Aviation: noise pollution

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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.

This note sets out the general scale of the problem in terms of noise impacts not only from aircraft but from airport operations more generally and explains how this is measured and mapped. It then summarises a number of measures that can be used to reduce aviation noise. These are largely focused on the tackling the problem 'at source', i.e. through quieter aircraft design, and by discouraging the use of noisier aircraft through international standards and operational changes and incentives.

The note also outlines the position of the Coalition Government in this regard and sets out the views of the independent Airports Commission, tasked with looking into the future of UK airport capacity. The Commission published a discussion paper on aviation noise in July 2013 and an interim report, in which it recommended that the Government set up an Independent Aviation Noise Authority, in December 2013. The final report is expected sometime in 2015.

This note does not look at the night flights regime at Heathrow and Gatwick, wherein the number of flights are limited during the hours of darkness: this is explained further in SN1252. Information on other aviation issues can be found on the Aviation Topical Page of the Parliament website.

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1 The scale of the problem

1.1 Extent and severity of impacts

In 2001 the then Department for Environment, Transport and the Regions commissioned researched into people's attitude to aircraft noise, how this was connected to preferred measures of sound and to put a monetary value on the annoyance due to this noise. The report, *Attitudes to Noise from Aviation Sources in England* (ANASE), was published in 2007.[1] This was the first major study of its kind since the early 1980s. It 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 data, the focus on 'the onset of significant annoyance' at 57 LAeq 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".[2] The Government addressed this in its March 2013 *Aviation Policy Framework*:

> Although there is some evidence that people's sensitivity to aircraft noise appears to have increased in recent years, there are still large uncertainties around the precise change in relationship between annoyance and the exposure to aircraft noise. There is evidence that there are people who consider themselves annoyed by aircraft noise

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1 John Bates Services etc. for the DfT, *ANASE: Attitudes to Noise from Aviation Sources in England*, October 2007

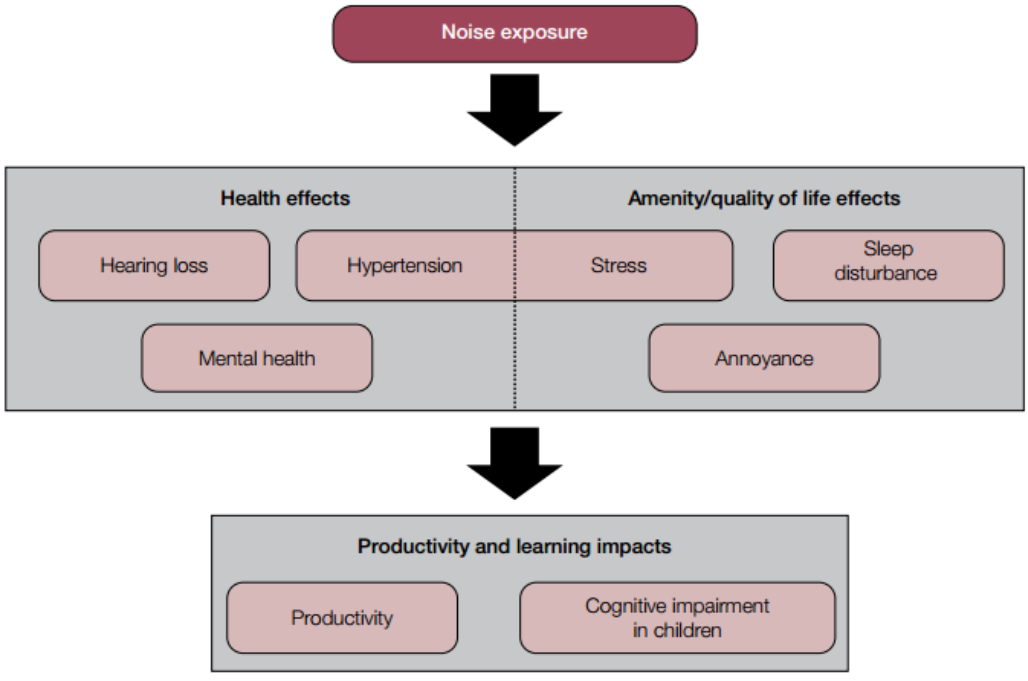
2 Ian Flindell & Associates and MVA Consultancy for 2M Group, *Understanding UK Community Annoyance with Aircraft Noise: ANASE Update Study*, September 2013, pi

