



BRIEFING PAPER

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Aviation noise

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Summary

This paper briefly looks at the impacts of aviation noise on those who live underneath flight paths and close to airports and explains the various measures put forward to tackle noise pollution, including flight restrictions and charges; better airspace design, and quieter aircraft.

Aviation noise is a source of constant annoyance to those who live under airport flight paths and for those subject to lower levels of disturbance caused by low flying smaller aircraft and helicopters. This form of noise pollution is explicitly excluded from general noise nuisance legislation.

The noise impacts of aviation on individuals and communities have been subject to a number of reports in recent years, some of which are summarised here. There have also been efforts to properly map and monitor noise, including the development of online live data sites which can be used by the public as well as industry.

Suggested measures to tackle noise vary from more controls and restrictions, to charges and better airspace and aircraft design. Some of these measures are exercised by international bodies and the UK Government while others are in the control of the industry – particular airports. There are also proposals for a new Independent Commission on Civil Aviation Noise (ICCAN), which would help develop airspace and noise policies and act as a guarantee to local people that their noise concerns would be heard.

Finally, for those affected there is the possibility of compensation, particularly in the form of funds for insulation; there will be specific schemes, possibly funded by a new noise charge, at Heathrow should it receive planning permission to build a third runway.

This paper deals with commercial airports and aircraft. For those affected by the separate issue of nuisance from low flying and recreational aircraft or helicopters, information can be found in HC Library briefing paper [SN4059](#). Information on other aviation issues can be found on the [Aviation Topical Page](#) of the Parliament website.

1. What's the problem?

1.1 Noise impacts

In recent years, partially fuelled by the proposals for airport expansion in the South East of England, there has been renewed focus on the impacts of noise from aviation on those living beneath flight paths.

In January 2016 the Aviation Environment Federation (AEF) published a report stating that in the UK, over one million people are exposed to aircraft noise above levels recommended for the protection of health, and that around 460 schools are exposed to aircraft noise at levels around Heathrow “that can impede memory and learning in children”, while around 600,000 people in the UK are exposed to average aircraft noise levels that risk regular sleep disturbance.¹

In July 2016 the European Commission published a summary of a report looking at how living with aircraft noise affects wellbeing. It found that:

Living within a daytime aircraft noise path (with noise at or above 55 decibels) ... was negatively associated with all measures of subjective wellbeing: lower life satisfaction, lower sense of worthwhile, lower happiness, lower positive affect balance, and increased anxiety. The authors found consistently negative and significant results across all five variables. The researchers could also predict the effect on subjective wellbeing associated with each decibel increase in noise, which they say has potential for modelling the possible wellbeing impacts due to changes in aircraft noise.

Although there were consistent negative impacts from daytime noise across all measures of wellbeing, the magnitude of these associations were small compared to other common drivers of wellbeing, such as unemployment, poor health and smoking (the negative effects of which are at least twice that of aviation noise).

The researchers found no evidence that night-time noise affects subjective wellbeing. There is a possibility, however, not explored in the study, that the noise had a physiological effect on the individuals. Furthermore, the sample of residences affected by night-time noise at or above 50 decibels was 50% lower than for daytime noise, which may affect the significance of the results.²

This followed the publication of the final report of the Airports Commission, in July 2015. Alongside the report the Commission published a review looking at aircraft noise effects on health. It briefly summarised the strength of the evidence for aircraft noise effects on:

- cardiovascular health;
- sleep disturbance;
- annoyance;

¹ AEF, [Aircraft Noise and Public Health: the evidence is loud and clear](#), 12 January 2016

² “[How does living with aircraft noise affect wellbeing? A study of UK airports](#)”, *Science for Environment Policy*, Issue 462, 8 July 2016; based on: Lawton, R. and Fujiwara, D. (2016). *Living with aircraft noise: Airport proximity, aviation noise and subjective wellbeing in England*. Transportation Research Part D: Transport and Environment, 42: 104– 118. DOI: 10.1016/j.trd. 2015.11.002

- psychological well-being; and
- effects on children's cognition and learning

It also briefly discussed guidelines for environment noise exposure. Overall, it concluded that:

The health effects of environmental noise are diverse, serious, and because of widespread exposure, very prevalent ... For populations around airports, aircraft noise exposure can be chronic. Evidence is increasing to support preventive measures such as insulation, policy, guidelines, & limit values. Efforts to reduce exposure should primarily reduce annoyance, improve learning environments for children, and lower the prevalence of cardiovascular risk factors and cardiovascular disease ...³

Data from the CAA published in 2014 showed that the top fifteen airports in the UK account for over one-third of the population affected by noise at the European level using standard measurements, with Heathrow accounting for more than a quarter.⁴ The Airports Commission had previously published an aviation noise discussion paper in July 2013 which attempted to give comparative figures for those affected by aviation noise as opposed to other transport noise:

The number of people deemed to be affected by transport noise will depend on the noise metric used [...] However, to give a sense of the relative numbers affected from each mode, the strategic noise mapping that took place in England in 2006 estimated that 4.2 million people are exposed to road traffic noise of 65 decibels (dB) (LDEN) or more, and found that the corresponding figures for railways and aviation are 0.2m people and 0.07m people, respectively.⁵

1.2 Views on noise by those affected

In February 2017 the CAA published its survey of noise attitudes (SoNA).

This largely replaces the last large scale survey *Attitudes to Noise from Aviation Sources in England* (ANASE), which was published in 2007.⁶ ANASE concluded that levels of annoyance reported by respondents increased with the sound level; people were concerned about noise at even low levels and particularly at night; and people were generally more annoyed at the same level of noise in this study than in similar work carried out in the early 1980s (possibly due to increased numbers of aircraft).

