

Heathrow NACF - PBN Deep Dive

Community Concerns

Stephen Clark (TAG)

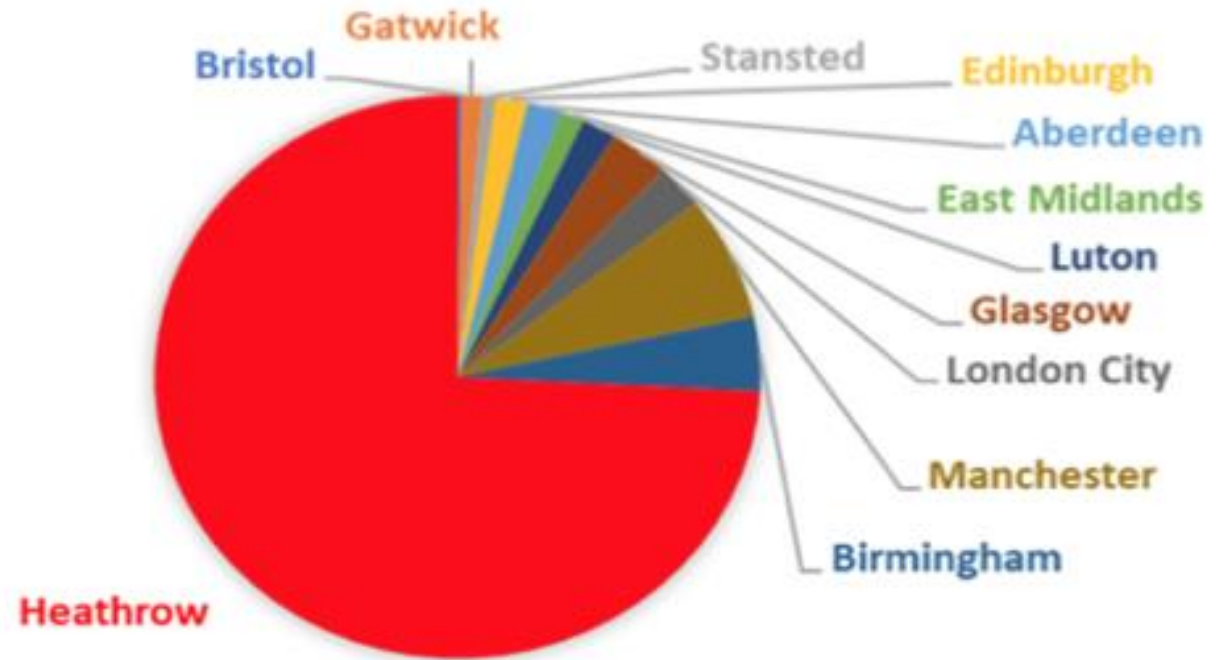
24 July 2024

Context - Heathrow's noise impact

The airport is located in the middle of long established densely populated areas. Heathrow only accounts for 25% of UK flights but causes 70% of all UK aviation noise impacts

Its flight paths already adversely impact an immense number of people

New flight paths and technologies could make this much worse. Its Airspace Modernisation proposals are therefore an incredibly important and sensitive issue



55dB Lden contour Airports Commission July 2013

Community Concerns - the social and environmental impacts of PBN have not been assessed and are not understood. Community concerns include;

Governance – lack of independent oversight, a proper evidence led process and an unbalanced decision-making framework

Airspace Modernisation is being progressed against the background of an incomplete and flawed evidence base

Firsthand experience of Heathrow's 2014 PBN trials – nothing has changed since Heathrow made the response to a European consultation shown opposite

Community awareness of the public reaction to the roll out of PBN in the US and elsewhere

Health and social impacts which should have been anticipated but which have not been considered or investigated by the DfT or CAA when committing to UK Airspace Modernisation

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comment by: *Heathrow Airport Limited*

Whilst Heathrow Airport Limited fully supports airspace modernisation, this document does not support current UK CAA guidance and is not in line with current UK airspace projects such as LAMP. The time scale suggested here is unrealistic and could jeopardise these projects. In addition, as subsequent comments highlight, we have the following concerns:

- The Social Impact of PBN trials in the UK has been enormous, therefore this should be considered and not dismissed in one sentence.
- There does not appear to be an environmental assessment of this proposed change in terms of noise.
- The Benefit section takes no account of the cost of airspace consultation which results in an incomplete assessment.
- Mixed conventional and PBN operations are not supported by the UK CAA.

Consequently, this NPA is not supported by Heathrow Airport Limited.

Noted.

nasa.europa.eu/sites/default/files/dfu/CRD%202015-01_0.pdf

Health considerations

The DfT committed to the introducing PBN to the UK but has undertaken **no research into the impact of highly concentrated PBN flight paths.**

Essential studies include;

- Impact of **higher noise levels** on those living under PBN concentrated routes (the metrics adopted in UK AM do not address this issue)
- Impact on physical and in particular **mental health** (such as raised anxiety) caused by living under highly concentrated flight paths
- **Atmospheric and particulate pollution** impacting people living under or close to PBN routes
- Impacts on child development and well being

Lack of Crucial Knowledge

CAA/ERCDC have relatively recently claimed that they have covered the effect of concentration by looking at arrivals using SoNA 2014 data from ILS arrivals paths

- This does not address or understand the impact of new curved PBN arrival routes
- This does not address or understand the impact of new PBN departure routes

The social implications of Airspace Modernisation

From Teddington Website



1st November 2019

Reply

This is a great article. PBN gives the aviation industry what it wants – certainty about where the aircraft are in the sky – so that ultimately they can get more planes into the same airspace at the same time. It does not work for communities on the ground. The powers that be must appreciate that it isn't all about how loud an individual aircraft is – it's also about how many there are.