> who live some distance from an airport in locations where aircraft are at relatively high altitudes. Conversely, some people living closer to an airport seem to be tolerant of such noise […]
>
> Average noise exposure contours are a well-established measure of annoyance and are important to show historic trends in total noise around airports. However, the Government recognises that people do not experience noise in an averaged manner and that the value of the LAeq indicator does not necessarily reflect all aspects of the perception of aircraft noise. For this reason we recommend that average noise contours should not be the only measure used when airports seek to explain how locations under light paths are affected by aircraft noise. Instead the Government encourages airport operators to use alternative measures which better reflect how aircraft noise is experienced in different localities […].[3]

The Airports Commission's July 2013 aviation noise discussion paper 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.[4]

The Commission categorised the effects of noise by considering them in three groups: health effects, amenity effects and productivity and learning effects.[5]



Source: Airports Commission adapted using WHO (2011) and Moorhouse (2009)

In terms of **health effects** from aviation noise, the Commission stated that the link between noise and hypertension is 'fairly well' established and that the 2008 European HYENA study,

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3 DfT, *Aviation Policy Framework*, Cm 8584, March 2013, para 3.14 & 3.19
4 Airports Commission, *Discussion Paper 05: Aviation Noise*, July 2013, para 2.6
5 ibid., fig 2.2., p10

which focused on a number of major European airports, found that night time aircraft noise was associated with increased hypertension and that aircraft noise events are associated with an elevation of blood pressure.[6] In January 2013 the CAA published a literature review on aircraft noise, sleep disturbance and health impacts. It concluded that findings were "not conclusive and are often contradictory, highlighting the practical difficulties in designing studies of this nature".[7] Recent EU research conducted around six European airports found that exposure to aircraft noise at night for more than 20 years could increase the risk of heart disease and stroke.[8] A further study published by the British Medical Journal looking at the health of people living in the vicinity of Heathrow found those with the highest exposure were 10 to 20 per cent more likely to be admitted to hospital for stroke, coronary heart disease and cardiovascular disease. There was also an increased risk of death from those diseases. A linked study of the health of more than six million Americans over the age of 65 living around 89 US airports found that, on average, their risk went up 3.5 per cent for every extra 10 decibels of noise.[9]

On **amenity and quality of life** the Commission stated that annoyance is the most commonly used outcome to evaluate the effect of noise on communities and cited ANASE and subsequent studies as showing that "the proportion of people being 'highly annoyed' at a particular exposure has increased". In terms of sleep disturbance it said that this is one of the impacts most commonly described by those who live with high levels of noise exposure, and one that "can a have a substantial impact upon quality of life". However, the Commission stated that it is less clear to what extent and at what level noise can cause harmful loss of sleep, and equally whether lesser reactions to noise, which do not involve awakening, can affect general well-being in similar ways.[10]

Finally, on **productivity and learning effects** the Commission stated that the European RANCH study found that road traffic students suffered impaired reading comprehension and recognition memory from aircraft noise, likely because of the 'transient nature' of aircraft movements, with short term peaks in noise affecting concentration and providing distraction.[11]

Data from the CAA shows 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.[12] Indeed, the numbers affected at Heathrow is an ongoing topic of debate and concern, particularly in light of proposals to expand the airport. In 2006 there was a separate survey of those living under the Heathrow flight path, commissioned from ICM by the then Mayor of London Ken Livingstone. They survey found that of the 1,001 residents surveyed[13] 40 per cent were bothered by aircraft noise during the day and 44 per cent felt it had got worse over the previous ten years.[14]

