound power level of the air source heat pump from manufacturer's data to calculate air source heat pump noise. To avoid confusion over which value for sound power level should be used, we propose having a single database to obtain the sound power level, for example the MCS Product Directory, instead of the manufacturer's data. Do you agree with this proposal, if so, where should the information be held?**

### Summary

Total responses = 47

Agree = 41

Disagree = 4

Not answered question correctly/neutral response = 2

Almost all respondents agree that the A-weighted sound power level of air source heat pumps should be held on a single database (i.e. The MCS Product Directory). Much of the feedback highlighted that manufacturers hide the sound power level and publish the sound pressure which is conventionally lower than the sound power. This makes it difficult for consumers and installers to determine which figure to use and to compare products. It was also raised that it needs to be explicitly clear under what conditions the A-weighted sound power level is determined to ensure consistency and clarity to both manufacturers and installers.

Respondents highlighted the importance of keeping access to the product directory and the details of the product visible for anyone to access.

Feedback highlighted that consideration should be given to including the octave band spectrum at the same time for future potential updates to the methodology.

### Conclusion

Based on the strong support of feedback, MCS will adopt a new field within the product directory, asking for the manufacturer's A-weighted sound power level. The conditions in which this shall be determined align with the requirements of the EcoDesign Directive which determines the data on the ErP label. These conditions were agreed upon by the MCS Heat Pump Working group when updating the MCS Heat Pump Product Standard (MCS 007 Issue 7).

The sound power level (dB(A)) of MCS certified air source heat pumps will be held on the MCS Product Directory, which is fully accessible to anyone.

Whilst it is still encouraged, MCS 020 (a) is removing the requirement to *mandate* the use of an MCS certified product within the installation, meaning air source heat pumps that are not listed on the MCS product directory, can also be used for non-MCS certified installations intending to install under Permitted Development. In this instance, the installer will need to find an alternative source to attain the sound power level which MCS will have no reference to, and the installation will not be eligible for MCS certification. It is important that we ensure that sound power level for all air source heat pumps, whether MCS certified or not, is based the A-weighted sound power level under the same conditions. This is vital to remove ambiguity and ensure consistency. Therefore, MCS 020 (a) will include guidance on the conditions in which the sound power level needs to be determined when selecting a non-MCS certified air source heat pump.

**QUESTION 1.3: The methodology requires contractors to establish whether there is a solid barrier between the air source heat pump and the assessment position. We intend to clarify what can and cannot be considered a solid barrier. In this respect, what types of barriers (e.g. different types of fence panels, walls, hedges) are likely to be encountered when installing air source heat pumps on domestic properties?**

### Summary

We received 42 responses to this question with many suggestions on what can and cannot be considered as a barrier.

## Conclusion

MCS will clarify what can and cannot be considered a solid barrier within MCS 020 (a). We will also provide clarification on reflective surfaces and the assessment position for undertaking a sound calculation.

**QUESTION 1.4: The current background noise assumption used in the methodology is 40dB. We are proposing to maintain this assumption for urban areas but decrease the background noise assumption to 35dB for rural areas. To determine whether an area is rural or urban, we propose using this postcode lookup tool. Do you agree with this method? Are there other considerations we should make in determining whether a domestic property is in an urban or rural area?**

## Summary

Total responses = 46

Oppose to the rural reduction and tool = 26 (12 both / 10 rural reduction / 4 tool)

Not answered question directly/neutral response = 14

Agree with tool to determine location = 6

Whilst the question was directed towards whether the proposed tool was an appropriate method to determine whether a location was in a rural or urban area, there was a significant number of unprompted responses that were heavily weighted towards no differentiation or further restrictions to be implemented for rural areas.

Key themes from the responses were:

- Do not create more restrictions for heat pump deployment.
- Official definitions are out of date, have low spatial resolution and fail to include any noise measurement. Applying them will very likely cause problems because property densities have changes over time, miss important local detail and do not relate to the background noise levels in each area.
- Differentiating the areas into only two categories creates issues for semi-rural locations that are not easily categorised or could be considered either category. For example, suburban areas with farmland behind the property.
- A rural area does not always necessarily mean a lower background noise as rural areas can be exposed to main roads, motorways, trainlines or under flight paths.
- An urban area may be shielded from neighbourhood noise by local noise barriers or buildings.
- A lower internal target should be used. The Salford University low frequency research paper, NANR 45, could be used in determining this.
- Simple modifications can reduce the noise emitted from an air source heat pump (e.g. installing rubber matting and or/acoustic enclosures/barriers). Therefore, approved acoustic enclosures should be included in the MCS 020 (a) calculation.
- Maintaining a straightforward, universal noise limit assumption will provide certainty to installers and homeowners and minimise the risk of unintrusive installations falling foul of noise constraints.
- 'Rural' villages are actually very dense areas and therefore would have an assumed background noise level to those in urban areas.
- There is not enough quantified research to back this proposal.