In late 2013 Ian Flindell & Associates and MVA Consultancy conducted a review of the ANASE study and its 1980s counterpart (ANIS) for the 2M Group of local authorities. It criticised policymakers' reliance on older

³ Queen Mary University of London, for the Airports Commission, [Aircraft noise effects on health](#), May 2015, p27

⁴ CAA, [CAA Insight Note: Aviation Policy For The Environment](#), 2014, p22

⁵ Airports Commission, [Discussion Paper 05: Aviation Noise](#), July 2013, para 2.6

⁶ John Bates Services etc. for the DfT, [ANASE: Attitudes to Noise from Aviation Sources in England](#), October 2007

data, the focus on ‘the onset of significant annoyance’ at 57 LAeq⁷ and the belief “that communities below this noise exposure threshold are relatively unaffected by aircraft noise – despite the fact that many such residents say that they are”.⁸

SoNA stated that its purpose was to:

- Obtain new and updated evidence on attitudes to aviation noise around airports in England, including the effects of aviation noise on annoyance, wellbeing and health;
- Obtain new and updated evidence on what influences attitudes to aviation noise, and how attitudes vary, particularly how attitudes vary with LAeq, but also other non-acoustic factors that may influence attitudes, such as location and time of day, and socio economic group of respondents;
- Examine whether the currently used measure of annoyance, LAeq, is the appropriate measure of annoyance for measuring the impact on people living around major airports;
- Consider the appropriateness of the policy threshold for significant community annoyance from aviation noise; and
- Provide baseline results that can be used for a programme of regular surveys of attitudes to aviation noise.⁹

Its main conclusions were as follows:

- **Mean annoyance score correlated well with average summer day noise exposure, LAeq,16h.** There was no evidence found to suggest that any of the other indicators Lden, N70 or N65 correlated better with annoyance than LAeq,16h. However, the study recognised that the concept of a time-averaged metric such as LAeq,16h and the fact that it is measured and reported on a logarithmic scale where a change of 3 dB represents a doubling or halving of noise energy can be difficult to understand. It therefore recommended that greater use be made of Nx metrics “as supplemental indicators to help portray noise exposure, but recognising that evidence-based decisions should continue to use LAeq,16h”;¹⁰
- **Mean annoyance score** and the likelihood of being highly annoyed were found to increase with increasing noise exposure (LAeq,16h). The relationship found was close to linear, though annoyance levels plateau at low exposure and do not reach zero annoyance;¹¹
- **Noise exposure and reported annoyance were compared against self-reported health rating** (5 point scale) and the

⁷ when a noise varies over time, the LAeq is the equivalent continuous sound which would contain the same sound energy as the time varying sound; in simple terms it as a type of average, where noisy events have a significant influence

⁸ Ian Flindell & Associates and MVA Consultancy for 2M Group, [Understanding UK Community Annoyance with Aircraft Noise: ANASE Update Study](#), September 2013, pi

⁹ CAA, [Survey of noise attitudes 2014: Aircraft](#), CAP 1506, 2 February 2017, p5

¹⁰ *ibid.*, p63

¹¹ *ibid.*, p64

Short Warwick-Edinburgh Mental Wellbeing Scale (SWEMWBS), a measure of well-being. Poorer health ratings and lower SWEMWBS scores were found to be associated annoyance, but not with noise exposure;¹² and

- Evidence was found that **non-acoustic factors** such as noise sensitivity, approximated social grade, and expectations – both prior to moving to an area exposed to aircraft noise and in the future – influence reported aircraft noise annoyance and these non-acoustic factors may be as important as the noise exposure level. From the survey as a whole, 9% of respondents were estimated to be highly annoyed at an exposure level of 54 dB LAeq,16h.¹³

The AEF welcomed SoNA as “new evidence which reflects the findings of numerous other studies that people now have a lower tolerance of aircraft noise levels than in the past”. In particular, on the question of whether the metrics employed to measure aircraft noise annoyance (specifically Leq) are appropriate, it said that:

The study concluded that, compared with ‘N’ measures (the number of overflights at or above a given noise level), Leq has the best fit with reported annoyance. However, the ‘N’ measures may work more effectively for communicating noise to communities since it can be understood more intuitively.

We welcome the recommendation that noise impacts should be considered and communicated using a range of metrics. ‘Number above’ metrics may be particularly relevant for night noise, since the overall mean noise level at night may be less relevant than the number of one-off incidents that are noisy enough to cause awakening.¹⁴

¹² *ibid.*, p65

¹³ *ibid.*, pp65-6

¹⁴ AEF press notice, “[Lower threshold for noise annoyance CAA study finds](#)”, 8 February 2017

2. How is noise mapped & monitored?

Airports covered by EU [Directive 2002/49/EC](#) relating to the assessment and management of environmental noise¹⁵ must prepare noise action plans, based on previously generated noise maps (contours), and submit these for formal adoption by the Government.¹⁶ In July 2013 the Government published new guidance for airports on drawing up their noise action plans. It stated that the plans must, amongst other things, be designed to manage noise issues and effects, including noise reduction if necessary and aim to preserve quiet areas in agglomerations.¹⁷

There are Noise and Track Keeping Working Groups at major airports such as Heathrow, and Stansted, to allow representatives of interested parties to consider noise and track keeping issues at the relevant airport.

London Heathrow, and other major airports, have a noise and track-keeping computer system which gathers information on both the noise made by aircraft operating to and from the airport and the actual track each aircraft makes.¹⁸ In August 2016 HAHL announced that 50 new noise monitors would be added to the airport's existing network.¹⁹

Over the past ten years major airports have partnered with technology companies to launch interactive aircraft noise websites available to the public.

