

Lords Science and Technology Select Committee

Inquiry into the effects of artificial light and noise on human health

1st March 2023

1. Introduction

- 1.1** HACAN (Heathrow Association for the Control of Aircraft Noise)¹ is a campaigning organisation formed in the 1970s to give a voice to residents under the Heathrow flight paths. We are a regional body covering London and part of the Home Counties.
- 1.2** We are responding to this inquiry to raise the concerns of our members about the impacts of aircraft noise from Heathrow Airport.

2. Noise Pollution: state of the evidence

- 2.1** The social, environmental and health problems caused by aircraft noise are well documented and evidenced. Our members believe that the aviation industry does not fully pay its environmental costs in terms of noise and emissions. These costs are born by local residents in terms of exposure to noise and the wider population in terms of local and global emissions.
- 2.2** According to the European Environment Agency, noise pollution is the second largest environmental threat to health, causing 12,000 premature deaths a year.² The harmful effects of noise include heart disease, annoyance and sleep disturbance.
- 2.3** Disturbance from aircraft noise has negative impacts on the health and quality of life of people living near airports and under flightpaths. The Civil Aviation Authority (CAA) Survey of Noise Attitudes - SoNA (2017)³ found that the public is becoming more sensitive to aircraft noise, to a greater extent than noise from other transport sources, and that there are health costs associated from exposure to this noise.
- 2.4** SoNA (2017) also found that 9% of people are highly annoyed when the average is 54 decibels. In geographical terms around Heathrow that goes as far as about Clapham to the east and about 2 miles past Maidenhead to the west.
- 2.5** Indeed, disturbance from aircraft noise has negative impacts on the health and quality of life of people living near airports and under flightpaths. SoNA (2014) found that the public is becoming more sensitive to aircraft noise, to a greater extent than noise from other transport sources, and that there are health costs associated from exposure to this noise.

¹ www.hacan.org.uk

² EEA (2020) Healthy environment, healthy lives: how the environment influences health and well-being in Europe. <https://www.eea.europa.eu/publications/healthy-environment-healthy-lives>

³ CAA (2017) Survey of Noise Attitudes

<https://publicapps.caa.co.uk/modalapplication.aspx?appid=11&mode=detail&id=7744>

- 2.6** 2019 analysis on noise forecasts from the CAA (CAP 1731⁴) anticipates that by 2050 the geographical area exposed to noise around all UK airports may shrink but that the total number of people exposed to aircraft noise will increase.
- 2.7** Exposure to aircraft noise can lead to short-term responses such as sleep disturbance, annoyance, and impairment of learning in children. Long-term exposure is associated with increased risk of high blood pressure, heart disease, heart attack, stroke and dementia, and may contribute to long-term mental health issues.
- 2.8** The Government's aircraft noise policy makes no specific reference to health-based noise targets. Despite this the Air Navigation Guidance 2017⁵ (ANG 2017) does include health and quality of life in its definition of 'adverse effects', however no independent evidence base exists. This has had knock-on effects for other policies, including the process for flightpath changes, night noise restrictions at Heathrow, Gatwick and Stansted, and policies for noise insulation in schools.
- 2.9** Hansel et al (2013) found that communities around Heathrow exposed to high levels of aircraft noise (levels > 63dB L_{Aeq} 16hr) had a 24% higher chance of stroke, 21% higher chance of heart disease, and 14% higher chance of cardiovascular diseases compared to people exposed to low levels of aircraft noise. Shahrababaki et al (2021) report that sleep disturbance is linked to long-term cardiovascular disease and mortality. Similarly, Münzel et al (2020) describes for the first-time acute effects of noise on cardiovascular mortality, indicating that aircraft noise is a trigger for fatal acute coronary events.
- 2.10** Seidler et al, (2017) as part of the NORAH study around Frankfurt Airport in Germany, found that a 10 dB increase in noise is associated with an 8.9% increase in the risk of depression.
- 2.11** Jaurp et al (2008) in the HYENA study around major European airports, including Heathrow, found excess risk of hypertension linked to long-term, night-time exposure to aircraft noise. Stansfeld et al (2010) found that where daytime noise levels exceed 50 dB L_{Aeq} 16hr on average, a 5dB increase in noise exposure is associated with a two-month delay in learning in UK primary school children. Over 460 schools around Heathrow are exposed to aircraft noise levels that may impair learning and memory.
- 2.12** Numerous studies have found a link between night flight noise, annoyance, stress and ill-health. Research from Warwick Medical School published in the European Heart Journal in February 2011 found that chronic lack of sleep produces hormones and chemicals in the body, which increases the risk of developing heart disease, strokes and other conditions, such as high blood pressure and cholesterol, diabetes and obesity.

