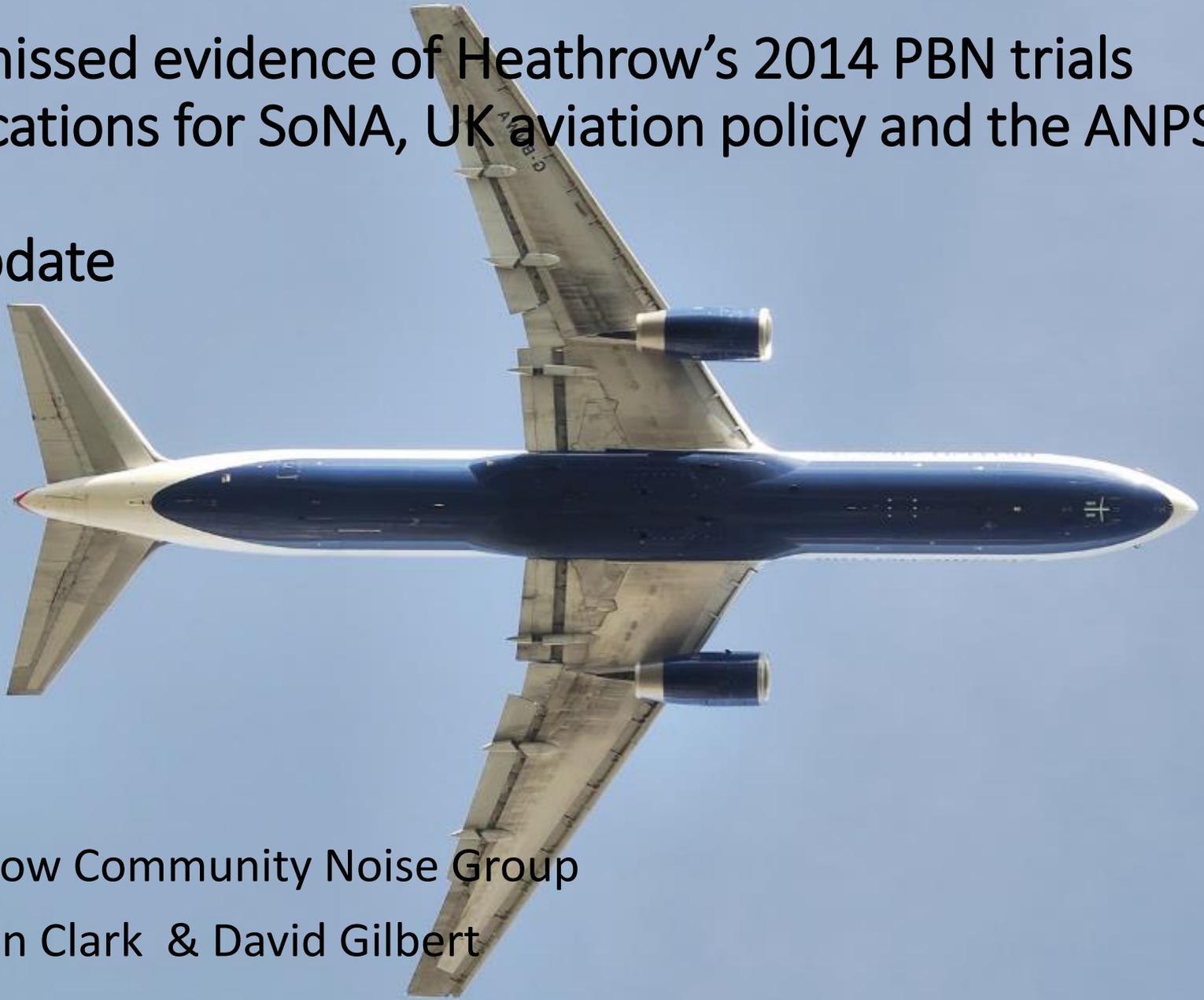


The missed evidence of Heathrow's 2014 PBN trials Implications for SoNA, UK aviation policy and the ANPS

An update



Heathrow Community Noise Group

Stephen Clark & David Gilbert

CNG Mar 2019

The missed evidence of Heathrow's 2014 PBN trials. Stephen Clark and David Gilbert (Teddington Action Group). Heathrow Community Noise Forum 20/03/2019.

