

Government Response to the House of Lords Science and Technology Committee Report: *The neglected pollutants: the effects of artificial light and noise on human health*

Government response to the Committee's recommendations

1. Many of the aspects of modern society that we enjoy – transport, distribution of goods and services, entertainment – involve exposing us to noise; and artificial light offers us important safety and security benefits. The government recognises, however, that noise is second only to poor air quality as an environmental cause of ill health in Europe, with impacts including increased risk of cardiovascular and metabolic disease, annoyance, sleep disturbance and cognitive impairment. While the circadian disruption caused by artificial light is also associated with a range of negative public health outcomes, the evidence for quantifying its impact is less developed than that for noise.
2. The House of Lords Science and Technology Select Committee published its report *The neglected pollutants: the effects of artificial light and noise on human health* on 19 July 2023. The report made 22 recommendations, which fall broadly under three themes: **research and evidence**; **policy and legislative response**; and **guidance, advice, and resourcing**.

The government has responded to the 22 recommendations collectively within these themes.

Research and Evidence

3. The Committee calls for Defra to work with the UK Health Security Agency and other organisations to assess the evidence on the health effects of noise; for the UK to seek opportunities to collaborate with similar countries, sharing research data and methodologies; and for Defra to commission and fund a range of studies into areas including intermittent sounds and non-acoustic factors. It also calls for the government to set up independent advisory bodies for both noise and light.

Noise

4. Much of the work recommended for noise is already under way. Defra has developed a new noise mapping system which will contribute significantly to the national evidence base on noise exposure. This pioneering tool, based on high quality, multi-party data and taking in all public roads and railways, will enable national and local government to make decisions on much improved evidence around the impacts of noise. For the first time, public bodies will be able to use the tool for scenario planning and it will be able to incorporate additional datasets

as required, providing the possibility of considering noise in conjunction with other pollutants. It has been designed so that the data is stored in open formats, allowing public bodies to access relevant information without the need for proprietary software.

5. Defra has convened the Interdepartmental Group on Costs and Benefits (Noise Subject Group) (IGCB(N)) to assess the most recent health research – both national and international – on the impacts of noise, with a view to determining whether updates to the Government’s guidance on assessing the economic impact of noise are necessary. This work draws in expertise and collaboration from across government, including UKHSA. Findings from research commissioned by IGCB(N) on the link between long-term exposure to noise and annoyance¹, sleep disturbance², and cardiovascular effects³ have been published. The group is currently reviewing evidence linking exposure to noise from transport sources with additional health outcomes, particularly diabetes and stroke. UKHSA has also developed a Burden of Disease toolkit for noise, which it plans to continually enhance in collaboration with Defra, academia and industry. DfT is funding two domestic cross-sectional studies – an Aviation Night Noise Effects Study and an Aviation Noise Attitudes Study – following international best practice. These include elements of research into the effect of non-acoustic factors in this area. The findings of these studies will feed into the work of the IGCB(N), and on into the government’s valuation of noise. UKHSA and Defra officials are committed to maintaining their relationship with the international noise and health community.
6. We agree that different metrics can help represent noise exposure in different ways. The Committee particularly focused on pitch, which is already incorporated in Defra’s noise modelling system; and intermittency, for which there are currently no agreed standards for modelling in transport sources. However, Defra’s noise modelling system has been designed so that it could incorporate intermittency at a later date, should robust methods be agreed nationally or internationally. Guidelines around night-time levels for dwellings to manage intermittent events are included in several documents available to planners – including from the British Standards Institution, the World Health Organisation and a joint initiative from the Institute of Acoustics, Association of Noise Consultants and the Chartered Institute of Environmental Health. Some of these are referenced in the government’s planning guidance. Development in this field is continuing, within government and more widely, with current government research including the above mentioned DfT studies, which are planned to inform aviation policy in the area of noise metrics. The International Standards Organisation has recently commenced work on a technical specification to provide a definition, conceptual framework and categorisation framework for non-acoustic factors. This work is currently being led by the UKHSA. The government welcomes this first step to standardise approaches across researchers and practitioners. However, it is

¹<https://www.ingentaconnect.com/content/ince/incecpc/2023/00000265/00000006/art00082;jsessionid=2bh802450pbp.x-ic-live-01>

² <https://ehp.niehs.nih.gov/doi/full/10.1289/EHP10197h>

³ <https://www.ingentaconnect.com/content/ince/incecpc/2023/00000265/00000005/art00094>

important to remember also that physiological responses to noise can still occur even if the hearer is not annoyed.