⁴ https://publicapps.caa.co.uk/docs/33/CAP1731AviationStrategyNoiseForecastandAnalyses_v2.pdf

⁵ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/918507/air-navigation-guidance-2017.pdf

2.13 All the studies are suggesting people can get annoyed by aircraft noise at lower levels than previously recognised. The volume, range and robustness of the academic evidence of the health impacts of aircraft noise continues to grow.

The Airspace Modernisation Programme

2.14 The Secretary of State has given the CAA the function to prepare and maintain a co-ordinated strategy and plan for the use of all UK airspace for air navigation up to 2040, including for the modernisation of the use of such airspace.

2.15 The programme will result in the redesign of the flight paths across London and the South East. This has the potential to introduce new flight paths, imposing aircraft noise on communities that are currently not overflowed and exacerbate the noise pollution endured by many others.

2.16 The programme will also see the greater use of Performance Based Navigation (PBN) which deliver more concentrated flight paths. Policies such as PBN have the potential unintended consequences of creating noise corridors which have been described by the CAA as noise sewers leaving resident little or no respite from the noise.

2.17 Existing Air Navigation Guidance states that up to 4,000ft the Government's priority is to minimise noise and the number of people impacted and that above 7,000ft the priority is to reduce emissions.⁶ However, it is also not clear what the impact of Government Net Zero policy and the prioritising of carbon reductions will have on dealing with noise emissions and other non-CO2 emissions in the future, particularly in the context of airspace change.

2.18 There is a risk that technological solutions to carbon reduction may have adverse effects on levels of noise experienced by communities; for example, large scale electric aircraft may be significantly heavier and thus create even more noise than existing aircraft, particularly on arrival.

3. Research Gaps

3.1 There remains a lack of clarity in existing policy as to how best to reduce the harmful effects of aircraft noise, particularly at night. This is exacerbated by gaps in research that need to be addressed in a systematic and robust manner.

3.2 The World Health Organisation (WHO) 2018 guidelines⁷ raised the bar for the quality of evidence which had the benefit of placing aircraft noise on a similar level to other environmental issues, such as air pollution. However, there remains a gap between statistically significant results and locally relevant findings.

⁶ DfT (2017) Air Navigation Guidance.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/587669/air-navigation-guidance-on-airspace-and-noise-management-and-environmental-objectives.pdf

⁷ https://www.euro.who.int/_data/assets/pdf_file/0008/383921/noise-guidelines-eng.pdf

- 3.3** Communities want to see the UK Government set out an independent research programme that seeks to ensure existing knowledge gaps are filled. This could include; protecting sensitive time periods, respite, noise insulation and the effectiveness of mitigation interventions. The abolition of the Independent Commission on Civil Aviation Noise (ICCAN) makes this work programme all the more vital, as the programme could also help address the issue about how communities can access independent expert advice.
- 3.4** There is no reliable evidence about the health impacts of greater concentration of flight paths on overflowed communities. This is a significant gap that needs to be addressed in light of the Airspace Modernisation Programme which will include far greater concentration of flight paths than previously possible.
- 3.5** The main organisations conducting research into the impacts of aircraft noise include the Department for Transport (DfT) (funded by taxpayers), the Civil Aviation Authority (funded by a combination of Government and industry), the Health Security Agency (HSA) – formerly Public Health England (also funded by taxpayers) as well as range of academics.
- 3.6** There is no independent research funding for residents who are over-flown and therefore the balance of research is highly weighted toward the interests of the aviation sector. A small “ring fenced” passenger environmental charge of say 10p per passenger would go a significant way to redressing the balance. Such schemes already exist at airports such as Vienna.