It is as yet unclear what the impact of Brexit might be on noise management or on aviation policy more generally. More information can be found in HC Library briefing paper [Brexit: impact across policy areas](#).

Live noise tracking

[WebTrak](#) provides live tracking for:

- Heathrow, Stansted, Manchester, Southampton, Bournemouth and East Midlands airports

[Casper](#) provides live tracking for:

- Gatwick, Manchester and Birmingham airports

¹⁵ information on environmental noise generally, including the provisions of this Directive, can be found in: Parliamentary Office of Science and Technology, [Environmental Noise \(Postnote 338\)](#), July 2009; this is a devolved issue - the Directive was implemented by the *Environmental Noise (England) Regulations 2006* ([SI 2006/2238](#)); *Environmental Noise (Wales) Regulations 2006* ([SI 2006/2629](#)); *Environmental Noise (Scotland) Regulations 2006* ([SSI 2006/465](#)); and *Environmental Noise Regulations (Northern Ireland) 2006* ([NISR 2006/387](#))

¹⁶ DfT, [Night Flying Restrictions at Heathrow, Gatwick and Stansted Stage 1 Consultation](#), January 2013, p14; the noise map for London Heathrow is available on the [Defra noise mapping website](#) [accessed 19 October 2016]

¹⁷ DEFRA, [Guidance for Airport Operators to produce noise action plans under the terms of the Environmental Noise \(England\) Regulations 2006 \(as amended\)](#), July 2013, box 1, p4

¹⁸ more technical information about the system is available in: CAA, [Validating the CAA aircraft noise model with noise measurements](#), 2001

¹⁹ HAHL press notice, ["50 new noise monitors installed around Heathrow"](#), 17 August 2016

The Environmental Research and Consultancy Department (ERCD) of the Civil Aviation Authority (CAA) estimates the noise exposures around the designated airports (Heathrow, Gatwick and Stansted) on behalf of the Department for Transport. The magnitude and extent of the aircraft noise around these airports are depicted on maps by contours of constant aircraft noise index (Leq) values. The contours are generated by a computer model validated with noise measurements, which calculates the emissions and propagation of noise from arriving and departing air traffic. The most recent data covers 2015.²⁰

The Department for Transport also publishes noise exposure contour reports on Ordnance Survey (OS) maps produced by the CAA for Heathrow, Gatwick and Stansted airports. The most recent data covers 2015.²¹

²⁰ DfT, [Noise exposure contours around London airports](#), 12 January 2017

²¹ DfT, [Noise exposure contours on Ordnance Survey maps](#), 12 January 2017

3. Measures to tackle noise

Aviation noise is generated mainly by actual aircraft and by airport ground operations, including ground transportation. However, noise from ground operations is largely confined to the airport site and the immediate vicinity, usually along well-established transport corridors where there are limited numbers of residential homes (i.e. along motorways and major A roads). Noise from aircraft is more pervasive and can be heard from a greater distance.

When looking at measures for tackling noise pollution from aviation it is sometimes difficult to separate out those specifically aimed at airports, encompassing the wider array of operations including how aircraft use the airport, from those only aircraft owners and operators can tackle (i.e. in the design and manufacture of quieter aircraft).

The Coalition Government's policy on aviation noise is "to limit and, where possible, reduce the number of people in the UK significantly affected by aircraft noise, as part of a policy of sharing benefits of noise reduction with industry".²²

3.1 Flight controls and restrictions

UK law

Section 79(6) of the [Environmental Protection Act 1990](#), as amended, specifically exempts aircraft noise from the general noise nuisance controls which exist under that legislation. This is the case, irrespective of whether an airfield in question is small and unlicensed or a major UK airport.

The Secretary of State for Transport is responsible for policy generally on the control of civil aircraft noise under section 78 of the [Civil Aviation Act 1982](#), as amended. These powers are devolved in Scotland to Scottish Ministers.²³ Under section 78(3) the relevant authority may "specify the maximum number of occasions on which aircraft of descriptions so specified may be permitted to take off or land" at airports so designated under section 80 of the same Act.

At present these controls apply only to **London Heathrow, Gatwick** and **Stansted** (the 'designated airports').

Generally, it should be noted that so long as the *Rules of the Air Regulations 2007* ([SI 2007/734](#)), as amended, are being observed, aircraft are protected from action in respect of trespass or nuisance under the 1982 Act.²⁴ Within controlled airspace, aircraft need air traffic control clearance, which gives air navigation service providers (ANSPs) some scope for exercising controls. Such controls are usually concerned with safety, but they also have to take account of noise requirements. Controlled airspace only extends around airports and

²² DfT, [Aviation Policy Framework](#), Cm 8584, 22 March 2013, para 3.12

²³ via [section 12](#) of the *Civil Aviation Act 2006*

²⁴ the *Rules of the Air* are made under Part 10 (Article 249) of the *Air Navigation Order 2016* ([SI 2016/765](#)), and are similar to a Highway Code for the airspace over the UK

along air routes. Controlled airspace can go from ground level to 66,000 feet in some cases, and 'air routes' can have bases down to 3,500 ft. Outside controlled airspace, aircraft can go anywhere so long as they abide by the *Rules of the Air*.

The Government has powers under the 1982 Act to designate areas where aircraft are not allowed to fly, but this is usually done only on safety or security grounds, for instance over high security prisons or sensitive installations.