Light

7. Research continues to show many societal benefits from artificial light, encompassing safety and security and facilitating a thriving night-time economy. The College of Policing Crime Reduction Toolkit⁴ refers to a systematic review of UK and US studies, which found strong evidence of a positive crime reduction impact from street lighting, with an average 21% crime reduction in areas with improved street lighting compared to areas without. In city centres, improved street lighting (average decrease in experimental areas of 32%) was more effective than CCTV⁵. Road vehicle lighting is subject to comprehensive international legislative requirements that must be satisfied before vehicles can be sold or registered in the UK. However, DfT is considering potential research to quantify the real-world occurrence of glare and dazzle on the road.
8. The Committee called for a standard methodology for tracking, monitoring and reporting on light pollution. At present, major technical and data issues need to be resolved before this can be considered feasible. Existing data cannot provide a comprehensive picture of street lighting, and would not cover lighting choices at private residences and many other buildings. While technological capabilities are advancing, satellite monitoring capable of picking up the full spectrum of LED light is in its infancy. Unlike noise, we do not yet have the technical solutions to enable artificial light exposure mapping. Further development of the evidence base will need to be considered within the context of government priorities.
9. NICE's guideline on the treatment and management of depression in adults (June 2022) recommends that healthcare professionals should advise people with winter depression that follows a seasonal pattern, and who wish to try light therapy in preference to antidepressant medication or psychological treatment for those whose depression follows a seasonal pattern, that the evidence for the efficacy of light therapy is uncertain. As NICE uses the best available evidence to develop its recommendations, and its surveillance programme proactively explores whether there is any new evidence to contradict, reinforce or clarify its guideline recommendations, it is well placed to identify any changes which may cause it to review its advice on light therapy and update if appropriate.

Noise and light

10. The Committee called for The National Institute for Health and Care Research (NIHR) to commission research to establish the mechanisms by which the possible beneficial effects of light and sound on humans can be maximised through green social prescribing, particularly access to tranquillity and the circadian benefits of exposure to natural light during daylight hours. This is an area of existing interest to the government, with evidence from Natural England showing that the NHS could save over £2 billion in treatment costs if everyone in

⁴ https://assets.college.police.uk/s3fs-public/2022-03/Safer_Streets_toolkit.pdf

⁵ Welsh, B., & Farrington D.F. (2004) 'Surveillance for crime prevention in public space: results and policy choices in Britain and America', *Criminology and Public Policy*, Volume 3, Number 3, 497-526.

England had equal access to good quality green space⁶. NIHR will continue to make funds available for green social prescribing research through open competition, responding to applications from researchers as with other areas of health and social care research. The Department of Health and Social Care, via the NIHR Policy Research Programme has recently commissioned four social prescribing research studies, each with a feasibility stage to plan and determine whether the project should go to a multi-year main stage trial. Outputs from all studies will be peer reviewed and published.

11. The 'Preventing and tackling mental ill health through GSP' programme was established in October 2020 to examine how to increase use and connection to the natural environment through referral to green and/or blue social prescribing services within communities in England to prevent and tackle mental ill health. The programme closed in March 2023, having achieved over 8,500 referrals to nature-based activities. A robust programme evaluation assessed processes, outcomes and value-for-money to inform implementation and future policy and practice, and a full programme evaluation report will be published this winter, which will inform future policy development in this area.
12. The government agrees that cross-government and interdisciplinary approaches to noise and light are important. However, we do not agree that a formal expert body on either noise or light is necessarily the most effective approach to drawing in the right expertise. Both noise and light cover a very wide spectrum of expertise, given the many possible areas of interaction between both noise and light and our human experience – in addition to the interactions with other species. Flexibility must be maintained to draw in the most appropriate expertise to individual areas of research, rather than relying on a group of individuals to embody all necessary knowledge across the board. There is already a mature network of collaborations between departments, agencies and independent experts in addition to the Defra-led IGCB(N). For example, DfT funds the Civil Aviation Authority to provide independent advice on aviation noise, as well as facilitating an ongoing Aviation Noise Engagement Group. The UK Roads Leadership Group (UKRLG) Lighting & Adaptation Board works with all professional lighting bodies relevant to street lighting.
13. The government will consider whether the remit of existing bodies should be extended to cover noise and/or light. The Committee on Medical Aspects of Radiation in the Environment (COMARE) have indicated to UKHSA that they will consider reviewing evidence related to light and health in the near future. We will convene round table events for noise and light, bringing together a range of experts to identify the most significant gaps in evidence; areas where the most value could be provided to public health; and options for how government can facilitate and potentially coordinate new research. This could include assessment of where certain groups may be disproportionately impacted by noise or artificial light. In the case of light, this could include consideration of extending the types of research already extant for noise.