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Presentation - key points

The following **developments** have occurred **since the last HCNF** meeting on 30 January;

- **Vital missed evidence**, not considered by SoNA, which was gathered by Heathrow following the 2014 Departure Trials, has been **identified and reviewed**
- This has been **discussed with senior DfT officials** on 20 February and also presented to the AEF Noise conference on 5 March
- The **CAA confirmed** at the AEF conference that since the T5 enquiry, **surveys** of public noise attitudes towards aviation have **avoided populations where airspace changes were taking place**
- **Public Health England agreed** at the AEF conference to **look into the impact of changes** in airspace use as well as the latest WHO guidance

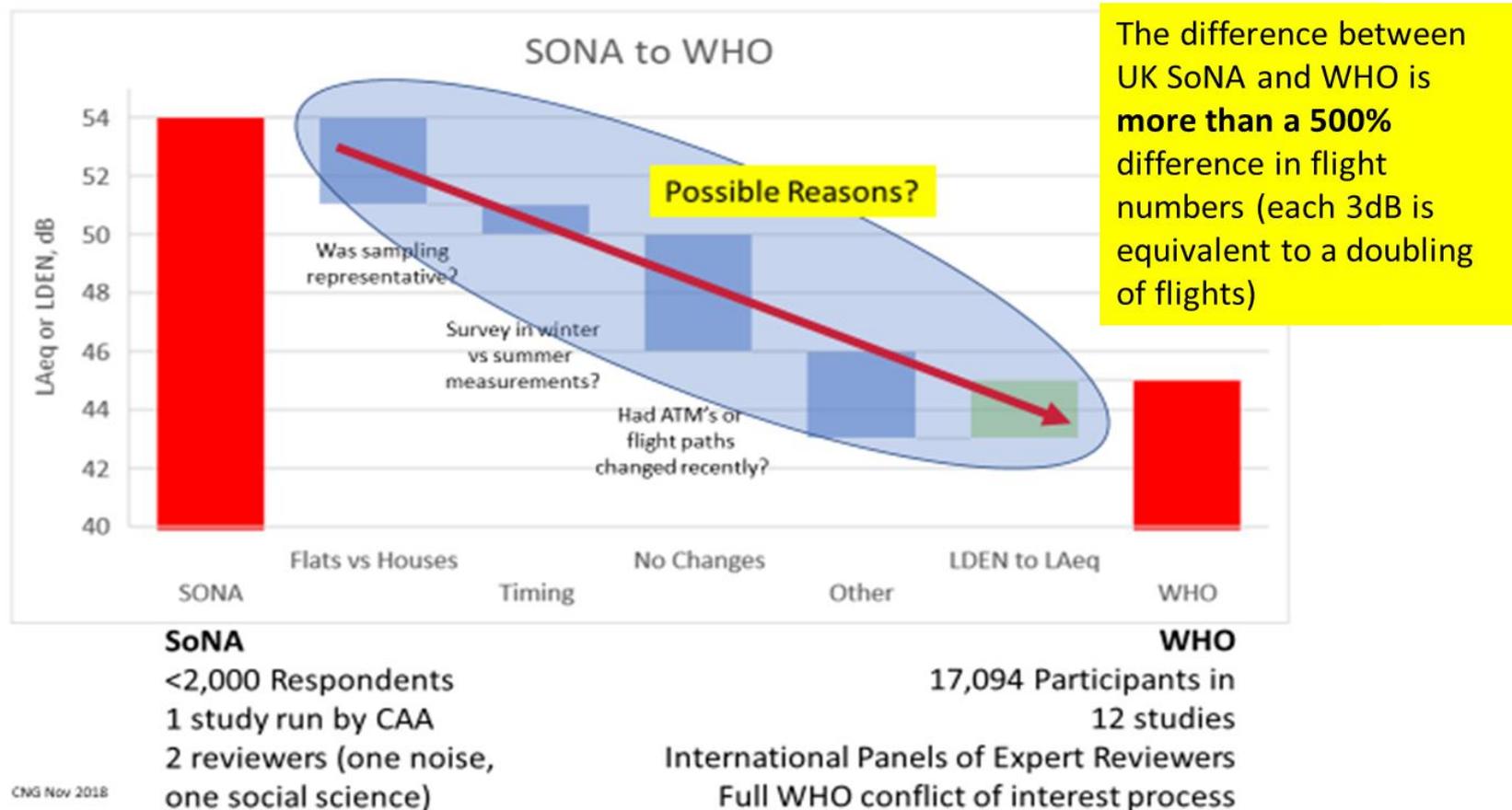
These factors have significant implications for assessing the impacts of a new runway at Heathrow and introducing new concentrated flight paths using PBN

This presentation **sets out actions** that should be taken in the light of this

The enormous differences between SoNA and WHO findings

(previous slide Nov HCNF 2018)

Proposed Project – Part 1. Independent Consultant to advise most likely reasons for differences