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6 ibid., para 2.25

7 CAA, *Aircraft Noise, Sleep Disturbance and Health Effects: A Review*, ERCD Report 1208, January 2013, p65

8 "Aircraft noise at night may lead to long-term health impacts", *Science for Environment Policy*, issue 363, 27 February 2014

9 "Aircraft noise may increase risk of heart disease, say researchers", *The Guardian*, 8 October 2013

10 op cit., *Discussion Paper 05: Aviation Noise*, paras 2.13 & 2.17

11 ibid., para 2.31

12 CAA, *CAA Insight Note: Aviation Policy For The Environment*, p22 [accessed 4 June 2014]

13 from eight London boroughs - Richmond, Hounslow, Hillingdon, Hammersmith & Fulham, Wandsworth, Lambeth, Kensington & Chelsea and Westminster

14 Mayor of London press notice, "Londoners need peace from aircraft noise, according to poll", 20 March 2006

More recently, Heathrow and the Mayor of London have disagreed as to the numbers of those affected by proposed expansion. Mayor Johnson's submission to the Airports Commission (more of which, see below) stated that 1,097,200 people live within a 55 decibel noise contour calculated to encompass a three-runway Heathrow; this would be higher if future population growth is factored in). In contrast, he argued that a little over 30,000 would be affected by a four runway airport in the Thames Estuary. Heathrow claims that the number of people impacted by noise would fall by 30 per cent if it is allowed to build a third runway northwest of the existing airport (from 249,000 to 165,000 people based on a 57-decibel contour).[15]

In its December 2013 interim report the independent Airports Commission recommended the creation of an **Independent Aviation Noise Authority** to "provide expert and impartial advice about the noise impacts of aviation and to facilitate the delivery of future improvements to airspace operations".[16] The Commission made this recommendation on the back of a lack of trust between the aviation industry and local communities, in particular: "mistrust amongst local communities in relation to the fairness and transparency of current arrangements for reporting aircraft noise, and for the recording and handling of complaints from members of the public".[17] The Commission noted that such an authority could be well-placed to undertake 'consistent and regular surveying of attitudes to aviation noise', including its impacts on health and well-being.[18]

1.2 Noise measurement and mapping

In June 2002, the EU adopted Directive 2002/49/EC relating to the assessment and management of environmental noise.[19] The Directive requires that Member States use a harmonised system of noise indicators and computational measures when assessing noise levels and that they use common protocols for noise mapping. Noise maps should be produced and accompanied by local action plans. The Directive was implemented in England by the *Environmental Noise (England) Regulations 2006* (SI 2006/2238),[20] which came into force on 1 October 2006.

Airports covered by the Directive must prepare noise action plans, based on previously generated noise maps (contours), and submit these for formal adoption by the Government.[21] Noise action plans should be available on the websites of the major airports.[22] 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.[23]

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

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15 "Heathrow noise 'to affect a million'", *The Times*, 19 May 2014

16 Airports Commission, *Airports Commission: Interim Report*, December 2013, p136

17 ibid., para 5.70

18 ibid., para 5.76

19 more 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

20 this is a devolved issue, so there will be separate regulations for Wales, Scotland and Northern Ireland

21 DfT, *Night Flying Restrictions at Heathrow, Gatwick and Stansted Stage 1 Consultation*, January 2013, p14

22 see, e.g. London City, Manchester, Birmingham, and Edinburgh

23 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

the airport and the actual track each aircraft makes.[24] 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. In May 2007 Heathrow Airport Holdings Limited (HAHL, then BAA) launched interactive aircraft noise websites for its airports. It allows local residents to track aircraft arriving and departing from the airport, and displays their height.[25]

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 were published in September 2013.[26]

In February 2010 a new ISO standard for reducing noise in the neighbourhood of airports was published. It set out "requirements for reliable measurement of aircraft sound. It describes a threshold system of sound event recognition in a complex sound environment with multiple aircraft and other sound sources".[27]

2 Measures for tackling noise pollution

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). For this reason information on the control and reduction of aircraft noise at airports is included in section 2.2 rather than section 2.1, below. Section 2.1 deals specifically with reducing the noise impact at and around airports in and of themselves.