⁶ <https://publications.naturalengland.org.uk/publication/35009>

Policy, legislation and co-ordination

14. In addition to research, the Committee's recommendations called for a range of policy responses. These included national interventions - a national reduction target for noise and a Light Policy Statement for England; taking steps to address the implications of technological shifts required for net zero; extending Defra's noise mapping beyond 24-hour average across the year to include metrics of pitch, peak volume and intermittency; and a review of where noise and light policy sit within government. The report also calls for UKHSA to assess whether emerging health effects evidence meets the threshold for policy action. Other recommendations were more focused on how noise and light policy is reflected in local authority decision making. These included the use of Defra's noise mapping to identify appropriate interventions; collecting data on local authority use of the Noise Policy Statement for England (NPSE) and on noise and light nuisance complaints; and clarifying the expectations around facilities exempt from statutory nuisance light complaints.

Noise

15. An overall noise reduction target is not feasible without a significant amount of work to understand how targets could be set, standardised, measured and achieved across many different noise sources and authorities. As a first step, UKHSA could explore the public health benefits of hypothetical intervention scenarios. The evidence is not sufficiently advanced to enable us to commit at present to incorporate the impacts of maximum volume and intermittency into Defra's national noise mapping; although as outlined previously, frequency data are already available within the model database, and the government continues to commission its own research in some of these areas as well as keeping abreast of national and international research.

16. DESNZ's aim of bringing forward energy solutions to meet net zero commitments – most notably air source heat pumps and onshore wind – is supported by ongoing work programmes to identify potential noise issues and their solutions. On heat pumps, an independent review of existing evidence on noise emissions and planning standards is being conducted. This is to be followed by a public consultation to establish whether the existing permitted development right is fit for purpose and in line with advances in heat pump technology. The recommendations from the research project may suggest changes to the current planning regulations to ensure they reflect the latest evidence. DESNZ is also working with the Devolved Administrations to share evidence of best practice. On onshore wind, DESNZ has commissioned a scoping review⁷ to consider whether the existing guidance for the assessment of noise from onshore wind turbines, which dates back to 1997, could be refreshed. The government is carefully considering the recommendations from this review to determine the

⁷ <https://www.wsp.com/en-gb/insights/wind-turbine-noise-report>

most appropriate next steps. The current ETSU guidance remains suitable for assessing wind turbine noise and should continue to be applied accordingly.

17. The NPSE remains a valuable and informative resource to professionals in a range of contexts. Ahead of the planned review of the National Planning Policy Framework, the government will undertake a one-off exercise to determine to what extent planning authorities are making use of it and use the resulting data to inform our review.
18. It is the government's intention to make the Defra's noise modelling system available to all public bodies, including government departments, local authorities and national, regional and local transport authorities, thus providing an accessible source of expertise to all. This will make it possible to incorporate authoritative noise assessments into the early stages of planning any new development, as well as identifying suitable and cost-effective interventions appropriate to individual situations where they exist. Hierarchies for interventions are set out in the government's Noise Action Plans, developed in accordance with the Environmental Noise (England) Regulations 2006⁸. Engagement with local authorities to date has highlighted significant interest in the opportunities presented by the model. As part of the forthcoming National Planning Policy Framework (NPPF) review, we will consider whether to update the government's Planning Practice Guidance to reference the noise modelling system as a resource available to local authorities. We also intend to use the noise modelling system to enable UKHSA to update the burden of disease calculations.