CNG Nov 2018

CNG Mar 2019

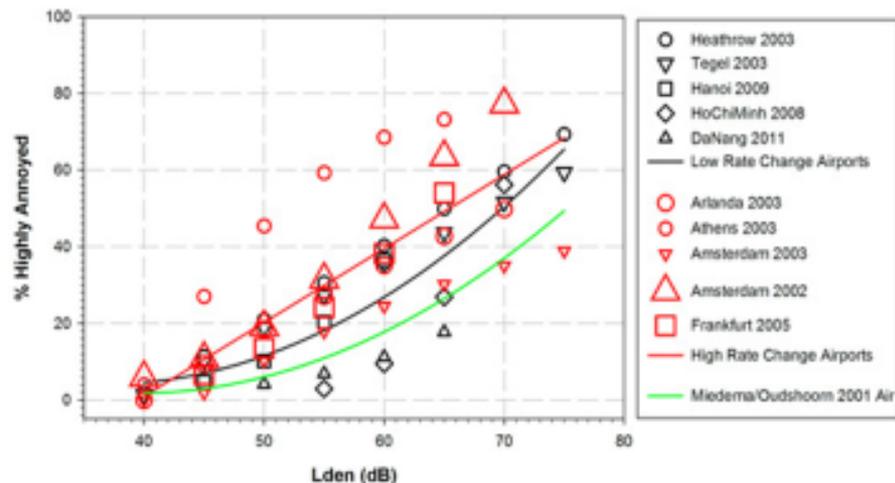
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Change impacts noise sensitivity

(previous slide Jan HCNF 2019)

A possible explanation – reviews of noise studies show that **CHANGE** increases noise impacts



From; Int. J. Environ. Res. Public Health 2017, 14(12), 1539
Rainer Guski, Dirk Schreckenberg and Rudolf Schuemer
WHO Environmental Noise Guidelines for the European
Region: A Systematic Review on Environmental Noise and
Annoyance

The **red symbols** indicate the airports where change has taken place, the 'high-rate change' airports.

The **black symbols** indicate 'low-rate change' airports.

At the time of the SoNA survey Heathrow & other UK airports were low change airports. It is inappropriate to use data based on no or low change situation to assess the impacts of change.

The use of a 'low/no change' UK SoNA position in 2014 is likely to massively underestimate the impact of a new runway at Heathrow by anywhere between 3-6dB L_{Aeq} .

Even other 'low rate change' studies suggest SoNA may have underestimated noise sensitivity by 3dB L_{Aeq} . (See Int. J. Environ. Res. Public Health 2018, 15(12), Truls Gjestland, A Systematic Review of the Basis for WHO's New Recommendation for Limiting Aircraft Noise Annoyance)

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The key evidence not considered by the CAA within SoNA