4. Existing Regulatory Regime

Who is responsible?

- 4.1** HACAN do not believe that Government departments and agencies are appropriately resourced. There is significant expertise across the DfT, CAA, HSA & Department for Environment Food and Rural Affairs (DEFRA) yet this is often spread too thinly, resulting in lengthy delays to decision making and the integration of research findings into Government policy. For example, there is just a team of 4 people looking at environmental noise issues in DEFRA with just one individual tasked with responsibility for the analysis of evidence about the impacts of aviation noise.
- 4.2** The demise of ICCAN and loss of expertise and personnel has also exacerbated this issue. Whilst some staff have been moved back into the DfT and CAA others have gone elsewhere reducing the available capacity for work on aircraft noise. Further the CAA’s new environmental panel has a much narrower remit when it comes to noise, raising concerns amongst communities that opportunities for new research and policy innovations will be severely limited.
- 4.3** The CAA has expert capacity on noise issues but should deploy those resources in ways that achieve improved regulation of the industry’s noise impacts and by increasing consumer confidence. We believe that the CAA’s statutory duties to the environment should be strengthened through an amendment to the Transport Act (2000) to put noise on an equal footing with its other statutory functions.

- 4.4** There is no single point of authority and thus no accountability between the multitude of organisations involved in aircraft noise from airports and airlines to Government departments and regulators. It is all too easy for each to say that responsibility lies elsewhere which results in frustration from community groups seeking to engage and means that securing improvements to policy is incredibly complex and slow-paced.
- 4.5** There are no effective (i.e. properly monitored and enforceable) mechanisms for ensuring that government policy in general and any noise/environmental benefits asserted to be delivered by airports or airlines are actually delivered.

WHO (2018) Guidelines

- 4.6** The WHO 2018 Guidelines for the European Region strongly recommend that the daytime level for aircraft is 45dB L_{den} 24 hr (equivalent to 43dB $L_{Aeq,16h}$ around Heathrow Airport) and at night 40dB L_{night} to reduce the risk of associated health effects. More than 10% of people will be highly annoyed by aircraft noise above these levels. These are lower levels than previously thought safe.
- 4.7** The Intergovernmental Panel on the Costs and Benefits of Noise (IGCBN) has been considering what impact WHO (2018) guidelines might have on UK policy but has yet to reach any firm conclusion. This is expected in 2023 but it was also expected in 2021 and 2022. It is our understanding that it is just one civil servant working on the majority of this assessment which, given that the panel consists of members from multiple departments, does not explain or justify the length of delay nor equate to the seriousness of the public health issue.

Local Planning Authorities

- 4.8** The role of local government and local planning authorities is limited in the context of aircraft noise.
- 4.9** Noise from aircraft is exempt from the nuisance provisions in the Environmental Protection Act 1990 by virtue of section 79 subsection 6⁸. This leaves local authorities powerless to intervene when an ongoing problem with aircraft noise occurs that is not covered by a specific planning condition.
- 4.10** If a member of the public feels it necessary to complain about aircraft noise they have to contact the airport. It is HACAN's experience that communities have limited confidence in the complaints process due to a lack of meaningful change in response to their complaint and the fact that the airports are investigating themselves.
- 4.11** In the case of airport development, it is likely that a planning proposal at Heathrow would be considered of national importance. As such the application may be called in by

⁸ <https://www.legislation.gov.uk/ukpga/1990/43/section/79>

the Secretary of State who, after the planning process⁹ has been completed would make the decision.