Except for the designated airports, the view of consecutive governments has been that noise at airports is essentially a local matter and best dealt with at local level. Most large airports have consultative committees and any changes in the rules are likely to be discussed with them.²⁵ In its March 2013 *Aviation Policy Framework* the Government said:

... airports not currently designated for noise management purposes have powers to set noise controls ... and the Government would like appropriate controls to be agreed locally. For example, local authorities will want to consider whether to set such controls as a planning condition on new airport development. Noise controls at the designated airports will provide examples for other airports to consider as appropriate. Airports should ensure that the effectiveness of their measures to tackle noise is reviewed on a regular basis. For airports required to produce Noise Action Plans under EU legislation, this should be done at least as often as the five-yearly review of these plans. Noise Action Plans and any other noise measures agreed locally should be proportionate to actual noise impacts.²⁶

Night flights

At the designated airports of Heathrow, Gatwick and Stansted the relevant authority (the Secretary of State for Transport in the case of England and Wales, Scottish Minister in Scotland) can mitigate the problem by limiting the number of flights and the type of aircraft that fly into and out of airports during the early morning (from 2300 to 0700). These are generally referred to as 'night flights'.

The current regime expires in October 2017 and in January 2017 the Government published its proposals for new limits to operate between 2017 and 2022. The key points are:

- reducing the total noise quota at Heathrow Airport by at least 43% in the winter and 50% in the summer;
- reducing noise quotas at Gatwick by at least 17% in the winter and 21% in the summer;
- setting a strict cap at existing levels for the number of night flights from Heathrow and Gatwick; and
- ending exemptions for almost 1,700 night flights operating out of Stansted by including these in the new cap, setting a strict limit which the airport cannot exceed.

For more information see: HC Library briefing paper SN1252, [Night flights at Heathrow, Gatwick & Stansted](#).

²⁵ the DfT published an updated industry Code of Practice in November 2006, designed to limit noise impacts on local areas, see: DfT, [Noise from Arriving Aircraft: An Industry Code of Practice](#) (2nd ed.), November 2006

²⁶ op cit., [Aviation Policy Framework](#), para 3.11

EU law

As indicated above, it is as yet unclear what the impact of Brexit might be on noise management or on aviation policy more generally.

That said, in terms of European law, [Directive 2002/30/EC](#), on the introduction of noise-related operating restrictions at Community airports, was adopted in March 2002. It did not require airports to take action to counter noise pollution, but it did set out a process that must be followed should any action be contemplated. The Directive was implemented in the UK by the *Aerodromes (Noise Restrictions) (Rules and Procedures) Regulations 2003* ([SI 2003/1742](#)), which came into force in August 2003. The Directive was replaced by [Regulation \(EU\) No 598/2014](#) from 13 June 2016.

The 2003 Regulations state that when plans to deal with noise problems at major airports are being drawn up, the following will have to be taken into account:

- use of modern, quieter aeroplanes;
- use of procedures to reduce operational noise (optimising use of traffic management procedures);
- effect of land-use planning and management policies in preventing or limiting noise sensitive development around airports; and
- restrictions or possibly bans on aircraft.

The Regulations apply to city airports (listed in Schedule 1 to the Regulations) and to other civil airports within the UK which have more than 50,000 take-offs or landings of civil subsonic jet aeroplanes per calendar year (based on the average of the last three calendar years before the application of the Regulations to the airport in question).²⁷ The 'competent authority' is the airport operator, except where the airport is designated under section 78 of the 1982 Act. In such cases the competent authority is the Secretary of State.

3.2 Charges for noise pollution

At the moment there are various powers set out in the [Civil Aviation Act 1982](#), as amended, which allow airports to make charges to airlines and to fine them for failing to comply with relevant conditions.

Specifically, section 38 of the 1982 Act gives licensed aerodrome authorities the power to fix their charges in relation to aircraft noise, or to the extent or nature of inconvenience resulting from such noise. The aim of this section is to encourage the use of quieter aircraft and diminish inconvenience from aircraft noise. An aerodrome authority may charge aircraft operators for use of the aerodrome by reference to the emissions from an aircraft (as well as to the noise produced).

²⁷ for example, London Heathrow, Gatwick, Stansted, Luton and City, Manchester, Edinburgh, Glasgow, Birmingham and Belfast

For regulated airports (i.e. Heathrow, Gatwick and Stansted) sections 78, 78A and 78B of the 1982 Act, as amended by the [Civil Aviation Act 2006](#), confer on the manager of a designated aerodrome a power to levy financial penalties on an aircraft operator in respect of any breach by that aircraft operator of noise abatement requirements imposed by the Secretary of State and require the aerodrome manager to make payments, equal to the amount of penalties received, for the benefit of persons who live in the area in which the aerodrome is situated.

In October 2013 the CAA published a report recommending that airports should use their landing charges to offer better incentives for airlines to operate cleaner and quieter flights.²⁸ It found that the monetary incentives designed to encourage airlines to use the quietest aircraft vary from airport to airport and that while designated airports levy landing charges, non-designated airports tend to levy other surcharges and penalties which, although they do serve a noise management role, are not strictly speaking noise-related landing charges. It recommended that noise charging categories be better defined and target the full range of aircraft with higher charges at night.²⁹ The CAA published further recommendations in May 2014 reiterating its call for airports to structure their landing charges to incentivise airlines to operate cleaner, quieter flights.³⁰

3.3 Curtailing airport expansion

Arguably the easiest way to reduce noise impacts from aviation is to close airports or at least to restrict their growth. In terms of reducing impacts on people on the ground, a further solution might be the re-siting of existing airports or construction of new airports away from centres of urban population. This was one of the arguments put forward for constraining expansion at Heathrow and for expanding Gatwick or building a new airport in the Thames Estuary. Others take the view that there is a fundamental conflict between increasing aviation capacity and limiting or reducing noise impacts.