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

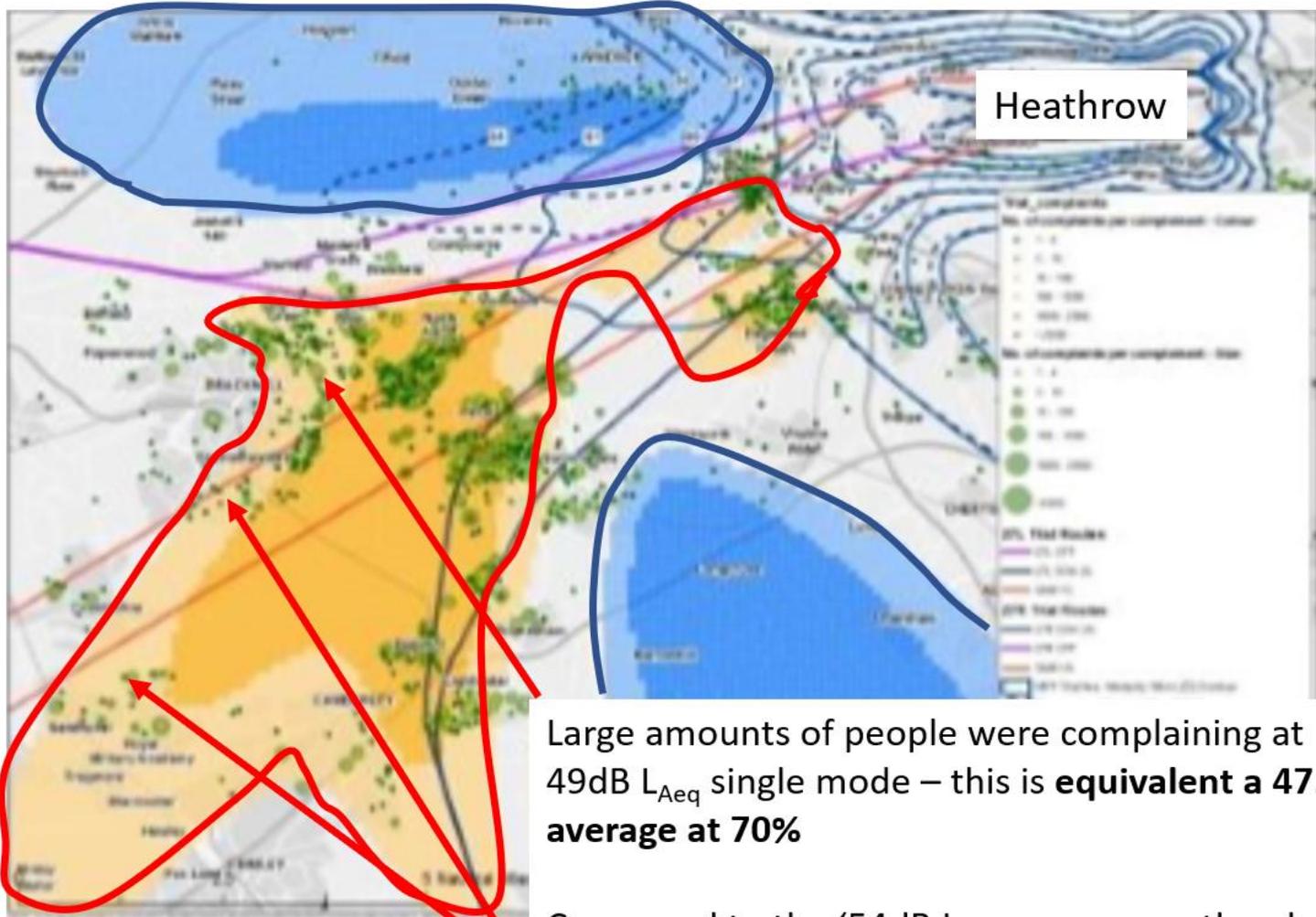
HEATHROW AIRPORT LTD

JULY 2015

Anderson's report contains crucial evidence for identifying realistic noise level thresholds, what metrics to use and the impact of the introduction of PBN over highly populated areas

Report available on Heathrow Website. Graphics on the following slides come from this report.

West side impact shown by **complaints**



Heathrow

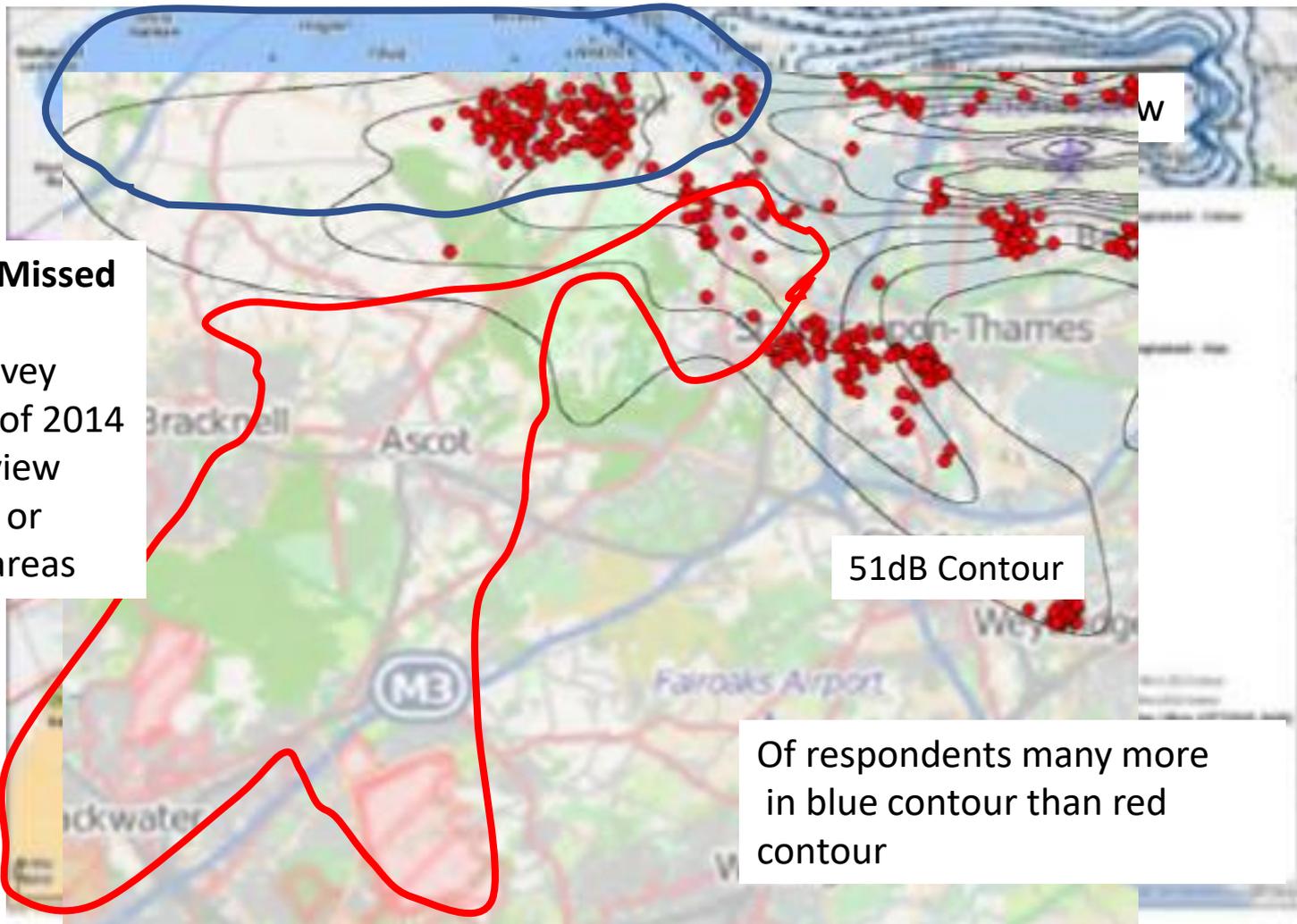
Large amounts of people were complaining at 49dB L_{Aeq} single mode – this is **equivalent a 47.5dB average at 70%**