PBN concentrates the flightpath so that those living directly underneath think that they are now living at the end of the runway. It doesn't work because those living on either side of the route also hear ALL of the planes – previously with dispersion, those living to one side of the didn't hear those flying on the other, and vv. Luton Airport introduced an RNAV flight path in 2015 on its most frequently flown route, westerly departures heading for European destinations. For those of us underneath – and I am about 18 flight miles from the end of the runway – it's been a disaster. Complaints went through the roof, even from those on the sides of the track who the airport said would be beneficiaries of the new technology. Over 4 years on, we are still waiting for the CAA to publish the Post Implementation Review.

- Vastly reduced quality of life for those living under or near concentrated PBN flight paths (see US NextGen experience)
- Perceived unfairness and inequality arising from policies and metrics leading to concentration. The primary UK metric Leq does not address this (see slides on CAP 2971)
- Creation of stigmatized and blighted neighborhoods – termed 'noise sewers' by the former CAA CEO
- Reduced house prices and saleability in badly affected neighborhoods. This raises the question of compensation
- Residents of social housing will find it particularly difficult to move (having less agency over their housing options)

Governance issues

These include;

- The DfT and the CAA are demonstrably pro-aviation growth and are not trusted to act impartially (Taylor Airey & CAP 2971) in relation to environmental and health impacts. Generally, there is currently minimal environmental regulation or protection over UK airspace (see next slide)
- The DfT has decided to press on with Airspace Modernisation in advance of the results of the new noise attitude survey (ANAS) it has commissioned becoming known. However, it has taken the opposite approach in relation to Night Flights, citing waiting for ANNE outcomes as the reason for rolling over present arrangements
- The CAA is not regarded as impartial or independent, yet its ERCD continues to be the principal advisor to the DfT on noise impacts. ERCD was responsible for producing SoNA 14, which ICCAN concluded was flawed - and DfT has agreed a new survey is required - but the CAA has still been tasked by the DfT to produce ANAS
- ICCAN (where there was potential for independent challenge) was abolished in 2021 without reason, justification or consultation by a recent Secretary of State for Transport – just at the time UK AM was getting off the ground

Taylor Airey's PBN benchmarking report for Heathrow March 2020

This study has identified recommendations for airports introducing PBN, and for UK Government

Policy	<p>1 Recommendation for UK Government: UK government policy offers no definitive statement on the preference for flight path dispersion/concentration and the resultant health impacts. Currently the guidance is vague & non-committal (eg around concentration vs. dispersion; the definition of respite, etc.) Policy detail would allow all stakeholders to optimise proposals against clear objectives.</p> <p>2 Recommendation for UK Government/UK CAA: There is insufficient joint sponsorship, accountability, authority and responsibility for the airspace changes affecting the London area. The UK airspace change process has resulted in a highly fragmented and complicated situation with multiple sponsors, governance bodies and coordination groups; this makes it difficult for sponsors and confusing/burdensome for stakeholders. More robust governance is needed. FMS limitations to multiple PBN routes should be challenged in appropriate governance groups (eg ACOG).</p>
Design / Assessment	<p>3 Recommendation for UK Government & airspace change sponsors: The standard metrics used to assess noise (and to a lesser extent local air quality) impact are under strong challenge, as is their transparency and relevancy. More meaningful metrics are needed, responsive to the needs of the affected community.</p>
Engagement	<p>4 Recommendation for airspace change sponsors: Engagement is a continuous process and relies on honesty, transparency and empathy. The earlier in the process that flight paths are identified and the affected communities are engaged in a genuine consultation, the greater is the opportunity to take feedback into account and modify the design. This relies on targeted communications to affected communities and a willingness to be open with all stakeholders.</p>

Case studies and lessons learnt – HR’s 2014 PBN trials

- Annoyance, evidenced by complaints, was generated at very low levels of noise (even below 48dBLeq)
- It was found average noise metrics (Leq) could not be used to explain the extent or distribution of complaints
- Public engagement regarding the trials was very poor
- The trials were ended earlier than planned in the face of strong adverse public reaction