- 4.12** Aircraft noise planning conditions can be imposed but only in the context of a planning application. Such conditions are usually imposed to mitigate the harm of the development for example, the use of an air traffic movement cap at an airport as has been the case at Heathrow following the Terminal 5 inquiry. Such conditions are welcomed by communities because of the associated certainty.
- 4.13** As stated above, communities often feel they have no meaningful way of challenging ongoing, unreasonable levels of noise from airports and airlines.

5. Government Noise Policy

- 5.1** The UK Government's overall policy on aviation noise is *"to limit, and where possible, reduce the number of people in the UK significantly affected by aircraft noise"*. Communities believe that this offers less protection than required by the EU's Environmental Noise Directive which states *"to avoid, prevent or reduce on a prioritised basis the harmful effects, including annoyance, due to exposure to environmental noise"*.
- 5.2** Air Navigation Guidance (2017) sets the levels of aircraft noise annoyance that should be measured by airports as 51dB $L_{Aeq}16hr$ (average summer day) and 45dB $L_{Aeq}8hr$ (average summer night). These levels are considerably lower than previous Government policy, but potentially still do not go far enough to address the health impacts of aircraft noise.
- 5.3** Current policy remains heavily reliant on SoNA (2014) which was not designed to look below 51dB $L_{Aeq}16hr$ and thus potentially prejudged the lowest onset of the lowest observable adverse effect level (LOAEL). This has crucial health and economic implications for any airport considering an airspace change and for the communities that are overflowed.
- 5.4** It is not clear what the DfT consider to be a successful outcome in terms of its noise objective or how progress might be measured against it. It is also not transparent what input the Department of Health (DoH) or the DEFRA have in terms of setting policy.
- 5.5** HACAN's membership has a wide geographical spread, many of whom are outside of the established noise contours, an indication that some people are so badly affected at lower noise levels, that they are motivated to join a pressure group for change.
- 5.6** Communities would like to see the core policy strengthened in line with WHO Guidelines to ensure that the total health impacts of aircraft noise are properly understood, analysed and reflected in both government policy and airport approaches to reducing noise. It is worth noting that across the EU, the annoyance reported by residents from a given level of aircraft noise has been shown to be greater than that caused by other transport sources.

⁹ <https://infrastructure.planninginspectorate.gov.uk/application-process/the-process/>

5.7 Overflown communities around Heathrow believe that the use of average noise metrics serves to underestimate the total number of people adversely affected by aircraft noise, particularly given the use of runway alternation at Heathrow and the lack of respite for some communities.

5.8 The evidence shows that there are health impacts at lower levels of noise than current government policy. Consequently, the number of people potentially affected must be known and appropriate policy measures put in place. It should not be for local community groups to estimate the size of this impact when there are governmental organisations capable of producing the work.

5.9 There is also a significant issue of trust between communities, government and the aviation industry. This deficit was meant to be addressed by the creation of the Independent Commission on Civil Aviation Noise (ICCAN). However, ICCAN was recently abolished by the Secretary of State and its functions transferred to the CAA, which is not viewed by local communities as sufficiently independent of either government or industry.

6. Recommendations

- 1.** The aviation industry should pay towards a national research fund to investigate the effects of aviation noise. Such a fund should be independently administered.
- 2.** Any significant change in flight paths should be independently assessed in relation to its impact on noise levels and associated health effects.
- 3.** As strongly recommended in WHO guidance, it is evident the UK's LOAEL and 'annoyance' thresholds for aviation need to be lowered and factored into cost benefit analysis and wider appraisal methodologies.
- 4.** Government should commit to developing specific long-term targets to protect the public from the health impacts of aircraft noise.
- 5.** The implications of the health impacts of concentrated flight paths on overflown communities remain unknown. It is not clear how Government proposes to assess and address this issue.
- 6.** Complaints about aircraft noise should be handled independently. Any complaints handling organisation should have the power to affect change.
- 7.** Alternative models of protecting local communities from the impacts of aircraft noise, such as the Vienna Dialogue Forum¹⁰, should be explored to help increase trust and administer funds for research.

¹⁰<https://www.viennaairport.com/en/company/flughafen-wien-ag/third-runway-project/dialogue-with-surrounding-communities>