Compared to the '54dB L_{Aeq} annoyance threshold' this would be a **6-7dB impact due to a change**. People were complaining well below this level

● Green spots are complaints

SoNA survey respondents (red dots)

Focussed on areas that received less noise in 2014 (base year for survey which coincided with the trials)



Opportunity Missed

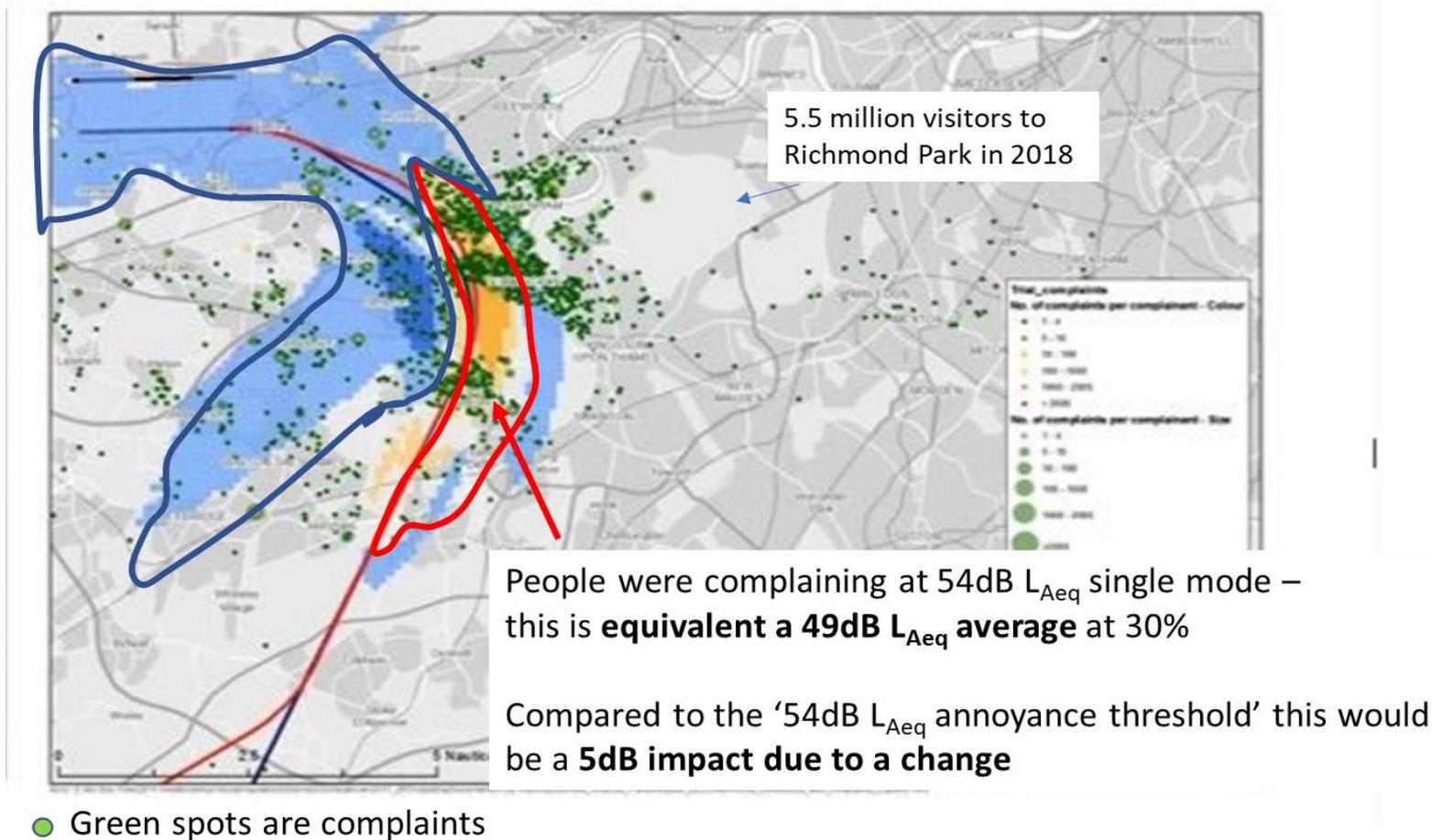
The SoNA survey in the winter of 2014 did not interview around Ascot or surrounding areas