On the one side of the debate Sustainable Aviation, funded by the aviation industry, argued in its Noise Action Plan that aircraft innovations and engine technology, operational advancements and better land-use planning offered the potential to reduce UK aviation noise output by 2050 compared to 2010, despite a forecast growth in flights.³¹ This would leave room for considerable expansion of the UK's aviation capacity. On the other hand, the Aviation Environment Federation (AEF), an NGO supported by environmental groups, has

²⁸ CAA press notice, "[CAA calls on airports to use landing charges to encourage cleaner, quieter flights](#)", 15 October 2013

²⁹ CAA, [Environmental charging – Review of impact of noise and NOx landing charges](#), CAP 1119, October 2013, pp50 & 53

³⁰ CAA press notice, "[CAA urges UK aviation to improve noise performance and do more to engage communities](#)", 29 May 2014

³¹ Sustainable Aviation, [Noise Road Map](#), 23 April 2013

argued that expansion schemes should meet stringent noise criteria in order to be approved.³²

The Government is currently proposing that as a condition of its planning consent for a third runway, Heathrow would have to commit to “mitigate the noise impacts which could result from a new runway. Measures will include new binding noise performance targets to encourage the use of quieter aircraft, and continuing to alternate the airport’s runways to provide local communities with predictable periods free from noise”. It also stated that it agrees with Sustainable Aviation that “predicted improvements in aircraft technology and procedures should mean that, with or without expansion, fewer people than today would be affected by noise”.³³

The main campaign group for residents affected by Heathrow, Hacan, is dubious. It stated that a new runway would bring a “considerable number of new people” under a flight path for a first time, that those communities which currently enjoy a half day’s break from the noise “are likely to find that reduced to a third of a day” and that a third runway “is expected to increase the number of planes using Heathrow by around 250,000 a year”. It concludes: “quieter planes and improved operation practices cannot wish that number away”.³⁴

3.4 Independent Commission on Civil Aviation Noise (ICCAN)

The final report of the Airports Commission into airport capacity, published in July 2015, said that an Independent Aviation Noise Authority (IANA) “should be established with a statutory right to be consulted on flight paths and other operating procedures. The authority should be given statutory consultee status and a formal role in monitoring and quality assuring all processes and functions which have an impact on aircraft noise, and in advising central and local Government and the CAA on such issues”.³⁵

Further, the Commission recommended that the Government introduce a noise charge or levy to “incentivise airports to reduce noise and ensure that they make an appropriate contribution to local communities”.³⁶ IANA should “advise on the exact design and weighting of a charge and provide guidance or direction on how funds raised are most fairly allocated with regard to noise impacts. This may include an assessment of pre-existing arrangements at different airports. Local people should be able to see clearly how funds are used in their local areas and should have real influence over how money is spent”.³⁷

³² AEF, *Evidence to the Airports Commission: Comments on Discussion Paper 05: Aviation Noise*, September 2013, para 1.2

³³ DfT, *Consultation on Draft Airports National Policy Statement: new runway capacity and infrastructure at airports in the south-east of England*, 2 February 2017, p31

³⁴ Hacan, *National Policy Statement: Briefing from HACAN*, 2 February 2017

³⁵ Airports Commission, *Final Report*, 1 July 2015, p32

³⁶ *ibid.*, p292

³⁷ *ibid.*, p293

The Commission listed a number of further activities which it believed IANA could undertake.³⁸

In its consultation on future airspace policy, published on 2 February, the DfT put forward its proposals for what it calls an Independent Commission on Civil Aviation Noise (ICCAN), basically its version of IANA. The DfT's 'success criteria' for ICCAN were set out as follows:

- It establishes a credible and authoritative voice on aviation noise issues;
- Communities have and feel they have a greater stake in any process which proposes to make noise changes;
- Processes which change aviation noise impacts better and more transparently balance the needs of all parties, thereby making these processes fairer and less adversarial;
- Greater public confidence in the noise data published by the aviation industry and in the impartiality of the airspace change process;
- Industry is challenged to enhance its approach where necessary on assessing and mitigating noise impacts and engaging with communities;
- Improved relations and trust underpin local decision making on noise controls; and
- The SofS is effectively supported in his role with regards to noise within strategically significant decisions³⁹

ICCAN's detailed role in airspace change and planning and ongoing noise management, as set out in the paper, is summarised below.

On **airspace change**:

- Respond to all formal airspace consultations to advise that the most appropriate and best available noise mitigations have been considered appropriately. ICCAN would not choose between different route options. This is because there would be other non-noise factors at play such as safety and efficiency, and these also need to be taken into account when deciding on a best option.
- Where a change sponsor has deviated from ICCAN advice on any noise management techniques, the sponsor should describe their reasoning behind their decision not to follow the advice. The CAA would take into account any relevant ICCAN advice in its environmental assessment, and in doing so, can decide on whether a change sponsor's reasoning for deviating from the advice is justified.
- If ... an airspace change decision [were] called-in by the Secretary of State ... ICCAN would give any expert advice required.
- Consulted as part of the CAA's Post-Implementation Review process following a change taking place e.g. to assess the outcomes of any noise mitigations.⁴⁰

³⁸ *ibid.*, p304

³⁹ DfT, [UK Airspace Policy: A framework for balanced decisions: on the design and use of airspace](#), CM 9397, 2 February 2017, pp54-55

⁴⁰ *ibid.*, p56

And on **planning and ongoing noise management:**

- Advise airports and relevant competent authorities in the process to agree operating restrictions including advising the competent authority whether they consider the ICAO balanced approach to have been followed.
- As an example, ICCAN should have a role in advising on the design of noise envelopes ... where one is being developed, such as has been suggested at Heathrow for the proposed new northwest runway.
- Advise local authorities when requested when they are considering noise implications of an airport's planning application.
- Provide input to planning inquiries relating to airport infrastructure as appropriate.⁴¹

The Government's lead option is to establish ICCAN as an independent body within the CAA. However, it recognises that ICCAN should be able to function independently from the CAA "if it is to be successful in building trust" and therefore proposes to direct the CAA under legislative powers to establish ICCAN as a separate legal entity. The Secretary of State would set Terms of Reference, establish the appointment process for the Commissioner and Board members of ICCAN, and agree its funding. To 'maintain credibility', it "would be up to ICCAN's Board to set a yearly work programme based on the Terms of Reference and its agreed funding". One of the Board members would be a senior official from the Department for Transport with a limited remit to ensure that ICCAN's work programme remained consistent with the Terms of Reference. ICCAN's governance would "include total functional separation between it and the CAA: they would work on separate work streams with no crossover".⁴²

The paper also states that ICCAN should be "funded publicly *in the first instance*".⁴³ It is unclear whether this means that at some future date such a body might be sold off or funded in some way by the aviation industry.