Light

19. Significant gaps in our understanding of the effects of artificial light would need to be addressed to inform a Light Policy Statement for England. A more immediate priority will be identifying the most important knowledge gaps to prioritise the research needed to inform such a statement.

Noise and light

20. The government agrees that effective cross-government communication is essential for effective policy making on noise and artificial light. A range of existing formal and informal engagement routes and procedures make sure that neither policy area is considered in a vacuum. These include longstanding engagement groups, such as DfT's Aviation Noise Engagement Group; project groups on areas such as air source heat pumps, onshore wind turbines, aviation noise and vehicle tyres; and long established cross-government working practices whereby officials developing new policy draw in the views of other government departments across their widest spectrum. From November 1st 2023 Ministers must have due regard to an Environmental Principles Policy Statement⁹ (EPPS) when making policy.

⁸ <https://www.gov.uk/government/publications/noise-action-plans-large-urban-areas-roads-and-railways-2019>. Updates due 2024.

⁹ <https://www.gov.uk/government/publications/environmental-principles-policy-statement/environmental-principles-policy-statement>

21. Other examples of close collaboration exist within areas covered by the Committee's recommendations. This includes the recommendation that UKHSA refine existing estimates for the disease burden from noise. This work is currently led by UKHSA, but relies on Defra data for road and rail noise exposure estimates from their Noise Modelling System, as well as DfT input and Civil Aviation Authority input. We believe that the task of ascertaining the evidentiary threshold for policy intervention should remain a collaborative process across government.
22. UKHSA will consider a dedicated team focusing on light and health. However, we note that a single team for either light or noise would not eliminate the need for localised experts working in different areas of government, as already the case.
23. A requirement to report on statutory nuisance complaints to DLUHC, however, would introduce a new burden on stretched local authorities. Data gathering currently takes place on a voluntary basis for noise complaints, through the Chartered Institute of Environmental Health's noise survey¹⁰, which provides the basis of a Public Health Outcomes Framework¹¹ indicator. We will consider extending a voluntary survey to cover other statutory nuisance complaints, including light.

Advice, guidance and resourcing

Light

24. The Committee set out several recommendations for enhancing and streamlining guidance around artificial light, and for resourcing local authorities for the specific tasks involved in managing noise and artificial light.
25. It noted the proliferation and lack of coherence in industry advice and guidance on artificial light. While this may be the case, there are also clear avenues of advice and guidance from the government available within specialised work areas. For example, DfT's local highways team works with the UK Roads Leadership Group (UKRLG) Lighting & Adaptation Board to disseminate best practice. National Highways adheres to its Design Manual for Roads and Bridges (DMRB), which is regularly updated and contains information about current design standards relating to the design, assessment, inspection and maintenance of lighting on motorways and all-purpose trunk roads in the United Kingdom. On Nationally Significant Infrastructure Projects (NSIPs), the National Policy Statement for National Networks provides advice on minimising light pollution from projects.
26. Where appropriate, external best practice can be referenced in Planning Practice Guidance. Several guides published by the Chartered Institute of Building Services Engineers – Society of Light and Lighting are already referenced in Planning Practice Guidance on Light Pollution. While one-size-fits-all guidance

¹⁰<https://www.cieh.org/policy/campaigns/noise-survey/>

¹¹ <https://www.gov.uk/government/statistics/public-health-outcomes-framework-march-2023-data-update>

would do little to serve professionals within specific fields, the most significant gaps in readily available guidance can be explored through the wider review of the NPPF and subsequent updates to Planning Practice Guidance.

27. The Committee drew attention to the list of facilities, including transport hubs, lighthouses and prisons which are exempt from statutory nuisance law as regards artificial light. New facilities being consented under the Town and Country Planning Act are still expected to conform to best-practice lighting guidelines as outlined in Planning Practice Guidance. However, there may be scope to provide greater guidance for local planning authorities through the NPPF review. We will explore the most appropriate avenues for clarifying the messaging to existing facilities with regard to adhering to best practice in lighting.
28. While work is ongoing on local planning capability and capacity, the recommendation that DLUHC should set out what resources local authorities should have to respond adequately to light and noise pollution policies would involve restricting the choices local authorities are able to make over their own staffing and funding priorities, which is not current government policy.

1 December 2023