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".[28]

2.1 Airports

Curtailing expansion

Arguably the easiest way to reduce noise impacts from aviation is to close or at least restrict the growth of airports. 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

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[24] more technical information about the system is available in: CAA, *Validating the CAA aircraft noise model with noise measurements*, 2001

[25] BAA press notice, "BAA launches noise websites", 25 May 2007; live noise tracking for Heathrow and Stansted is available on the WebTrak site; Gatwick is available separately [accessed 3 June 2014]

[26] DfT, *Noise exposure contours around London airports*, 24 September 2013

[27] ISO press notice, "New ISO standard for reducing noise in the neighborhood of airports", 26 February 2010

[28] op cit., *Aviation Policy Framework*, para 3.12

centres of urban population. This is 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, argues in its Noise Action Plan that "aircraft innovations and engine technology, operational advancements and better land-use planning offer the potential to reduce UK aviation noise output by 2050 compared to 2010, despite a forecast growth in flights".[29] This would leave room for considerable expansion of the UK's aviation capacity. On the other hand, the Aviation Environment Federation, an NGO supported by environmental groups, argued that expansion schemes should meet stringent noise criteria in order to be approved.[30]

Operations

In its December 2013 interim report the Airports Commission looked at a number of suggestions for reducing aviation noise, including:

- concentrating aircraft along the smallest possible number of specified routes, avoiding densely populated areas as far as possible, using new aircraft navigational technology such as performance based navigation;
- concentrating noise through the creation of multiple arrival and departure routes to performance based navigation standard to avoid the creation of 'noise ghettos'; and
- the development of a 'noise envelope' to create a balance between aviation growth and noise reduction with the objective of incentivising airlines to introduce quieter aircraft whilst giving local communities more certainty about the levels of noise they may expect in the future. This could be achieved via a movement cap noise contour-based restrictions or noise level caps.[31]

It also looked at compensation (see below).

For technical and safety reasons, aircraft usually take-off and land into the wind. At London Heathrow, for example, because the prevailing winds are from the south west, the airport must operate in a westerly direction most of the time.[32] At the UK's major airports the Secretary of State may prescribe 'Noise Preferential Routes' (NPRs) to minimise noise disturbance:

> For most major airports in the UK, aircraft following a departure route after take-off are required to fly within 1.5 km of the centre of the route until they reach a defined altitude. This results in a swathe of airspace 3 km wide within which aircraft may be seen and heard under normal circumstances. This swathe is called the 'noise preferential route' (NPR). The altitude below which aircraft must stay within the NPR is either 3000ft or 4000ft, depending on the route in question.[33]

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29 Sustainable Aviation, "Experts demonstrate that UK aviation noise will not increase with near doubling of flights", 23 April 2013

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

31 op cit., *Airports Commission: Interim Report*, paras 5.116-118

32 more information on 'westerly preference', the 'Cranford Agreement' at Heathrow and how the Labour Government had planned to change this before the 2010 election, can be found in section I.D.3.a of HC Library Research Paper RP 09/11, pp23-24

33 NATS, *Terminal Control North: Airspace Change Proposal – consultation document*, Part D, para 8.1

These are intended to ensure that departing aircraft avoid centres of population as far as possible although the routes cannot be followed rigidly for numerous reasons, including weather patterns, and types of navigation equipment. It is the responsibility of the airport operators to ensure the NPRs are used but there are no statutory powers to penalise poor track keeping.