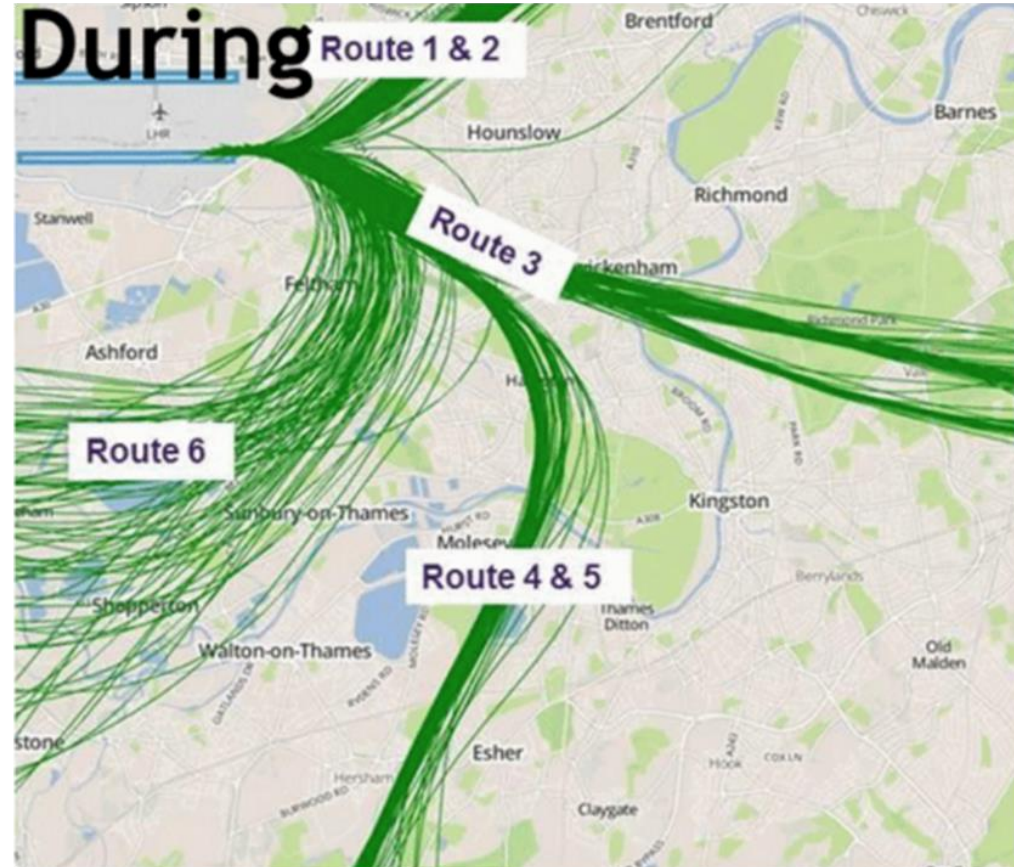
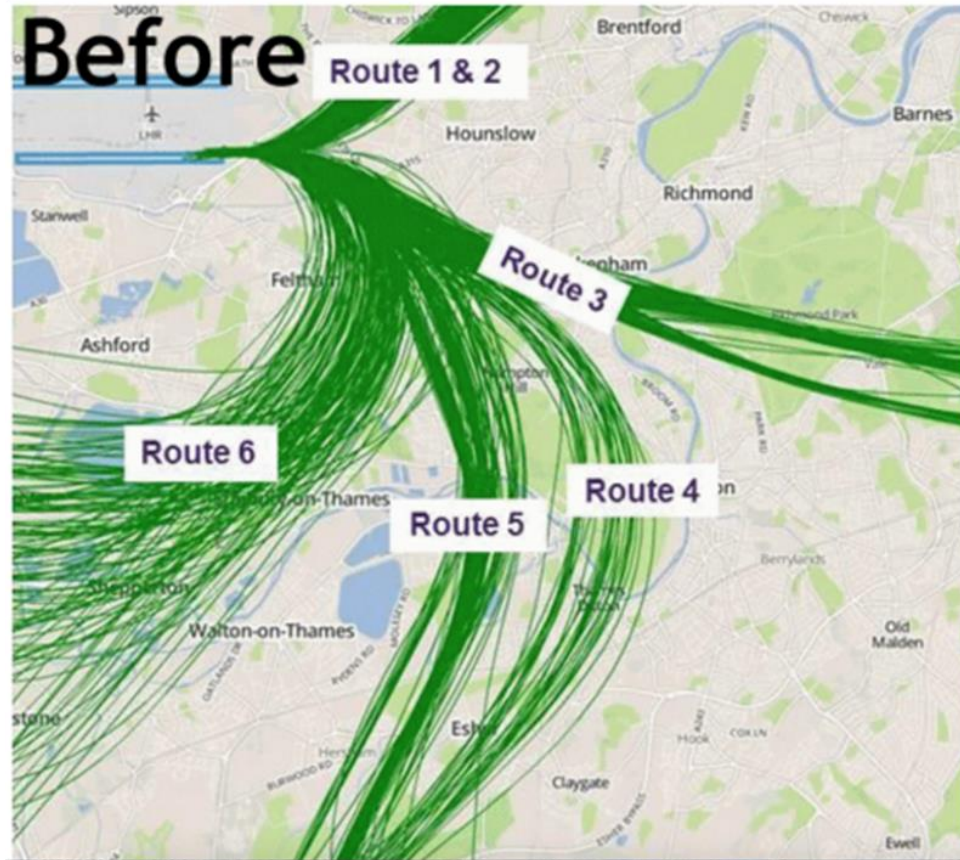