3.5 Airspace design and Air Navigation Routes

UK airspace contains a network of corridors, or airways. These are usually ten miles wide and reach up to a typical height of 24,000 feet from a typical base of between 5,000 and 7,000 feet (however, as noted above they can stretch between 3,500 and 66,000 feet). They mainly link busy areas of airspace known as terminal control areas, which are normally above major airports. At a lower level, control zones are established around each airport. The area above 24,500 feet is known as upper airspace. All of these airways are designated "controlled airspace". Aircraft fly in them under the supervision of air

⁴¹ *ibid.*, p57

⁴² *ibid.*, p58

⁴³ *ibid.*, p59 [emphasis added]

traffic controllers and pilots are required to file a flight plan for each journey, containing details such as destination, route, timing and height.

Throughout Europe there is a move to restructure European airspace, add capacity, improve safety and increase the overall efficiency of the European air transport network through the Single European Sky (SES) project.

The UK and Ireland is planning to meet the SES requirements through the Future Airspace Strategy (FAS) which sets out a plan to modernise airspace by 2020.

The biggest changes in the UK are likely to be in the south east of England (whose airspace was designed over 40 years ago) where London's five big airports and many smaller aerodromes create some of the world's busiest and most complex skies.

There have been airspace trials at airports across the south east, including Heathrow, London City and Stansted as part of the London Airspace Management Programme (LAMP). The first part of LAMP affecting London City Airport and the south coast was implemented in February 2016. In addition, Gatwick has undertaken a number of trials of standalone technology/procedure enablers, such as ADNID and routes 2&4. These were particularly controversial with local residents and the proposed changes around the airport were postponed.

On 2 February 2017 the DfT published a consultation on modernising the UK's airspace. This contained a number of proposals about dealing with the noise from overhead flights. Overall the Government is proposing:

- greater transparency in decision making and the way noise is handled;
- increased focus on engagement and locally-informed solutions;
- improvements to the evidence base which informs how airspace decisions are made, particularly evidence on the noise impacts; and
- clarity and consistency in the level at which decisions are made, and why.⁴⁴

In addition to a new Independent Commission on Civil Aviation Noise (see above), this would involve the following:

- **Assessing adverse effects of aviation noise** – DfT to provide further guidance on its aviation noise policy in order to be clear about how it should inform decisions on airspace design and use. The policy should be interpreted to mean that the number of people experiencing adverse effects as a result of aviation noise should be limited and, where possible, reduced. Adverse effects would be considered to be those related to health and quality of life: 51 dB LAeq 16hr should be regarded as the LOAEL [Lowest

⁴⁴ op cit., [UK Airspace Policy: A framework for balanced decisions: on the design and use of airspace](#), p68

Observed Adverse Effect Level] for daytime noise and 45 dB Night for night time noise;⁴⁵

- **Assessing the frequency of aircraft noise occurrences** – To take account of people who may be significantly affected by aviation noise at levels that do not exceed the LOAEL, DfT intends to supplement the risk-based approach with guidance on metrics which can be used to assess the frequency of noise events;⁴⁶
- **The Balanced Approach⁴⁷ and noise management** – DfT proposes two routes for decisions on operating restrictions being taken within the planning process. In most cases for both routes, the airport itself would be expected to lead the development and consultation on any proposed restrictions, with the competent authority ensuring the correct process is followed. In England and Wales⁴⁸ the SofS would be appointed competent authority for all operating restrictions delivered through the planning process in the case of Nationally Significant Infrastructure Projects (NSIPs), as well as any local planning decisions that are called-in by the Secretary of State while all other planning-related operating restrictions would be decided by the relevant local authority;⁴⁹ and
- **Other noise controls at the designated airports** – In order to allow the designated airports to manage noise in the way that best reflects the issues faced by their communities, DfT proposes that responsibility for setting other types of noise controls is transferred to the airport. They could then be agreed locally or decided through the planning process or airspace change processes. DfT would also transfer the ownership of Noise Preferential Routes (NPRs) to the designated airports, which would also be required to publish data on their departure routes and track keeping performance. To be clear, designated airports have been publishing this data for decades, this would be a change to the basis on which it's published.⁵⁰

The consultation closes on 25 May 2017.

⁴⁵ *ibid.*, p52

⁴⁶ *ibid.*, 52

⁴⁷ this refers to [ICAO's Balanced Approach](#), which lays down a common framework for managing noise

⁴⁸ this would be a devolved matter in Scotland and Northern Ireland

⁴⁹ *op cit.*, [UK Airspace Policy: A framework for balanced decisions: on the design and use of airspace](#), p64

⁵⁰ *Ibid.*, pp65-6

3.6 Aircraft design

One of the main ways of reducing aircraft noise is by limiting that noise at source.⁵¹ International agreement is essential in this respect because of the world-wide nature of the aviation industry.