There have been operational changes at both Heathrow and Gatwick in recent years, designed to test the efficacy of different departure and landing routes, runway alternation and respite periods. While such changes can relieve noise for some it can have the opposite effect on others.[34] In October 2013 NATS published a consultation on the wider reform of London airspace. It stated that the net effect of the proposals would be less noise: "aircraft will climb higher, more quickly on departure and stay higher for longer on arrival. However, flight paths will change – and this may mean some areas will be overflown more than today, others less, and some will not notice any significant change".[35]

Noise and other impacts from ground transportation at and to and from airports can also be substantial. Modal switch to less intrusive forms of ground transportation (e.g. switching from road to rail) has been encouraged by successive governments. The Airports Commission encourages better rail connections at all major airports.[36]

Mitigation and 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.[37]

In its December 2013 interim report the Airports Commission said that the proposed Independent Aviation Noise Authority (see section 1,1, above) should include responsibilities for advising the Secretary of State for Transport and the CAA in respect of appropriate noise compensation schemes.[38]

In its July 2013 discussion paper the 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 have typically contributed half of the costs of new double-glazed 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 are greater (where their airports are often state-owned). In France for example there is a specific 'noise tax' that part funds compensation payments.[39] Responding to the paper the AEF said that existing approaches to

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34 see, e.g. at Gatwick: Gatwick Airport, *ADNID departure trial* [accessed 5 June 2014] and "Centuries of calm ruined as Gatwick planes take left turn", *The Sunday Times*, 9 March 2014; and for Heathrow see: *Heathrow Airport, Early Morning Arrivals Trial*, August 2013; and Airportwatch/HACAN, *The Trials of Heathrow – "Operational Freedoms", "Respite" – layman's guide to what's going on and what it means*, February 2013

35 NATS, *London Airspace Consultation*, October 2013, executive summary; more information on the consultation website

36 op cit., *Airports Commission: Interim Report*, paras 5.86-5.90

37 op cit., *Aviation Policy Framework*, paras 3.36-8

38 op cit., *Airports Commission: Interim Report*, para 5.122

39 op cit., *Discussion Paper 05: Aviation Noise*, para 5.42

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.[40]

In spring 2014 Heathrow announced a new compensation package for people who would be most disrupted by the 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.[41]

2.2 Aircraft

Design

One of the main ways of reducing aircraft noise is by limiting that noise at source.[42] 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 certificating 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*.[43] 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.[44]

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40 op cit., *Evidence to the Airports Commission: Comments on Discussion Paper 05: Aviation Noise*, p10

41 HAHL press notice, "Heathrow proposes higher compensation for people most affected by a new runway", 10 May 2014

42 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

43 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)

44 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

According to the CAA today's aircraft are typically 75 per cent quieter than jet aircraft used in the 1960s.[45] As indicated above, aircraft manufactured since 2006 must meet the requirements of Chapter 4, which has been set at 10 decibels below that of Chapter 3. Campaigners have argued that this is 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.[46]

Chapter 5 will be introduced from 2017, this is 7dB below the Chapter 4 standard. EASA intends to incorporate it into EU law in 2015.[47] However, these new standards only apply to 'future' aircraft. While Sustainable Aviation sees this as, nevertheless, leading to a significant improvement in noise pollution over the next 35 years, the AEF warns that older non-compliant aircraft, may not be retired so the benefits realised from the phase out of Chapter 2 aircraft (see below) may not be realised on the same scale in the future.[48]

When the Chapter 3 standard was introduced in 2002, by European Directive 92/14/EEC, 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, among which exemptions were provided to operators in developing nations, as agreed with ICAO, 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 EASA Regulation'). 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 EASA 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 EASA Regulation must comply instead with the environmental standards provided for in that Regulation and in Regulation 1702/2003/EC (the relevant implementing rules).[49]

A Noise 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 as provided by certification authorities.

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45 CAA, *Aircraft Noise and Emissions* (Environmental Information Sheet no. 10) [accessed 5 June 2014]; for a neat pictorial representation see fig 2.6, p39 of op cit., *Airports Commission: Interim Report*

46 AEF/Green Skies, *Aircraft Noise* [accessed 4 June 2014]

47 ICAO press notice, "ICAO Environmental Protection Committee Delivers Progress on New Aircraft CO2 and Noise Standards", 14 February 2013; and EASA press notice, "EASA welcomes ICAO agreement on new aircraft CO2 and noise standards", 22 February 2013

48 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

49 for further information visit the EASA website [accessed 4 June 2014]

Controls and restrictions

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.

