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Environmental Policy Implementation Community
Noise & Vibration Sub-Group
Part of the Institution of Environmental Sciences family

Department for Levelling-Up, Housing & Communities: Consultation on changes to various permitted development rights

Written Submission of the Noise & Vibration Sub-Group of the Environmental Policy Implementation Community (EPIC) – Part of the Institution of Environmental Sciences family

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The Institution of Environmental Sciences (IES) is a professional membership organisation unifying communities of scientists, policymakers, and academics to transform knowledge on environmental science and support the transition to a sustainable society. Across the full range of environmental disciplines, the IES offers a common home for all those involved in environmental work or action underpinned by science.

The Environmental Policy Implementation Community (EPIC) is a group of environmental scientists within the IES, who support the urgent implementation of policies that lead to the protection and regeneration of the natural world. It brings together voices to call for ambitious and deliverable policy, and provides local authorities and other decision makers with the knowledge, insights and tools to deliver on the ground. EPIC convenes a Noise & Vibration Sub-Group, representing acoustic and environmental health professionals and experts across the UK.

The interdisciplinary background of the IES family makes it particularly well-placed to address interconnected environmental challenges, such as energy security, climate change, and noise pollution. By bringing together professionals, local authorities, and academia, EPIC applies those insights to policy implementation, supporting policy makers to deliver environmental ambitions in practice.

Given that expertise, the Noise & Vibration Sub-Group has prioritised responding to the proposals relating to the Permitted Development Right for air source heat pumps (ASHP).

The Institution and the Sub-Group can elaborate on any of the details in this response with further evidence in whatever form the Department finds most appropriate. Our membership includes over 6000 environmental professionals who are well-positioned to share insights directly from the point of policy implementation.

Question 44: Do you agree that the limitation that an air source heat pump must be at least 1 metre from the property boundary should be removed? [Yes/No/Don't know]

Don't know.

The Sub-Group supports the position taken by the Institute of Acoustics that removing the blanket one metre limitation may be reasonable. The Sub-Group believes there is currently insufficient evidence to remove the one metre rule without further research into the consequences for achieving a permitted sound level.

Once the review of MCS 020 is published, it should be clearer whether or not this will be achievable in practice. The noise limit and associated noise assessment procedure (i.e. the

noise propagation model, with allowances for barriers and distance) for heat pumps should be based on scientific evidence and research. Relying on a fixed setback distance is an overly simplistic proxy for controlling noise impacts. A performance-based approach allowing heat pumps to be situated closer to boundaries, as long as they comply with an appropriate noise criterion at nearby receptors, aligns better with standard noise control practices.

Currently, 40dB is used as an assumption for background noise levels to ensure that the noise is not louder that 42dB at 1 metre from the ASHP at the nearest neighbouring window or door. This level is appropriate for urban areas, but as background levels can vary and in some places can be relatively low, using 40dB for background noise as an assumption still has the potential to cause disturbance. For rural areas, a 35dB assumption may be more appropriate.

The practice for many local authorities is to use BS 4142:2014 (or BS 4142:2014+A1:2019) for assessments, so in many cases they are reliant on background sound levels and broader context. The Institute of Acoustics, in its response to the MCS 020 consultation noted that 42dB may be too high, requiring further research to identify a permitted sound level to reduce the risk of noise nuisance to adjoining properties.

In principle, calculations can indicate the likely increase in noise levels as a result of inserting additional sources in close proximity. In practice, further research is needed to take account of a wider set of factors, such as reflection from hard surfaces and variable background noise levels. Tonal characteristics and effects also need to be taken into account, as smaller ASHPs working close to their capacity have the potential to produce higher frequencies from their compressors.

The need for a wider set of considerations beyond property boundary distance is further evidenced by existing best practice and commentary. BS 4142 Annex C includes these in assessing industrial noise and introduces a penalty of 2dB, 4dB or 6dB depending on the prominence of the tone. The DESNZ Review of Air Source Heat Pump Noise Emissions (the DESNZ Review) also acknowledges the importance of encouraging best practice on orientation and minimising reflecting surfaces to minimise noise levels, rather than solely distancing the ASHP from a boundary. To that end, further research into these cumulative effects may be necessary before removing the one metre rule.

Question 45: Do you agree that the current volume limit of 0.6 cubic metres for an air source heat pump should be increased? [Yes/No/Don't know]

Yes.