Whilst respondents advocated to not create any more barriers to heat pump deployment by reducing the assumed background noise level and a corresponding reduction in the overall sound limit for rural

areas, there were several responses highlighting the importance of not increasing the risk of adverse noise implications in quieter areas.

The overall consensus of respondents showed both that air source heat pumps installed in rural areas should not incur stricter requirements by reducing the assumed background noise level and overall sound limit but also ensure that we are not increasing the risk of adverse noise impacts by making it easier to install in rural areas.

Therefore, the overall feedback is that there should be no differentiation between rural and urban areas to remove the risks highlighted above.

One member's feedback strongly opposed the specification of noise limits without any allowance for tonality or other acoustic features that will lead to increased annoyance and disturbance. They recommended that an assessment procedure is developed to account for tones and other features and ideally, the limit should be expressed as a rating level, consistent with BS 4142.

### Conclusion

Whilst the consultation asked the question on whether MCS 020 (a) should differentiate between urban and rural areas, in which the feedback proposed to not proceed with a differential, other feedback of the consultation highlighted the proposal of removing this step all together. Raise by many, but particularly from acoustic specialists, was that steps 7,8 and 9 **add no value to the calculation**, and instead, can be seen as a burden in some instances. For example, if the sound pressure of the heat pump is below the assumed background noise level (40dB(A)) at step 9, then the installer is to use a figure higher than what the actual sound pressure from the heat pump, thus making it harder for the installation to pass the calculation.

As a result of this, MCS will remove what was step 7,8 and 9 from MCS 020 (a) and will change the overall limit to a corresponding limit of 37dB(A).

## **QUESTION 1.5: We want to ensure the assessment methodology is straightforward for installers on-site to accurately follow. Are there ways to make the assessment simpler and more streamlined?**

### Summary

We received 13 responses to this question.

A minority of respondents called for the removal of background noise levels from the assessment methodology (as discussion in Q1.4) and a reduction in overall permitted noise levels at night-time.

The majority of respondents called for an optional online tool or app for completing the calculation.

### Conclusion

MCS will provide installers with options for completing the assessment to include the current paper-based method and an Excel tool. Following the publication of MCS 020 (a), MCS will develop a web-based tool / mobile app.

## **QUESTION 2.1: What steps could be considered appropriate to strengthen the requirements in the Heat Pump Installation Standard to ensure the acoustic impact of air source heat pumps on domestic properties is minimised? For example, should we consider orientation, location, avoiding reflective surfaces, the use of anti-vibration mats or other steps, how?**

### Summary

We received 45 responses to this question.

Some respondents felt that the existing measures around heat pump installation are sufficient, and any further restrictions would harm heat pump deployment.

The majority of respondents welcomed strengthening the requirements or providing additional guidance in the MCS Heat Pump Installation Standard to minimise noise and reduce vibration with the use of acoustic enclosures, noise dampeners, and anti-vibration mounting systems, grommets and fixings.

Many respondents called for location, orientation and assessment position to be clarified. It was also suggested that illustrated examples of common issues when siting air source heat pumps should be provided.

Some respondents felt that tonality and acoustic characteristics should be taken into account and some requested clarification on what can be considered as a reflective surface and to provide additional guidance on avoiding reflective surfaces.

Feedback also highlighted the benefits of establishing maintenance schedules, regular service or annual inspections and to follow manufacturer's instructions.

A minority of respondents cautioned against allowing wall mounted air source heat pumps and mono block systems.

Overall, there is support for MCS to strengthen requirements within MIS 3005 I and introduce guidance for installers and members of the public, illustrating what owners of air source heat pumps, and their neighbours, might expect to hear from a correctly specified and installed air source heat pump.

### Conclusion

MCS is working in collaboration with DESNZ and other industry stakeholders to develop a guidance document for installers on installation sound mitigation measures for air source heat pumps. This will include the feedback from respondents to the consultation. This guidance will be published shortly after the publication of MCS 020 (a).

### **QUESTION 3.1: Are there any circumstances where it would not be appropriate to install multiple cascaded air source heat pumps on the same property? For example, due to the heat load or system design to the property, or the location of the property?**

#### Summary

Total respondents = 41

Positive = 25

Not answered question directly/neutral response = 14

Negative = 2

Nearly all respondents supported installing cascade air source heat pumps on one property.

Feedback confirmed that there are circumstances for when you both would or would not install multiple cascaded air source heat pumps on the same property and highlighted the following reasons which may influence the decision for installing multiple cascaded air source heat pumps:

- To meet load requirements
- Electricity supply inadequate for one large air source heat pump vs cascaded smaller air source heat pumps

- Limited external wall space
- Planning restrictions

In addition to examples provided, respondents highlighted the importance of determining whether a cascaded system is necessary on best engineering practice and installing the system in accordance with the relevant standards.

Regarding the impact on the sound calculation, feedback supported that cascaded systems should be incorporated but this should be based on the combination of units rather than individually.

### Conclusion

MCS will introduce a methodology for including up to two air source heat pumps into the MCS 020 (a) sound calculation.