The [International Civil Aviation Organization \(ICAO\)](#) was established in 1944. Part of its role is to reduce aviation noise; much of its effort in this area has been directed to reducing noise at source – i.e. in aircraft specification. Aeroplanes and helicopters built today are required to meet the noise certification standards adopted by the Council of ICAO. These are contained in [Annex 16](#) to the [Convention on International Civil Aviation](#) (the 'Chicago Convention'), while practical guidance to certifying authorities on implementation of the technical procedures of Annex 16 is contained in the [Environmental Technical Manual on the use of Procedures in the Noise Certification of Aircraft](#).⁵²

The categorisation of aircraft under Annex 16 is described on the [ICAO website](#):

The first generation of jet-powered aeroplanes was not covered by Annex 16 and these are consequently referred to as non-noise certificated (NNC) aeroplanes (e.g. Boeing 707 and Douglas DC-8). The initial standards for jet-powered aircraft designed before 1977 were included in Chapter 2 of Annex 16. The Boeing 727 and the Douglas DC-9 are examples of aircraft covered by Chapter 2. Subsequently, newer aircraft were required to meet the stricter standards contained in Chapter 3 of the Annex. The Boeing 737-300/400, Boeing 767 and Airbus A319 are examples of "Chapter 3" aircraft types. In June 2001, on the basis of recommendations made by the fifth meeting of the Committee on Aviation Environmental Protection (CAEP/5), the Council adopted a new Chapter 4 noise standard, more stringent than that contained in Chapter 3. Starting 1 January 2006, the new standard became applicable to newly certificated aeroplanes and to Chapter 3 aeroplanes for which re-certification to Chapter 4 is requested. Most recently, CAEP/8 in February 2010 requested the noise technical group to review and analyze certification noise levels for subsonic jet and heavy propeller driven-driven aeroplanes and, based on the analysis, develop a range of increased stringency options.⁵³

According to the CAA, modern aircraft are typically 75 per cent quieter than jet aircraft used in the 1960s.⁵⁴ As indicated above, aircraft manufactured since 2006 must meet the requirements of Chapter 4,

A Noise certification database [NoisedB](#) was developed in 2006 by the French DGCA under the aegis of ICAO. The database is intended to be a general source of information to the public on certification noise levels for each aircraft type.

⁵¹ for some information on smaller scale aircraft improvements to e.g. engines and wings, see EurActiv, "[Winging it: EU researchers look for novel ways to cut aircraft noise](#)", 21 June 2013 and "[Heavy metal thunder: Aircraft grow quieter as rock drones on](#)", 17 June 2013

⁵² Annex 16 and other international requirements were transposed into UK law by the *Aeroplane Noise Regulations 1999* ([SI 1999/1452](#)) and the *Air Navigation (Environmental Standards) Order 2002* ([SI 2002/798](#))

⁵³ a slightly longer outline of the contents of Annex 16 is given in: ICAO, [Aircraft Noise Certification](#) (presentation to the Noise Certification Workshop), 20-21 October 2004

⁵⁴ CAA, [Aircraft Noise and Emissions](#) (Environmental Information Sheet no. 10), 2014; for a neat pictorial representation see: Airports Commission, [Interim Report](#), December 2013, fig 2.6, p39

which was set at 10 decibels below that of Chapter 3. Campaigners argued that this was not enough:

A new standard for aircraft noise, Chapter 4, [came] into force on 1 January 2006. However, the new standard is very weak and already met by 98% of aircraft currently in-production. It will improve the current standard by a little over 3dB, on average, at each measurement point. The industry's aspirational target is to develop an aircraft that reduces perceived aircraft noise by 50% by 2020 compared to 2000 (ACARE, 2000). Even if this demanding target can be met, it will take several years with its gradual introduction to the fleet before the benefits are felt. Moreover, such improvements are not sure to counter the effects of increasing traffic.⁵⁵

A new standard will be introduced from the end of 2017 (see below).

When the Chapter 3 standard was introduced in 2002⁵⁶ it led to the elimination of most of the noisier planes meeting Chapter 2 noise standards from European skies. The phasing out of noisier Chapter 2 aircraft was governed by certain conditions agreed with ICAO, among which were exemptions to operators in developing nations, for specific aircraft. The cumulative effect of these changes is debatable as reductions in noise generated by individual aircraft have to be balanced against increases in the numbers of aircraft in operation, particularly around larger airports that have continued to expand – even when they have not been able to do so geographically with new runways.

Current noise and emissions standards for UK-registered aircraft are set out in *Air Navigation (Environmental Standards For Non-EASA Aircraft) Order 2008 (SI 2008/3133)* and European [Regulation 216/2008/EC](#) (the 'Basic Regulation'), as amended. The Basic EASA Regulation established the European Aviation Safety Agency (EASA), set out essential requirements for environmental protection and provides for the making of implementing rules in support of those essential requirements.

The aircraft which are not subject to the Basic Regulation are State aircraft and those coming within one of the categories listed in Annex II to that Regulation. UK-registered aircraft which are subject to the Basic Regulation must comply instead with the environmental standards provided for in that Regulation and in [Regulation 1702/2003/EC](#) (the relevant implementing rules).⁵⁷

Chapter 14 standards from 31 December 2017

The successor standard to Chapter 4 – called (somewhat confusingly) Chapter 14 will be 7dB below the Chapter 4 standard.⁵⁸ It is applicable to new aeroplane types submitted for certification on or after 31 December 2017 at or above 55 tonnes in weight, and on or after 31

⁵⁵ AEF/Green Skies, [Aircraft Noise](#) [accessed 13 February 2017]

⁵⁶ by EU [Directive 92/14/EEC](#)

⁵⁷ for further information see the [EASA website](#) [accessed 13 February 2017]