51dB Contour

Of respondents many more in blue contour than red contour

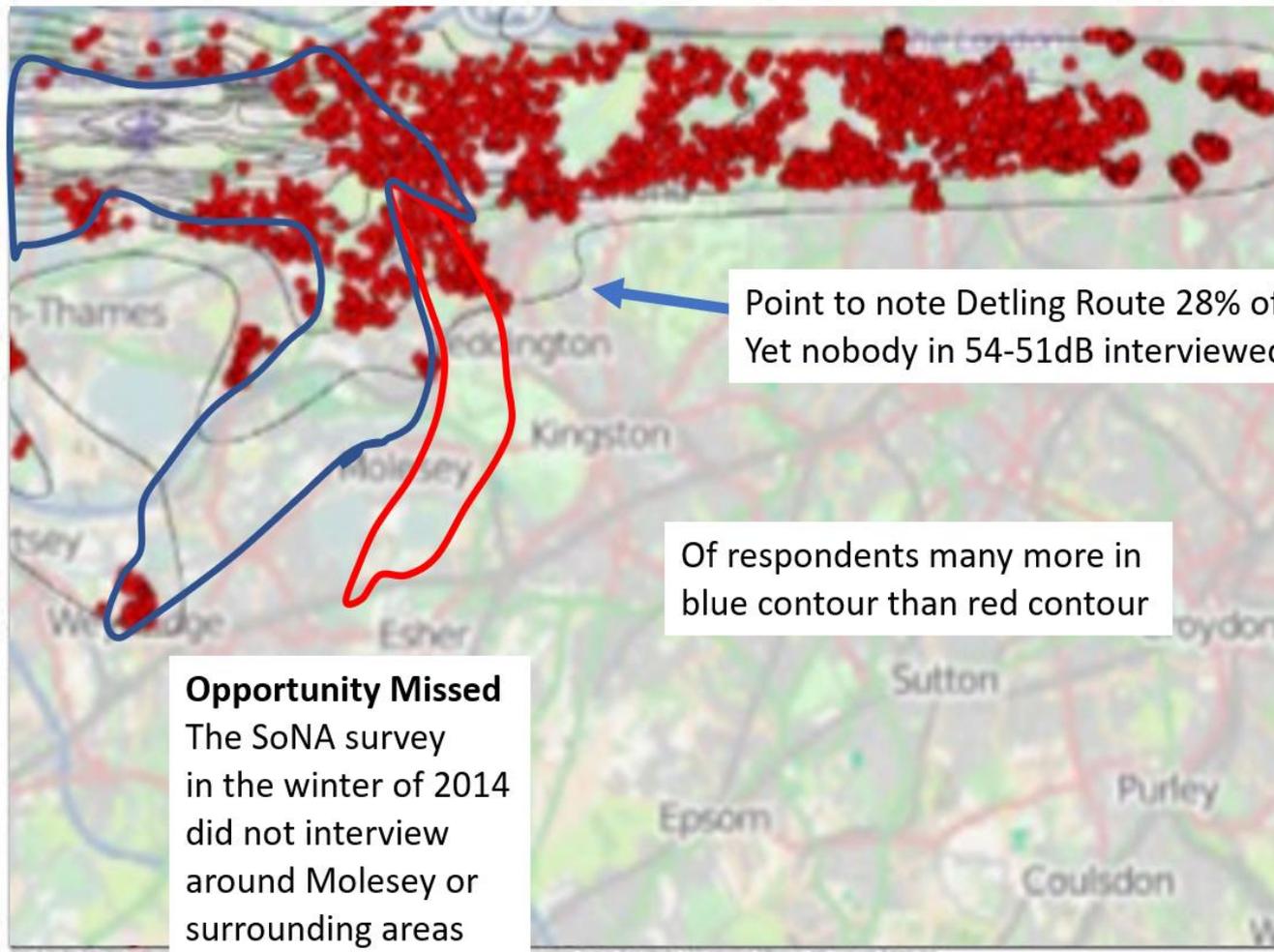
East side impact shown by **complaints**