WESTERLY AND EASTERLY DEPARTURE TRIALS 2014 - NOISE ANALYSIS & COMMUNITY RESPONSE

HEATHROW AIRPORT LTD

JULY 2015

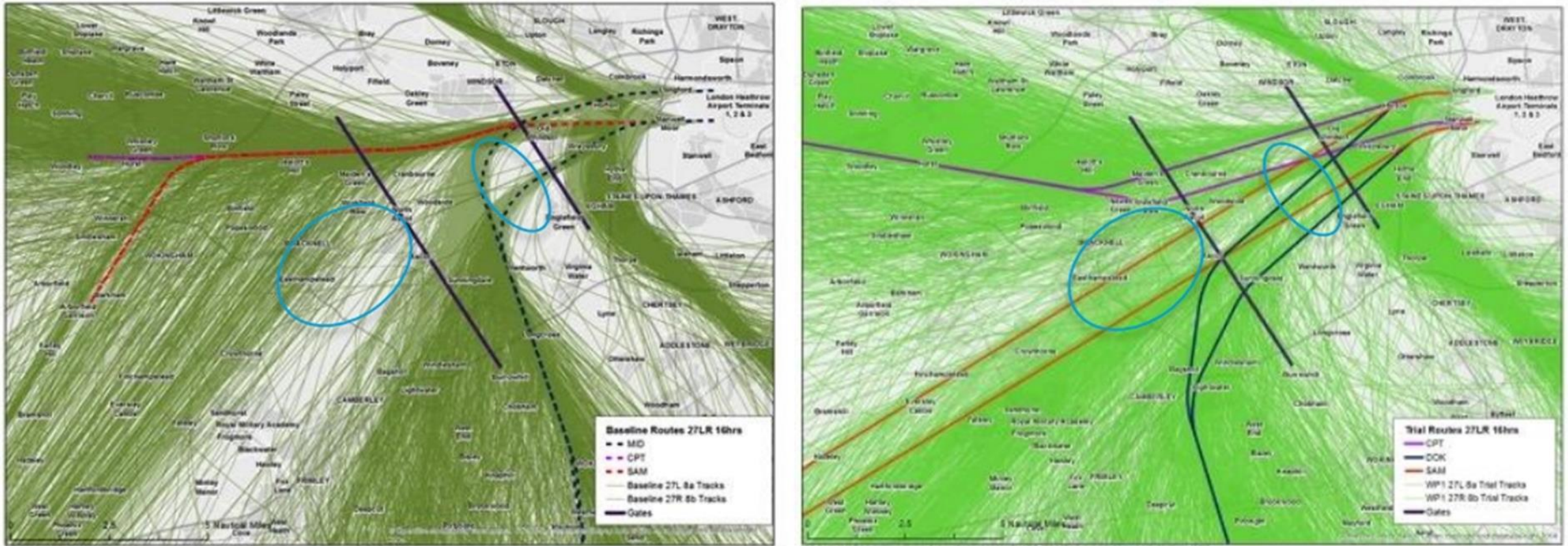
What happened during the 2014 PBN trials – eastern departures



Lessons to be learnt – highly concentrated PBN flight paths should not be used around Heathrow. The public reaction also demonstrated the dangers of a simplistic approach for airspace modernisation

What happened during the 2014 PBN trials – western departures

Figure 4.1: Heathrow flights tracks and SIDs for westerly operations for the baseline period (shown left) and the trial period (shown on right). Also shown are the gates used for analysis



Lessons to be learnt – massive adverse public reaction was caused by overflying **new areas for the first time** and from existing communities who were impacted more intensively with PBN concentrated paths

Let's not go there again!



DAVID HILTON

| About 1,000 people attended a public meeting in Ascot with representatives from Heathrow and NATS

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Heathrow airspace trials: Life under the flight path

12 November 2014



PA

| Ultimately, it will be for the government to decide whether flight paths will be changed or capacity increased

Case studies and lessons learnt – the NextGen disaster in the US

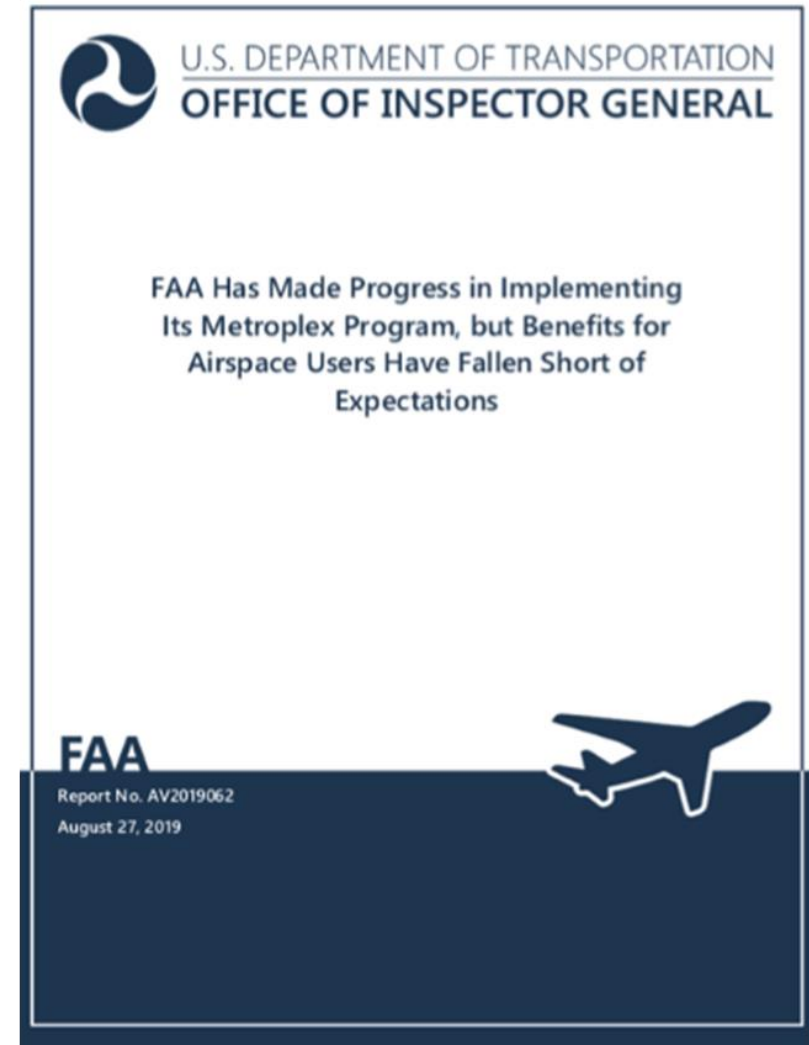
The NextGen programme in the US has created enormous opposition and hostility to the aviation industry and particularly the FAA

NextGen's roll out has been delayed by legal and political challenge

The promised economic benefits in the US have not materialised. The UK business case/HR statement of need for PBN in lower airspace should be reviewed

Despite widespread public opposition it has not been possible to undo the damage caused by highly concentrated NextGen PBN flight paths (so far)

Let's not go there!



