

Issues arising from Heathrow's Airspace Modernisation July and November workshops

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The purpose of this presentation is to highlight key community concerns arising from Heathrow's July and November Airspace Modernisation (AM) workshops

This presentation will cover

- Accountability and governance
- ANG 17 and potential conflicts with Heathrow's DPs
- The absence of a credible evidence base on health and annoyance impacts
- The importance of appropriate metrics and thresholds in flight path option appraisal
- Adverse outcomes of PBN and the 'change effect'
- Respite, increased flight heights, flight management strategies and avoidance of impacting communities by multiple routes
- Validation and verification of Heathrow's assessment tools

Heathrow's role as ACP sponsor and consequent governance issues

Heathrow's huge noise footprint creates the context for its Airspace Change Proposals (ACP)

- The airport is uniquely situated in the middle of a densely populated area
- The airport's noise impacts already dwarf all other UK and European airports
- Around 5 million people are already adversely impacted by aviation noise according to WHO standards

Heathrow, as maker of its ACP, must be accountable and bear responsibility for its actions and decisions relating to flight path changes, which will be judged on their outcomes

- It is not sustainable for Heathrow to rely on metrics, processes and policies which it knows to be flawed or wrong
- After the 2014 PBN trials, and from many HCNF presentations on the international experience of introducing PBN, the airport is fully aware of the potential dangers and damage from radical new flight paths and extreme concentration

Heathrow should answer on its own behalf, all the challenges and questions from communities made after the AM workshops, and not deflect these to standardised guidance or procedures from the DfT, the CAA or ACOG

- If necessary, the airport should be prepared to take up community concerns with the above organisations
- As flight path decisions will have far reaching implications for communities around Heathrow, it should also arrange a meeting between community representatives and key decision makers within these organisations

The status of ANG 17 and potential conflicts within Heathrow's DPs

ANG 17 requires

- that minimisation of significant adverse noise impact is the sole consideration (save safety) up to 4000ft and remains the priority up to 7000ft unless a convincing case can be made for trade off with carbon emissions
- adverse impacts are to be assessed by reference to health and associated annoyance criteria

ANG 17 makes it clear that any evaluation is to have regard to significant adverse impacts, and not by a simplistic approach based on numbers within a noise contour

The second (non mandatory) tier of Heathrow's DPs includes criteria which in some cases conflict with ANG 17 as they are based on noise exposure numbers, not impacts

Heathrow needs to make clear what evidence base and evaluation tools it will be using, and how it will address avoiding and minimising significant adverse impacts arising from its AM programme

The need for credible metrics and thresholds in appraisal of flight path strategies

WHO Environmental Noise Guidance advises

- Day noise of 45 dBLden (equivalent to 43 dBLAeq) causes high annoyance to 10%; significant impacts start earlier
- Night noise impacts begin at 40 dBLAeq

There is no credible justification for not factoring WHO advice into Heathrow's AM evaluation. There is no acceptable alternative local evidence base

- ICCAN found SoNA 14 to be flawed. The DfT accepts this, and it is commissioning a new Noise Attitude Survey and a review of LOAEL (despite significant evidence re impacts SoNA 14 did not look into noise levels below 51 dBLAeq)
- SoNA night was only ever released in draft; its peer reviewers advised it should not be used for UK policy making, and the DfT has commissioned the Aviation Night Noise Effects (ANNE) study

The 2019 ICAO Environmental Symposium concluded that LAeq (long term average) metrics only account for one third of aviation annoyance

- Change is one of the most significant 'non acoustic' factors. AM is all about change. SoNA14 did not look into the effect of change. International research shows the change impact adds 6-9 dBLAeq to the base LAeq levels
- Other recognised non-acoustic factors include numbers of flights, time of day/night, peak noise and trust in authorities

How CAP 1616 compares to WHO guidance

Communities were advised at the workshops that under CAP1616 guidance, consideration of Day noise below 51 dBLAeq and Night noise levels below 45 dBLAeq would have to be excluded from TAG CBA calculations. Arising from reliance on primary metrics based on SoNA 14, the very significant adverse impacts from change and concentration will also be excluded from TAG calculations

Clearly it is inappropriate and irresponsible to undertake an evaluation of Heathrow's ACP on the above basis

- Heathrow knows from its 2014 PBN trials and complaints data that the CAP 1616 assessment framework will not reveal the true impact of flight path redesign. This is potentially highly injurious to public health and quality of life
- Heathrow has said it will consider incorporating analysis based on other metrics; however, it also indicated this evidence will not be taken into account by TAG the CAA's CBA model

This may not be a correct interpretation of CAP1616/2091 which actually sets out **the minimum requirements for noise modelling**)

Given that the DfT accepts SoNA 14 and the day and night LOAELs need review, Heathrow must take these issues up with the DfT, the CAA and ACOG. It should clarify how and at what point up to date and credible noise metrics, together with non-acoustic factors (such as change, concentration, time of day, etc) will be incorporated into the ACP application programme and assessment process

Communities would wish to be formally consulted on and involved in such discussions

Heathrow must identify how known severe adverse outcomes widely associated with PBN can be avoided under its ACP

There is abundant evidence that extreme concentration using PBN navigation technologies creates noise blighted communities, described as 'noise sewers' by a former Chief Executive of the CAA. Key evidence includes;

- Heathrow's 2014 PBN trials
- US experience in rolling out its Metroplex program (including widespread community protest, legal challenge and high-profile political challenge)