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)



SoNA survey **respondents** (red dots)

Many respondents received less noise in 2014 (base year for survey which coincided with the trials)



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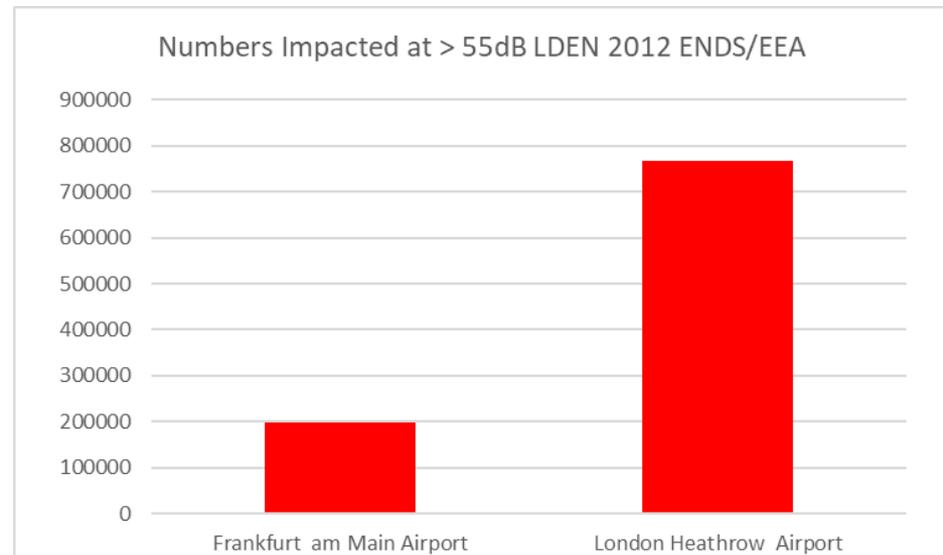
How long does increased sensitivity last?

- Since the 2014 Heathrow trials communities have become more sensitive to noise and have continued to complain in high numbers
- Protests continue at Frankfurt – 7.5yrs after operation

The AEF reported on January 7, 2017; *'The 4th runway at Frankfurt was opened in October 2011. Due to re-alignment of flight paths, with thousands of people either newly overflowed, or with more flights than before, there was uproar.'*

The **270th protest took** place on Monday 14th January 2019 the protestors message is 'Our protest is getting louder'

Heathrow impacts 3x as many people as Frankfurt (without expansion);



East side – evidence average L_{Aeq} metrics do not work

The assessment of ‘adverse effects’ is fundamentally flawed over the most impacted population by Heathrow



6.2.2 There were no people exposed to a substantial increase in average noise level from flights using the easterly trial routes.

Table 6.5 below presents the change in population exposed to noise levels from aircraft on the trial specific routes during easterly operations. During use of the easterly trial routes, 0% of people experienced a substantial increase in noise level.

Table 6.5: Population exposed to change in noise levels for flights using trial routes

Noise level change	Change description	Easterly trial routes (MID, SAM)		
		> 48 dB	> 54 dB	> 57 dB
-5-10dB		0%	0%	0%
-3-5dB		10%	7%	1%
-3 to +3 dB		90%	93%	99%
+3-5dB		0%	0%	0%
+5-10dB		0%	0%	0%

Note: there were no areas where noise levels were greater than 48 dB L_{Aeq} in the baseline or the trial periods where the change was greater than +/- 10dB

L_{Aeq} contours showed no increase in population negatively impacted – health impacts due to Noise used in Environmental assessment and webTAG would show no negative changes

Notes – Reduce single mode L_{Aeq} by 5dB to get average at 30% days overflown
Change descriptions need correction – blanked out

Figure 8.1: Complaints and complainants about departures by day during the trial period.