Communities across the US continue to suffer and call out for NextGen to be reversed

The FAA's role and (mis)use of metrics has come under close political and community scrutiny

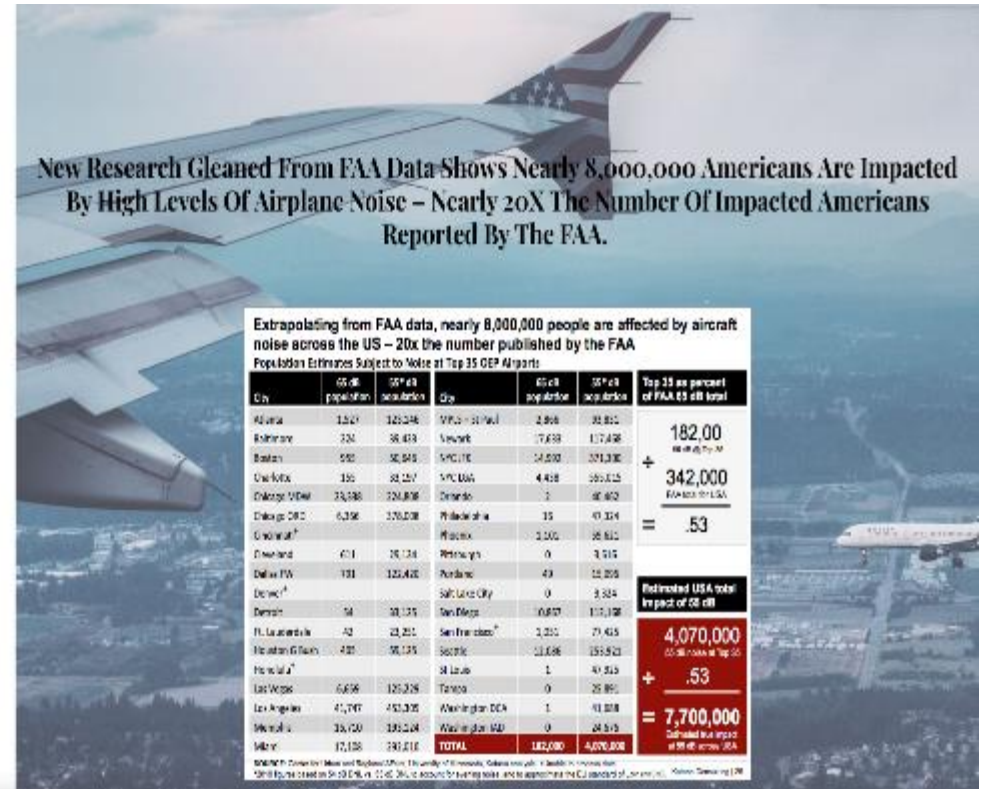
Noise thresholds used for policy decisions have been found to be far too high

The extreme public reaction across the US was not considered or anticipated by the FAA, which has been subject to intense criticism

These mistakes must not be repeated in the UK



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- Health Benefits



NextGen And Community Response – NextGenRelief

US – lessons from implementation of NextGen – political and public opposition has been extremely widespread

NATIONAL QUIET SKIES COALITION
 NQSC Home Page | Congressional Quiet Skies Caucus | Organizations | National Petition | Archives/Information Exchange

AMERICAN CITIZENS UNITED
 These organizations represent concerned American citizens from across the United States whose lives have been severely impacted by the Federal Aviation Administration's NextGen RNAV procedures.

AZ LET'S MAKE SOME NOISE (PHOENIX)	letsmakesomenoise	CA BURBANK FOR QUIET SKIES	burbankquietskies	IL ALLIANCE OF RESIDENTS CONCERNING OHARE	areco.org
AZ SCOTTSDALE COALITION (SCANA)	scottsdalecoalition.org	CA LOS ANGELES FOR QUIET SKIES	losangelesquietskies	IL O'HARE NOISE COMPATIBILITY COMMISSION	oharenoise.org
CA SAVE OUR SKIES SANTA CRUZ	saveour skies.org	CA BAY AREA JET NOISE	bayareaquietskies.com	MA AIR INC.	airinc
CA UPROAR (SAN FRAN BAY AREA)	uproar.org	CA UPROAR L.A.	uproarla.org	MA FAIR SKIES NATION	fairskiesnation.com
CA SAVE OUR SKIES EAST BAY	saveour skies.org	CA CAANP ORANGE COUNTY	caanp.com	MA BOSTON SOUTH FAIR SKIES	bostonsoth
CA QUIET SKIES NORCAL	quietskiesnorcal.org	CA STUDIO CITY FOR QUIET SKIES	studiocityquietskies	MA BOS FAIR SKIES COALITION	bosfairskies
CA SAVE OUR SKIES MONTEREY COUNTY	saveour skiesmontereycounty.org	CO CITIZENS FOR QUIET SKIES	citizensforquietskies	MA HULL NEIGHBORS FOR QUIET SKIES	hullneighbors.org
CA CONCERNED RESIDENTS AGAINST AIRPORT POLLUTION	www.resistpollution.com	CO QUIET SKIES BOULDER COUNTY	quietskiesboulder	MD MONTGOMERY COUNTY QUIET SKIES COALITION	montcoquietskies
CA NO PLANE NOISE - SAN DIEGO	noplanenoise.com	CO QUIET SKIES JEFFERSON COUNTY	quietskiesjefferson	MD SO. MARYLAND FAIR SKIES COALITION	sofairskies.com
CA FRIENDS OF LAKE ARROWHEAD	movestheflightpath.org	CO QUIET SKIES ARAPAHOE COUNTY	quietskiesarapaho	MN SO METRO AIRPORT ACTION COUNCIL	smnacmn.org
CA QUIET SKIES IDYLLWILD	quietskiesidyllwild	CO GRRIFT	grift.org	NJ NEW JERSEY COALITION AGAINST AIRCRAFT NOISE	njcan.org
CA MONTGOMERY-GIBBS ENVIRONMENTAL CO.	montgomery-gibbs	DC WASHINGTON D.C. FAIR SKIES	dcdairskies.org	NY PLANE SENSE FOR LONG ISLAND	planesense4li.org
CA SHERMAN OAKS & ENCINO FOR QUIET SKIES	quietskiesencino.org	DE QUIET SKIES WALNUT RIDGE GREENVILLE	walnutridge	NY QUEENS QUIET SKIES	queensquietskies.org
CA QUIET SKIES LA JOLLA	quietskiesjolla.org	FL SKY JUSTICE MIAMI	skyjusticefl.com	NY PROSPECT PARK QUIET SKIES	prospectparkquietskies
CA CULVER CITY FOR QUIET SKIES	culvercityforquietskies	HI QUIET SKIES HONOLULU	quietskieshonolulu	NY WESTCHESTER COUNTY	westchestercounty
CA SANTA CLARITA FOR QUIET SKIES	saveour skies.org	HI QUIET SKIES HAWAII	quietskieshawaii.org	NY QUIET SKIES.NET	quietskies.net
CA SAVE OUR SKIES L.A.	saveour skiesla.org	IL FAIR CHICAGO	fairchicago.org	NY FOREST HILLS QUIET SKIES	foresthillsquietskies
					NATL AVIATION-IMPACTED COMMUNITIES ALLIANCE