Instead, aircraft are covered by the *Civil Aviation Act 1982*, as amended, which gives the Secretary of State for Transport wide powers to apply operational controls and restrictions. 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. Within controlled airspace, aircraft need air traffic control clearance, which gives the Civil Aviation Authority (CAA) some scope for exercising controls. However, such controls are usually concerned only with safety, and in any case controlled airspace only extends around airports and along air routes, which are usually 10,000 to 12,000 feet up. 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.

The Department for Transport is responsible for policy generally on the control of civil aircraft noise in the United Kingdom under section 78 of the 1982 Act; and specifically for noise control (other than ground running) at airports designated for this purpose under section 80 of the same Act. Airports so designated are London Heathrow, Gatwick and Stansted.[50] At other airports the responsibility for noise lies with individual owners or operators. 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.[51] 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.[52]

The last significant change to UK legislation was in 2006, which followed years of consultation and a White Paper in 2003.[53] The *Civil Aviation Act 2006* enhanced and clarified the powers of the Secretary of State when regulating environmental controls at designated aerodromes (i.e. Heathrow, Gatwick and Stansted) and of aerodrome authorities at all other

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50 noise limits were first set at Heathrow in 1959 and were applied to Gatwick in 1968 and Stansted in 1993

51 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

52 op cit., *Aviation Policy Framework*, para 3.11

53 DETR, *Control of noise from civil aircraft*, July 2000; DETR, *The Future of Aviation: The Government's Consultation Document on Air Transport Policy*, December 2000; DfT, *The Future of Air Transport*, Cm 6046, December 2003; and DfT, *Control of Noise from Civil Aircraft: The Government's Conclusions*, December 2003

(non-designated) sites.[54] One of the changes proposed in the original Bill – to remove the duty of the Secretary of State to set a 'movements limit' in addition to a noise quota at airports – was removed due to significant opposition from MPs. They argued that removing the movements limit could lead to an increased number of flights both at night and during the day. This was a particular concern to MPs with constituencies near large airports such as Heathrow.[55] The Conservatives, then in opposition, succeeded in removing the offending clause in the House of Lords. The Labour Government eventually conceded the point and removed it from what became the final Act.[56]

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 does not require airports to take action to counter noise pollution, but it does set out a process that must be followed where any action is being 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 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 United Kingdom 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).[57] 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.

In December 2011 the European Commission launched the Better Airports Package which includes a proposal for an EU Regulation on noise which would repeal the current Directive; allow airport authorities to phase out more easily the very noisiest aircraft; give the Commission a scrutiny role, ex ante, on new noise measures; and improve noise mapping and administrative support to ensure the efficient use of the European airspace.[58] The Regulation has passed all its legislative stages and is awaiting publication in the Official Journal of the EU. IT will come into force later in 2014.[59]

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54 for full details, including background, see: HC Library Research Paper RP 05/51

55 e.g. Justine Greening: HC Deb 27 Jun 2005, c1084

56 HL Deb 8 March 2006, cc781; HL Deb 28 June 2006, c1217; and: *Letter from Gillian Merron MP to Gwyneth Dunwoody MP, Chris Grayling MP and Alistair Carmichael MP*, 20 July 2006

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

58 EC memo, "MEPs to vote on "Better Airports" Package", 6 December 2012

59 it was debated in the House of Commons in March 2012; see: ESC A Deb 19 March 2012

Charges

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. The second part of section 38 empowers the Secretary of State, by Order, to direct specified aerodromes in this regard. The 2006 Act made it clear that 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).

Sections 78, 78A and 78B of the 1982 Act, as amended by the 2006 Act, 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.[60] 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 (Heathrow, Gatwick and Stansted) 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.[61] 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.[62]

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60 CAA press notice, "CAA calls on airports to use landing charges to encourage cleaner, quieter flights", 15 October 2013

61 CAA, *Environmental charging – Review of impact of noise and NOx landing charges*, CAP 1119, October 2013, pp50 & 53

62 CAA press notice, "CAA urges UK aviation to improve noise performance and do more to engage communities", 29 May 2014