As the DESNZ Review recognises, the physical size requirement for ASHPs directly relates to the capacity of the evaporator. Larger ASHP units are generally quieter because there is more space for sound insulation measures. The report also notes that new ASHP models can be as much as 8dB quieter. The Sub-Group agrees with the review that the current volume restriction is preventing the development of quieter models for the mass market. By increasing the volume of the evaporator, size of fans and lowering the fan speed, an ASHP could run at a lower speed to help minimise noise levels, without compromising capacity.

In general terms, reducing fan size and speed should reduce the sound power of the unit. The Sub-Group recognises that some Local Planning Authorities may not want larger units which can contribute to the loss of amenity space, so further research may be necessary to identify a suitable upper limit for the volume of the evaporator to reach a permitted sound level.

Question 46: Are there any other matters that should be considered if the size threshold is increased? [Yes/No/Don't know]

Yes.

In many instances, these will be planning considerations, particularly those associated with loss of amenity space and similar ramifications for Local Planning Authorities.

Question 47: Do you agree that detached dwellinghouses should be permitted to install a maximum of two air source heat pumps? [Yes/No/Don't know]

Yes, provided that the cumulative effect does not exceed the permitted sound level.

Where the consultation notes that this change will be "*subject to this methodology being successfully developed*", the methodology must account for the challenges raised in the DESNZ Review, which notes that "*existing PDR operates on a property-by-property basis … there is no mechanism to manage the impact from multiple households installing ASHPs within a localised area. The current arrangements, therefore, do not preclude the possibility of ASHPs causing a greater impact than described in MCS 020.*"

To that end, for the development of methodology within MCS 020 to be considered a success, it must address not only the management of noise emissions from multiple heat pumps installed on the same property, but the cumulative effects on noise emissions of the installation of multiple ASHPs across multiple properties within a localised area.

Recognising that the current proposal applies to detached dwellinghouses and does not apply to terraced housing, the Sub-Group agrees with this limitation. For terraced houses, the cumulative noise pollution could be particularly problematic due to the enclosed nature of terraced housing and adjoining back-to-back yards.

Question 48: Do you agree that stand-alone blocks of flats should be permitted to install more than one air source heat pump? [Yes/No/Don't know]

Yes, though as above this should only be permitted provided that the cumulative effect does not exceed the permitted sound level in practice.

In situations where there would be numerous individual units, the use of roof-mounted 'community air source heat pumps' can be considered, similarly to facilities for air conditioning. For new-build developments, the option of 'community ground source heat pumps' should also be considered, following case studies such as the Heat the Streets Project in Cornwall and Enfield Council's shared ground loop array heat pump programme.

These are major civil engineering schemes requiring deep drilling and vibration during construction, so care is required to isolate pumps in operation. In such contexts, ground source can be a more reliable approach as ground temperatures are more consistent.

Question 49: Do you agree that the permitted development right should be amended so that, where the development would result in more than one air source heat pump on or within the curtilage of a block flats, it is subject to a prior approval with regard to siting? [Yes/No/Don't know]

Yes.

Whilst there are significant risks associated with permitting ASHPs in blocks of flats and other situations where the cumulative noise emissions from several ASHPs could create an unacceptable acoustic environment, the requirement for a planning application should provide the necessary protections to minimise that risk.

See the responses to Questions 47 and 48 for more information.

Question 50: Are there any safeguards or specific matters that should be considered if the installation of more than one air source heat pump on or within the curtilage of a block of flats was supported through permitted development rights? [Yes/No/Don't know]

Yes.

The DESNZ Review recognises significant limitations in its household research, noting that "*the MCS sampling frame is not representative of ASHP owners nor proximal neighbours … the online survey findings are indicative rather than representative.*" Additionally, the majority of online survey respondents lived in detached and semi-detached housing, so the findings may be less indicative of the perceived ASHP sound emissions of higher density property types such as those living in flats and terraced houses.

The report also stated that for multiple installations of ASHPs in blocks of flats, whilst calculations could be made on the cumulative effect assuming that each flat had an ASHP all operating together, many local authorities seek a much lower permitted level to protect against cumulative effects which can be unsafe or inequitable. As referenced in response to Question 48, one solution would be to consider the option of 'community air source heat pumps', which can mitigate against this risk.

Question 51: Do you have any views on the other existing limitations which apply to this permitted development right that could be amended to further support the deployment of air source heat pumps? [Yes/No/Don't know]

Yes. See the response to Question 44 for more information.