OR OREGON AVIATION WATCH | oaw.org
 WA QUIETER SKIES TASK FORCE OF SEATTLE | quieterskiesmfse
 WA QUIET SKIES PUGET SOUND | quietskiespuget
 WA QUIET SKIES COALITION | quietskiescoalition
 WI AIRPORT NEIGHBORS ASSOCIATION | airportneighbors
 NATL CITIZENS NOISE MONITOR | skyte.com/noise
 NATL US CITIZENS AVIATION WATCH | us-caw.org
 NATL N.O.I.S.E | aviation-noise.org
 NATL NEXTGEN NOISE | nextgennoise.org
 NATL AVIATION IMPACT REFORM | airreform.com
 NATL SKY JUSTICE NATL NETWORK | skyjustice
 NATL NEXTGEN RELIEF | nextgenrelief.org
 NATL AVIATION-IMPACTED COMMUNITIES ALLIANCE | AICA

[Citizens United](#) | [aircraft noise](#) | [FAA](#) | [NextGen](#) | [National Quiet Skies Coalition \(nqsc.org\)](#)

Fair and equitable distribution (FED) – and CAP 2971

Key findings include;

- Lack of public trust in the CAA and the decision-making framework and processes in CAP1616
- General support for FED amongst public; sentiment strongly against use of highly concentrated flight paths
- Average dBL_{aeq} metrics used for UK policy making are not appropriate – N> above 65 preferred over specified time period
- Decisions based predominantly on webTAG are not soundly based as they do not reveal actual impacts



**EXPLORING THE CONCEPT OF
FAIR AND EQUITABLE
DISTRIBUTION TO MINIMISE
SOCIAL UNACCEPTABILITY OF
AIRSPACE DESIGN OPTIONS –
INTERIM REPORT**

PREPARED FOR GATWICK AIRPORT LTD

JANUARY 2024

<https://www.caa.co.uk/publication/download/21170>

Next Steps - Potential solutions 1

Guiding principles;


- HR should use as its starting position for Stage 3 work strategies **based on incremental Do Minimum scenarios**. This is inherent in Treasury Green Book option appraisal methodology (incorporated into CAP1616) and will require risk assessments and sensitivity analysis of all change scenarios
- Except in special local circumstances (eg SE London where there are particular problems involving concentration, lack of respite and multiple routes) current dispersion patterns should be maintained as closely as possible. **Retaining vectored departures and arrivals in lower airspace should be considered as a real option**, or if this is impossible under international aviation agreements, achieving dispersion replicating the existing pattern of flight paths using PBN
- Heathrow (HR) communities have **called for fair and equitable distribution** (FED) from the outset of HR's ACP process. This will require reevaluation or adaption of HR's DPs. This can be achieved under the overriding DP2 which requires ANG 17 compliance, consideration of flightpath systems and the DPs that were omitted from the DPE and IOA
- **No community should be exposed to more noise under HR AM and PBN.**
- **No community should receive reduced respite** compared to present **whether achieved through runway alternation or modal change**. An essential aspect of this is that no community should be overflowed by both departures and arrivals

Next Steps - Potential solutions 2

Practical steps;

- Given HR's noise impact it should sponsor an **independent study into the impact of PBN concentration** and how the worst impacts can be avoided. This should reflect local circumstances and address health and annoyance
- There should be a **review of noise metrics in the context of Heathrow**, which should address local noise levels, periods communities are overflowed, single mode analysis, time of day/shoulder hours and use of N>65 and N>70 contours. Overall long-term average noise dB LAeq should not be used as the principal basis for decision making
- **Noise modelling should be validated** particularly in relation to spread and attenuation where there are believed to be errors. This should be reviewed by independent noise experts
- HR AM should be used as an opportunity to **fly higher on departures** (using NADP1 procedures) **and arrivals** (using CDO) as far as possible as this will aid noise dispersion, mitigate against PBN concentration and generally reduce noise impact (due to greater distance from noise source)
- Specialist independent advice should be made accessible to local stakeholders, and a **Noise Engagement Oversight Board should be formed** comprised of local MPs, the GLA, local authorities and community representatives
- A case study is required on the reasons 'do minimum' was chosen as the preferred strategy Manchester Airport