Avoidance of similar outcomes must be the main priority for Heathrow, given its extremely sensitive location and noise footprint

In 2015 Heathrow commissioned Andersen to report on the impacts of its own PBN trials. Andersen found

- Significant complaint levels, protest and impacts at levels of noise below LOAEL, far from the airport
- That average LAeq metrics could not be used to explain the level of community reaction (so with LAeq metrics the implication being the problem cannot be described or defined)

Given the scale and significance of the changes under consideration it is fundamentally wrong to rely on CAP1616/2091's inadequate 'minimum requirement' evidence base to evaluate the impact of potentially massive changes in the noise environment around Heathrow

Heathrow should insist on sensitivity analysis (reflecting the potential change effects) being included within its ACP

Respite

A critical factor making aviation noise under flight paths close to Heathrow just bearable now is respite. With operational mode and runway alternation most communities in close proximity to the airport, experiencing the highest levels of peak noise, are overflowed one third of the time. There are particular problems further out under arrivals before flight paths are merged and where there are also impacts from City airport, which need special consideration and respite under AM

Heathrow's DPs include not flying multiple routes over the same communities. It will be vital to adhere to this to avoid communities being impacted by both departures and arrivals. This would preclude respite from operational mode and result in severely blighted areas

To achieve 'valued respite' Andersen advised the HCNF that 9dBLA_{max} (single event) acoustic reduction was required. Noise labs based on this were used in public consultations. At the recent AM workshops, for reasons not explained, Andersen have apparently changed their advice and it is now suggested 9dBLA_{eq} acoustic separation is required.

It will be impossible to achieve respite with this level of acoustic reduction anywhere near the airport, due to the averaging nature of LA_{eq} scales. Heathrow must clarify their position – if Andersen have changed their advice, they should explain their reasoning directly to NACF members

Given that maintaining or improving current levels of respite is of critical importance, which under ANG 17 must drive airspace redesign below 7000feet, the opportunities and constraints for respite must be resolved before flight path design and option appraisal is progressed

Increased flight heights and managed dispersion

ACOG guidance places emphasis on reducing noise impacts by flying higher (arrivals and departures). Communities have been calling for this ever since the 2014 PBN trials.

Heathrow should explain how flying higher will be factored into design development, option appraisal and enforced through flight management regulations in future

ACOG publicity material also refers to the possibility of managed dispersion (to avoid creating noise blighted areas). Heathrow should advise what the technical opportunities and constraints are in this respect

How will independent validation and verification be applied to Heathrow's algorithms and assessment tools?

At the November workshop Heathrow's airspace team stated that (under CAA directives), the next stage (2A) would be to model 650,000 theoretical flight paths to be assessed on an individual basis. At this stage, the design team would not be looking at how these might be put together into systems or the creation of meaningful flight path strategies

The purpose of doing this, as well as its mechanics, are not at all clear. Clearly ANG 17 will rule out a great number on environmental grounds, and it will be necessary to create indicative airspace 'systems' to see how these might be put together. In particular, Heathrow's DP to avoid overflying the same communities with multiple routes (particularly arrivals and departures) must act as a key constraint

Heathrow needs to explain the methodologies and processes that will be applied in narrowing down flight path options and in relation to short listing and identifying preferences (for example what traffic level assumptions down each flight path and what sensitivity tests should apply). Given the huge range of considerations, flight path options and possibilities, it is anticipated the use of complex computer processes involving algorithms will be an integral part of the process

To build trust, not only do these processes need to be understood by communities, but also given the complexity of the task and the need to be transparent, these models should be subject to independent validation, verification and audit

Conclusions and Next Steps (1)

Heathrow, as ACP proposer, will be held accountable to its local communities for the impact of its Airspace Modernisation programme. Its AM programme is unlike any other and far more sensitive due to the level of flights it generates and the enormous number of people living within its noise catchment.

Heathrow should respond in full and on its own behalf to the questions raised in this presentation and community submissions. It should not defer in its answers to standard DfT, CAA and ACOG policy, procedures and protocols

There is a clear and evident absence of a credible and independent UK evidence base relating to aviation noise. Given the enormous scale of its operations and noise footprint, Heathrow should confirm how this is to be overcome, in order to avoid disastrous outcomes arising from its flight path redesign (which have been seen elsewhere when PBN technologies were introduced).

To resolve these issues, it is likely to be necessary for the airport to facilitate direct meetings between community representatives and the senior officers of the DfT, CAA and ACOG who are responsible for policy to address issues of concern which impact on public health and wellbeing

Conclusions and Next Steps (2)

Flight path options or strategies should not be devised or appraised until acceptable evidence is available relating to

- Noise metrics and thresholds - what they should be and how/when they will be factored into the option appraisal process. These should have regard to WHO advice, and reflect change and concentration effects, which have the potential to have massive adverse impacts on overflowed communities
- Given its significance the NAS and ANNE should be subject to independent peer review, and (unlike SoNA 14) public consultation
- The lessons that can be drawn from PBN experience, at home and abroad, and how the worst effects will be avoided around Heathrow
- How acceptable respite can be achieved around Heathrow for all communities (to include managed dispersion options)
- How increased flight heights and managed dispersion will be factored into option design - and enforced in future

Finally, the evidence base and option shortlisting criteria, scoring, weighting and algorithms relied on by Heathrow for its ACP should be subject to fully independent audit and verification