

Airports Commission: Paper 05 “Aviation Noise Discussion Paper ”

Comments from the Royal Aeronautical Society

Prepared by the “Greener by Design” group

Greener by Design

Greener by Design was formed in 1999 by the Royal Aeronautical Society and bodies representing airports, UK airlines and the aerospace industry, bringing together experts from every part of the aviation industry with Government bodies and research institutions. The initiative is sponsored by the Department for Business, Innovation and Skills and is supported by other bodies in the aviation sector but it is non-aligned, researching and advising independently of any interest.

General comments

Overall the paper is a comprehensive analysis of the issues, but tends to the view that noise is something that can be quantified rather than that it is a subjective issue, on which individual views vary very widely. There is a need to understand better the underlying nature of annoyance.

While the paper does mention climate change, it does not directly suggest that noise should be evaluated alongside climate impact although it does state (Box p42) “Airbus A380 (which was designed to meet a specific quota count in the London Airports’ Night Flying Restrictions scheme), was the first to trade off lower noise for (very slightly) increased fuel burn, compared with a design solely optimized for fuel burn. The paper does point to the role of policy makers in handling trade-offs. This “local” v “global” is a vital consideration in which government has a key role to play.

AC *Guidance Document 02, Long Term Capacity Options: Sift Criteria* includes “People”. Under this heading, the box (p.15) raises the question, “What are the likely social impacts of the proposal, including impacts around the proposed location for new capacity and around any other airports which would be affected, for example on: employment, housing and local communities, vulnerable groups, **quality of life and health**?” The Noise paper appears to downplay the impacts on quality of life and health as set out by the CAA in its supporting paper for the APF consultation. Interdependencies could affect local air quality.

There is no mention of measures linked to property purchase such as “easements” or indeed of any research into resident attitudes where such measures are in place.

The suggestion is made (c 3.20) to look at steeper approaches cf Frankfurt but the paper also points to problems arising from improved aerodynamics. Steeper approaches must be thoroughly reviewed. For example, with the reduction in approach drag due to modern higher span wings, the maximum descent angle reduces without deploying airbrakes etc, which can cause more aerodynamic noise than that “saved”.

A number of metrics can be used to measure relative noise efficiency. It is probable that what is more important to communities is the absolute amount of noise reaching the ground at relevant points.

UK policy should evolve in harmony with, or at least taking due notice of, developments in the USA and the EU. Consideration of topics such as annoyance should take into account practice and research in the USA and Europe.

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Comments on specific questions (Greener by Design comments in italics)

What is the most appropriate methodology to assess and compare different airport noise footprints? For example:

What metrics or assessment methods would an appropriate 'scorecard' be based on?

A suite of metrics - for operational use/understanding by local communities - would be welcome but a single metric should be used by the AC to determine the suitability of an additional runway at airport A,B,C... for comparative purposes. In other words, the metrics for planning need not necessarily be the same as those to measure implementation and use.

A range of metrics is available, including, for example, those used in Sydney. It is most important that key metrics can be understood by the public. Consultative committees could play a role in selecting appropriate metrics, if not deciding on levels within them.

Number of movements above a certain level is certainly useful. PEI AIE would also be useful in particular at larger airports.

A measure of noise per passenger moved might be useful to show "noise efficiency"? However this could be complicated if it reflected the passenger miles flown, the size of the aircraft and number of passengers would need to be incorporated into the metric – this would need considerable thought and development.

LA_{eq 16hr} has become the de facto standard for describing aircraft operational noise impacts at airports in the UK for a number of years. Since this facilitates historical comparisons between UK airports it should be retained for benchmarking purposes in any future suite of metrics. In the future, it might be possible to use the EU END's L_{DEN}, though this is not useful in describing periods where there are a limited number of movements (e.g. night-time). However, "average noise" is not a meaningful concept for local communities and there are increasing indications that annoyance can be related to the number of overflights even if created by quiet(er) aircraft. Accordingly, any metrics used should include a reference to the number of flights as well as the noise created. A version of the old NNI (Noise & Number Index), re-weighted for the number of flights, could serve the purpose.

To what extent is it appropriate to use multiple metrics, and would there be any issues of contradiction if this were to occur?

It is important to consider the possibility of more than one single metric (see above). However, care would have to be taken to ensure that a wide range of metrics is not developed that serves only to increase confusion rather than being more instructive. The Sydney experience may be a useful reference.

Are there additional relevant metrics to those discussed in Chapter 3 which the Commission should be aware of?

ICAO provides guidance on commonly used noise metrics (as does the CAA), though no firm advice is given on which one to use. The concept of the number of events (flights) above a certain threshold level, might be a good one to develop? For instance, if the threshold were set at 10 dB above the ambient noise level (L₉₀), this would give an indication when aircraft noise would be noticeable. However this would need connection to social surveys to determine annoyance thresholds, which is not easy.

What baseline should any noise assessment be based on? Should an assessment be based on absolute noise levels, or on changes relative to the existing noise environment?

Depending on the purpose of the noise assessment both may be relevant.

How should we characterize a noise environment currently unaffected by aircraft noise?

Consideration could be given to use of BS 4142 - Rating Industrial Noise affecting mixed residential and industrial areas" (specifies the L₉₀ metric to define background noise level).

Is monetizing noise impacts and effects a sensible approach? If so, which monetization methods described here hold the most credibility, or are most pertinent to noise and its various effects?

We do not have any expertise in monetization but in principle it sounds like a very sensible approach and one through which interdependencies, for example with climate impact, could be examined.

Are there any specific thresholds that significantly alter the nature of any noise assessment, e.g. a level or intermittency of noise beyond which the impact or effect significantly changes in nature?

This is related to the metric used. The "Schultz-curve" (see p31 of the report), suggests that around 65 dBA L_{DN} , there is a threshold beyond which the annoyance levels rise sharply, however there is still considerable scatter in the results pointing out the issues with characterizing individuals reaction to noise. The 57 $LA_{eq\ 16hr}$ metric was based on similar reasoning. See also the comment on social surveys above.

To what extent does introducing noise at a previously unaffected area represent more or less of an impact than increasing noise in already affected areas?

This would depend on the individual circumstances: nature, timing etc of changes.

To what extent is the use of a noise envelope approach appropriate, and which metrics could be used effectively in this regard?

A noise envelope is effective but should not be rigid – flexibility would allow changes in future operational measures without breaching a flexible envelope.

To what extent should noise concentration and noise dispersal be used in the UK? Where and how could these techniques be deployed most effectively?

GBD would like to see some trials of more dispersed routes (avoiding population concentrations where possible) but we also note the growing importance of approach noise.

What constitutes best practice for noise compensation schemes abroad. Whilst GBD has no specific expertise, it does appear that other EU Countries compensation schemes are more generous and more appropriate than in the UK. We support noise compensation schemes in principle and would welcome a full review under Govt. guidance