Back up slides

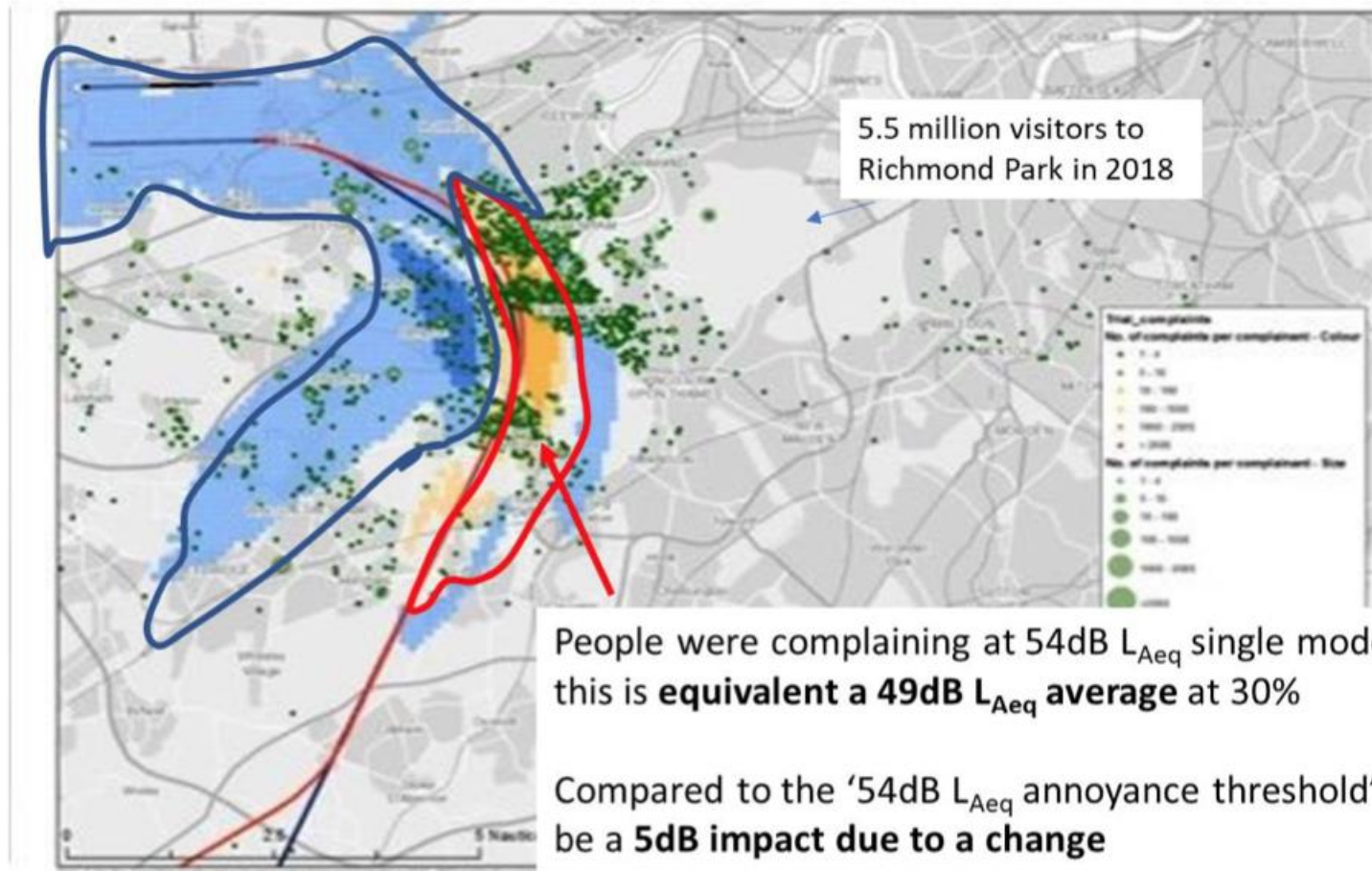


Extract of letter
dated 31 August
2021 from Secretary
of State to CAA Chief
Executive

'You will be aware that there remains considerable interest within Parliament, among members of the public and community groups and industry on issues related to aircraft noise. Winding down ICCAN does not represent any weakening of the Government's aviation noise policy and Transport Ministers will need to have continued access to impartial advice on noise impacts.'

East side impact shown by **complaints**

No change identified in L_{Aeq} levels but $N>65dB L_{Amax}$ reveals the true picture
(Blue areas less noise, Orange/Red areas more noise)



● Green spots are complaints

Repeated noise harms health.

Repeated noise events prime the vasculature for developing endothelial damage, no tolerance development.

-- Thomas Munzel, MD, Professor, Chief of Cardiology, University Medical Center, Mainz



The FAA's thresholds for significant impact and residential compatibility do not account for repeated noise.