⁵⁸ ICAO press notice, "[ICAO Environmental Protection Committee Delivers Progress on New Aircraft CO2 and Noise Standards](#)", 14 February 2013

December 2020 for aeroplanes less than 55 tonnes in weight.⁵⁹ EASA incorporated the change to Chapter 14 into EU law in 2016.⁶⁰

Sustainable Aviation said that this would lead to a significant improvement in noise pollution over the following 35 years, but the AEF warned that older non-compliant aircraft may not be retired, so the benefits realised from the phase out of Chapter 2 aircraft (see above) may not be realised on the same scale in the future.⁶¹

⁵⁹ EASA, [*Notice of Proposed Amendment 2014-15: Implementation of CAEP/9 amendments - Update of CS-34 and CS-36*](#), 24 June 2014, p6

⁶⁰ EASA press notice, "[EASA welcomes ICAO agreement on new aircraft CO2 and noise standards](#)", 22 February 2013 and [Regulation \(EU\) 2016/4 amending Regulation \(EC\) No 216/2008 ... as regards essential requirements for environmental protection](#), 5 January 2016

⁶¹ Sustainable Aviation, [The SA Noise Road Map](#), April 2013, p39; and op cit., [Evidence to the Airports Commission: Comments on Discussion Paper 05: Aviation Noise](#), para 6.1.2

4. Compensation

The Government's view is that airport operators should offer households exposed to levels of noise of 69 dB LAeq,16h or more, assistance with the costs of moving and offer acoustic insulation to noise-sensitive buildings, such as schools and hospitals, exposed to levels of noise of 63 dB LAeq,16h or more. Where acoustic insulation cannot provide an appropriate or cost-effective solution, alternative mitigation measures should be offered. If no such schemes already exist, airport operators should consider financial assistance towards acoustic insulation for households.⁶²

The Airports Commission recommended in its July 2015 final report that the Government should introduce a noise charge or levy at major UK airports to ensure that airport users pay more to compensate local communities.⁶³ In its February 2017 consultation on airspace change the Government concluded that a noise levy applied to all major airports regardless of whether they are expanding would "not be proportionate", however, it did support measures at individual airports (see Heathrow, below).⁶⁴

Further, in the airspace consultation the Government proposed that four proposed changes to current compensation policy:

1. Change the policy wording to remove the word 'development' in terms of when financial assistance towards insulation is expected so that compensation is applicable regardless of the type of change (infrastructure or airspace change);
2. Change the policy wording to allow for financial assistance towards insulation in the 63dB LAeq level or above to be applicable regardless of the level of change that causes a property to be in that noise contour level (i.e. remove requirement for a minimum 3dB change);
3. Inclusion of additional wording in the policy to encourage an airspace change promoter to consider compensation for significantly increased overflight as a result of the change based on appropriate metrics, which could be decided upon according to the local circumstances and economics of the change proposal; and
4. Include a requirement of an offer of full insulation to be paid for by the airport for homes within the 69dB LAeq or more contour, where the home owners do not want to move.⁶⁵

In its July 2013 discussion paper the Airports Commission looked at compensation schemes in the UK and other parts of the world. It found that historically the compensation schemes in place at major UK airports had typically contributed half of the costs of new double-glazed

⁶² op cit., [Aviation Policy Framework](#), paras 3.36-8

⁶³ op cit., [Final Report](#), p31

⁶⁴ op cit., [UK Airspace Policy: A framework for balanced decisions: on the design and use of airspace](#), pp36-7

⁶⁵ *ibid.*, p37

windows. The Commission stated that UK schemes were often less generous than those in other countries, though this could be at least in part due to the fact that central or local government contributions in many other countries were greater (where their airports are often state-owned).⁶⁶ Responding to the paper the AEF said that existing approaches to the monetisation of noise impacts, through differential landing charges or the limited noise compensation schemes available at some airports, “fall a long way short of anything we would consider to be an effective, evidence-based approach to either noise abatement or compensation for noise damage” and recommended alternatives.⁶⁷

4.1 Heathrow

In spring 2014 Heathrow announced a new compensation package for people who would be most disrupted by the future expansion of the airport, which involve payments of 25 per cent above market value for properties subject to compulsory purchase, stamp duty and legal fees; and a further £550 million fund for noise insulation and property compensation.⁶⁸

In February 2015 it followed this with a new scheme to offer insulation to homes within the 55db Lden noise contour; residents would be eligible regardless of whether they experienced noise under existing flight paths or would be newly affected by noise from a new runway. Homes in the designated zone closest to the airport with higher levels of noise would have the full costs of their noise insulation covered by the airport. In addition, up to £3,000 in noise insulation would be offered to homes further away from the airport. The airport estimated the costs of the scheme somewhere in the region of £700 million.⁶⁹

In February 2017 the Government published its draft National Policy Statement (NPS) for airports in the South East of England. This set out its support for the development of an ongoing Community Compensation Fund at an expanded Heathrow. This stated that “Heathrow Airport must fulfil its statutory obligations on compensation” and indicated its support for a noise levy at Heathrow of 50 pence per passenger, which could raise around £50 million per annum.⁷⁰

⁶⁶ op cit., [Discussion Paper 05: Aviation Noise](#), para 5.42

⁶⁷ op cit., [Evidence to the Airports Commission: Comments on Discussion Paper 05: Aviation Noise](#), p10

⁶⁸ HAHL press notice, [“Heathrow proposes higher compensation for people most affected by a new runway”](#), 10 May 2014

⁶⁹ HAHL press notice, [“Heathrow responds to calls for world - class noise insulation scheme”](#), 2 February 2015

⁷⁰ DfT, [Consultation on Draft Airports National Policy Statement: new runway capacity and infrastructure at airports in the south-east of England](#), 2 February 2017, pp33-4

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