Following further feedback from the working group, it was felt that it would benefit the industry if the tool allowed the sound calculation to be completed for multiple air source heat pumps (> 2) for supporting those installing under full Planning Permission. Therefore, MCS will add this capability into the Excel tool.

### **QUESTION 3.2: The proposed methodology would likely be based on a spreadsheet in order to make calculations simpler for installers on-site, but is there additional benefits to making a paper-based methodology available too?**

#### Summary

Total responses = 40  
Agree = 16  
Disagree = 18  
Neutral = 6

Respondents who believe a paper-based methodology would be beneficial highlighted:

- There will be situations where it may not be possible to use a spreadsheet on-site
- Some installers are 'old school' or prefer to understand what the calculation entails for confidence
- For any instances where the tool experiences glitches or issues, it is good to have a back-up.
- Can be used as a way of 'verifying' tools.

Respondents who disagree with the need to maintain a paper-based methodology highlighted:

- All installers of renewables can use a spreadsheet which can run on a phone or tablet.
- Consideration should be given to making the calculation as accessible as possible.
- Most companies are paper free.
- Keeping it solely as a tool will avoid human error and misinterpretation.

Multiple respondents highlighted they would like to see this as an app or web-based tool rather than Excel spreadsheet and that having the option of both would be most beneficial

### Conclusion

MCS will continue to allow a paper-based calculation but will also develop an Excel spreadsheet to perform the calculation. The sound calculation methodology will also be provided in narrative form for transparency and to provide the opportunity for innovative tools to gain verification in the future. Following the publication of MCS 020 (a), MCS will develop a web-based tool / mobile app.



#### **QUESTION 4.1: What methods could be used to determine the number and relative positioning (both distance and angles) of air source heat pumps already installed or likely to be installed in a neighbourhood?**

##### Summary

We received 37 responses to this question.

Many respondents called for further evidence or research before implementing a methodology for installing air source heat pumps in a neighbourhood and felt that it was vital that any approach is not restrictive and will not deter installation in densely populated areas, and that it is important not to penalise late adopters.

##### Conclusion

Due to the complexity and lack of research, MCS will not consider this for this update, but will consider for the next review.

#### **QUESTION 4.2: What precautions should be taken to avoid raising background noise above agreed levels when multiple air source heat pumps are being installed in a given area?**

##### Summary

We received 40 responses to this question.

Although cumulative impact and sound creep from multiple air source heat pump installations was identified as a serious concern, as there is no existing methodology to determine the noise impact from multiple air source heat pumps in a neighbourhood many respondents called for further research to be carried out to identify what the effect of numerous domestic air source heat pumps is likely to have within a residential neighbourhood.

##### Conclusion

MCS will not add requirements for cumulative impact from air source heat pump installations in a neighbourhood for this update but will consider for the next review.

### **Overview of the impact assessment**

An impact assessment was conducted on real-life examples of MCS 020 sound calculations. A total of **48 assessments** were ran through the current version (version 1.3) and the proposed new version of the MCS 020 (a) Heat Pump Sound Calculation (in accordance with MCS 020 (a) Issue 1).

MCS received 22 examples with photos of the barrier used in the calculation and 26 without photos. The barriers used for the 26 were assumed to be the same for the new calculation.

Examples with barrier photo evidence:

- 22 of these assessment examples provided photo evidence of the barrier.
- 10 of these assessments used a barrier with a 10dB sound pressure reduction (assuming a solid barrier). Where under the new proposed definitions of a barrier, this value had to be changed for the new calculation (e.g. vegetation was assumed as a full solid barrier with 10dB reduction in initial assessment, whereas new calculation would be no reduction).
- All the 22 that passed in the current calculation, also passed the new calculation.

Examples without barrier photo evidence:

- 26 assessments were provided without photo evidence of the barrier.
- Out of the 19 assessments that passed in the old calculator, none failed in the new calculation.
- 3 that failed the current calculation, passed the new calculation.
- 4 failed both calculations.

Overall:

It is important to note that it can be seen throughout the impact assessment that a significant number of assessments only marginally passed with the current calculation (average of 1.08 from sound pressure limit of 42dB(A) and calculation result) whereas the difference between the sound pressure limit of 37dB(A) and the calculation result for the new calculation was larger (average 7.3) - meaning for most installations, despite the changes to the barrier attenuation, it was easier to pass with the new calculation compared to the current one. This is likely due to coming away from the step-up table in the current MCS 020 (Note 4) and moving to using exact distances from heat pump to assessment position in the new calculation. This change to the methodology removed the embedded inaccuracies, caused by rounding up in the step-up table, which was causing, in some circumstances, the sound pressure to be overestimated.

Furthermore, we also assume removing steps 7,8 and 9, which includes the assumed background noise level, has had a positive impact on the results of assessment. For example, if the sound pressure of the heat pump is below the assumed background noise level (40dB(A)) at step 9, then the installer is to use a figure higher than what the actual sound pressure from the heat pump, thus making it harder for the installation to pass the calculation. Relying on an absolute figure of the sound pressure from the heat pump provides a more accurate representation of the sound detected at the assessment position.