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Governance and trust – recognition that metrics, measures and approaches used are outdated

After sustained political challenge and scrutiny FAA was forced to undertake an updated National Environmental Study (NES) into noise as part of its reauthorization act

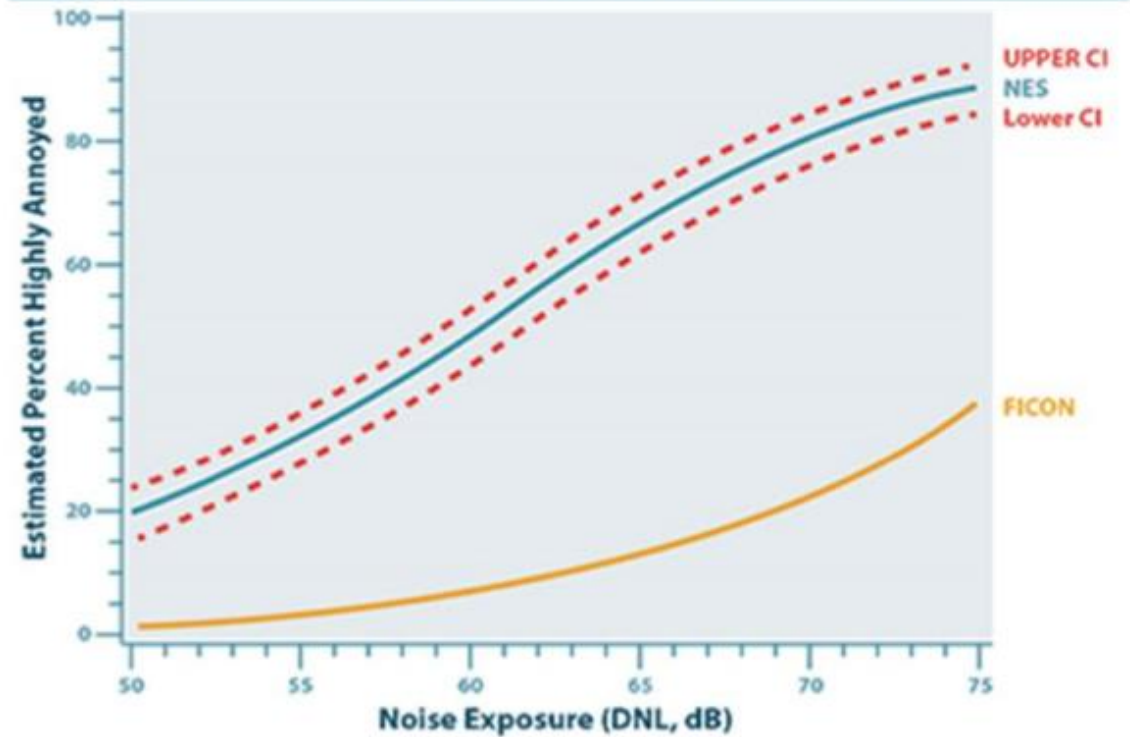
The NES was published in January 2021

The results show how out of touch the FAA has been regarding community noise (20 dB DNL out – in highly annoyed terms a factor of 400%)

The report demonstrates that FAA noise standards used in formulating aviation policy are obsolete

Lack of trust in aviation governance is a massive issue in the US (see additional link in References)

NES Dose Response Curve Relative to the FICON-validated Schultz Curve



Key presentations to Heathrow

- https://www.heathrow.com/content/dam/heathrow/web/common/documents/company/local-community/noise/nacf/meeting-notes/2022/HCNG_Issues_From_AM_Workshops_NACF_20221123.pdf
- https://www.heathrow.com/content/dam/heathrow/web/common/documents/company/local-community/noise/heathrow-community-noise-forum/forum-meeting-notes/2021/TAG_Airspace_Modernisation_HCNF_20211020.pdf

References

- ANG 17 - https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/918507/air-navigation-guidance-2017.pdf
- WHO ENG 18 - <https://www.euro.who.int/en/health-topics/environment-and-health/noise/publications/2018/environmental-noise-guidelines-for-the-european-region-2018>
- Heathrow context, pie charts – <https://www.eea.europa.eu/data-and-maps/data> on noise exposure-4/noise-exposure-information-under-the/end_df4_df8_results_2012_150630zip
- Social impact of PBN trials – https://www.easa.europa.eu/sites/default/files/dfu/CRD%202015-01_0.pdf
- Andersen Acoustics Heathrow trial report 2015 – https://www.pdfFiller.com/238523053-Noise_impacts_Community_Response_easterly_and_westerly_trials_2014pdf-Heathrow-Airport-Ltd-Westerly-and-Easterly-Departure-Trials-2014-Noise-Analysis-Community-Response-
- CAA report on health benefits of splitting routes – previous HCNF minutes and report circulated by Heathrow in 2018 (contact Heathrow or the CAA)
- US Dept of Transportation – accessed through <http://www.mocoquietskies.org/news/dotinspectorgeneralreportonthefaasmetroplexnextgenprogram>
- Benefits of NextGen overstated - <https://reason.org/aviation-policy-news/air-traffic-benefits-from-nextgen-are-far-below-expectations-new-airlines-keep-starting-up-and-more/>
- Congress Representatives’ letter to FAA 20 December 2019 - <https://nextgenrelief.org/congress-and-nextgen/>
- Congress Representatives’ letter to President Elect - <https://thedcline.org/2020/12/31/press-release-norton-bass-lead-letter-to-president-elect-biden-on-combating-aircraft-noise/>
- Congress Representatives’ letter to FAA 20 December 2019 re trust and metrics - <https://norton.house.gov/media-center/press-releases/norton-quiet-skies-caucus-send-letter-to-faa-on-aircraft-noise>
- Comparative graph of Ficon noise annoyance curve and NES - https://www.cscos.com/2021/02/neighborhood_environmental_survey/
- Very recent US challenges - <https://patch.com/california/sanmateo/peninsula-lawmakers-push-bills-curb-airport-noise>
- Very recent US challenges - <https://www.aviationairportdevelopmentlaw.com/2021/09/articles/federal-regulation/congress-continues-to-search-for-relief-from-airport-noise-impacts/>