

Heathrow Community Noise Forum

Airspace Design Principles

Minimising significant adverse impacts from noise

30 January 2019

Heathrow Community Noise Group (CNG) presentation – HCNF 30 01 19 (SPC and DH)

Air Navigation Guidance 2017

ANG 2017 sets out the government's key environmental objectives

These are to;

- Limit and where possible reduce the number of people in the UK significantly affected by adverse impacts from aircraft noise
- Ensure aviation sector makes a significant and cost effective contribution towards reducing global emissions
- Minimise local air quality emissions and in particular ensure that the UK complies with its international obligations on air quality

This presentation focusses on the noise objective

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Noise adverse impacts

- ANG states the CAA, in considering airspace changes, should interpret the noise objective to mean total adverse impacts on people should be limited and where possible reduced, rather than the absolute number of people in any particular noise contour
- ANG confirms adverse impacts are considered to be those related to health and quality of life
- ANG also acknowledges significant adverse impacts can be expected to grow as noise increases above LOEL; 51dBLAeq(day); 45 dBLAeq(night)]. This must mean higher noise levels over communities should be avoided as far as possible
- WHO guidance strongly recommends far lower levels of noise from aviation than the CAA's SoNA or what is currently applied by the DfT
- The WHO day threshold is 45 dBLden, roughly equivalent to circa 43 dBLAeq – a vast difference to 51 or 54 dBLAeq considering 3dB is equivalent to roughly doubling the number of noise events

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DfT commissioned research on webTAG monetised costs of concentration and splitting routes

- The DfT commissioned a report from CAA ERCD dated September 2018
- It compared a single departure route with average dispersion (summer 2017) with a single replicated PBN route and also with the route split into two PBN routes 3 km apart after 6km from start of roll
- The traffic mix assumed a 'busy' 150 ATMs per 16 hour day
- The analysis assumed the departure route was over a homogeneous and typically dense urban environment
- The assessment was based on the DfT's webTAG model. It is understood this was established by DEFRA in 2014.

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Key findings

The report used webTAG to monetise the 10 year NPV for the three scenarios (2010 prices);

- Baseline v single PBN route produced £28.3 million additional health costs
- Baseline v twin PBN respite routes produced £643.3 million less health costs
- Single PBN v twin PBN respite routes produced £642.3 million less health costs

The report also confirms that as altitude increases the effects of concentration in terms of health costs diminish

Context and comparisons

- The traffic mix in the DfT study assumed a 'busy' 150 ATMs per 16 hour day. This is equivalent to an average of circa 9 – 10 flights an hour.
- According to Anderson DET took 213 ATMs a day on easterlies in 2015/16, an average of circa 12 flights an hour
- Heathrow's Airspace Consultation envisages much higher numbers of flights in future. For example route D3 anticipates three PBN routes with up to 17 flights an hour (which could each be equivalent to 136 - 272 per 16 hour day - dependent how the respite rules are set). In practice for many people living under the middle PBN route they will also be able to hear each of the peripheral routes (i.e. some people could be hearing the equivalent of 25 -34 flights an hour or more (which in practice means incessant noise)
- This analysis should be subject to refinement and confirmation once more is known about respite patterns but indicates the health cost implications of extreme concentration and intensification under expansion could be huge

What conclusions should be drawn?

- The report demonstrates that splitting a single route into two – in other words noise sharing - delivers huge health benefits
- PBN leads to additional health impacts compared to traditional navigation technology. This applies even at 2017 average dispersion levels, which were significantly more concentrated than in 2013, the NPS base year
- The identified health impact cost in the DfT/CAA report is for one route only – there are multiple arrival and departure routes around Heathrow
- Making aircraft fly higher also significantly reduces the negative impacts of aviation in webTAG terms
- Minimising significant adverse health and wellbeing impacts is mandatory under the Government's directions to the CAA in Air Navigation Guidance 2017
- Heathrow's stated noise principles prioritise minimising newly affected and minimising total populations. This inevitably results in concentration on existing communities and therefore is not in accordance with adopted Government policy

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What should be done?

- The DfT should review the CAA's decision to approve Heathrow's Gateway 1 Airspace Change Application as its flight path design priorities lead directly to concentration and do not reflect Government policy and on a human level cause demonstrably more damage to people than noise sharing
- The proposed noise envelopes in the current application require comprehensive revision to ensure planes are flying at the highest possible levels over communities around Heathrow. This requirement must be prioritised over airlines' commercial concerns regarding engine wear. Heathrow should revise its noise envelopes accordingly
- If it is to be used as a decision making tool for airspace changes, the webTAG model requires comprehensive updating in the light of the latest WHO recommendations, in terms of the suite of metrics to be applied and the levels of values attributable to impacts in monetisation assessments
- Given the scale of potential impact on human life, first fully independent health and wellbeing research is required to identify and validate first what levels of respite are required to be acceptable and, secondly, how extreme concentration involving PBN can ever be acceptable over the densely populated residential areas around Heathrow (at least without substantial rotation of route). Despite many examples of adverse international experience being highlighted almost a year ago no successful precedents have been identified on a worldwide basis so far

Key questions

- How can communities be assured the DfT will ensure the key environmental objective to reduce/limit/mitigate aviation's significant adverse health impacts will be complied with throughout the Airspace Change Process?
- On what basis has Heathrow set the proposed heights in the proposed design envelopes? Is the DfT satisfied these are at the maximum possible having regard to the very serious health impacts? How can communities be confident and the DfT ensure Heathrow will prioritise minimising health impacts over commercial considerations (such as saving engine wear, minimising fuel cost)?
- When will the review of webTAG in the light of WHO guidance be completed? How will this be validated on a fully impartial basis; what peer review arrangements will be put in place?
- When will research be available on (a) the levels of respite (noise reduction and period) necessary to create effective relief, (b) whether technically these conditions can be achieved within Heathrow's congested airspace and (c) the impact of PBN over densely populated areas such as Heathrow's hinterland?

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