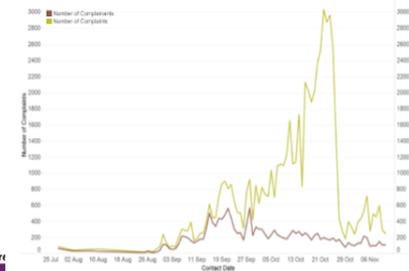
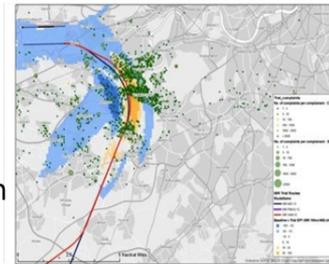


Table 8.1: complaints and complainants about departure

Complaints		Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Total
Overall [1]	No. of complaints	63	507	12,987	42,927	4,652	61,136
	No. of complainants	43	201	4,587	1,928	540	5,887
Westerly [2]	No. of complaints	382	4,236	34,986	3,515	43,119	
	No. of complainants	145	1,344	1,416	384	2,410	
Easterly [3]	No. of complaints	63	21	5,721	789	219	6,813
	No. of complainants	43	13	2,911	204	89	3,095
Both	No. of complaints	104	3,030	7,152	918	11,204	
	No. of complainants	55	1,294	909	267	2,026	

Table notes:
 [1] The total number of complainants in each month is the number of unique people that have complained. This does not sum across to the total column - the total is the number of unique people complaining across the whole trial.
 [2] The easterly operations trial began on the 28 July 2014 and ended on the 12 November 2014.
 [3] The westerly operations trials began on the 25 August and ended on the 12 November 2014.
 [4] Complaints are reported in the table for the period 28 July to 12 November 2014.

Yet complaints rocketed!

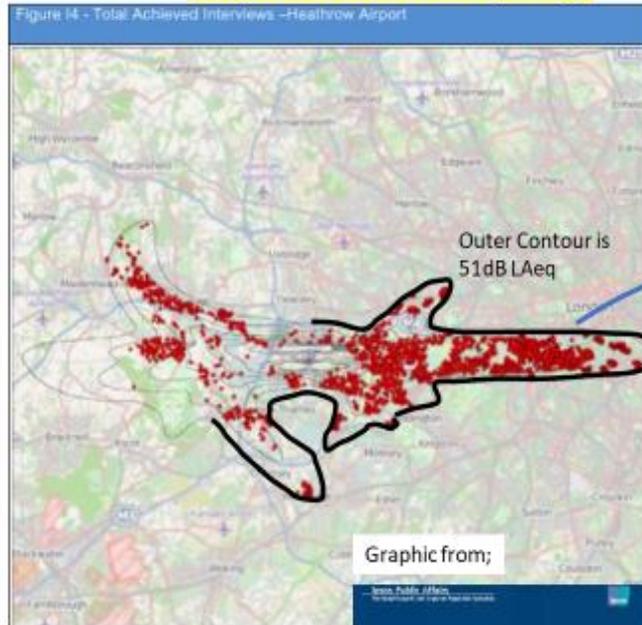


The metric that AA found that showed correlation with complaints was single mode N65 event changes

LOAEL is incorrectly set – SoNA did not plan sampling below 51dB L_{Aeq}

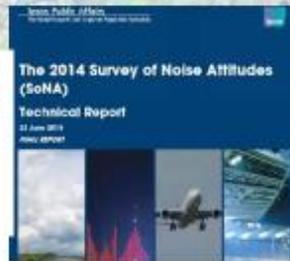
(previous slide from HCNF Jan 2019)

Was the population sampling in SoNA appropriate?



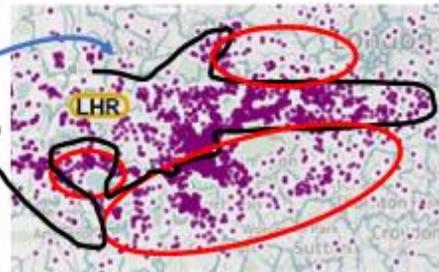
This level is important as the DCO judges adverse effect on numbers impacted between SOAEL (Significant Observable Adverse Effect Level) and LOAEL (Lowest Observable Adverse Effect level)

CNG Jan 2019



SoNA did not plan to cover any areas where there was noise below 51dB.

Extract from Complaints (purple spots) mapping (to support feedback we request LHR provide contours on these complaints maps – black line is indicative)



Even at 51dB it found 7% annoyance levels which is therefore not a LOAEL level. As 792 people were interviewed in this band it would have taken only 16 more people to make this the significantly annoyed level



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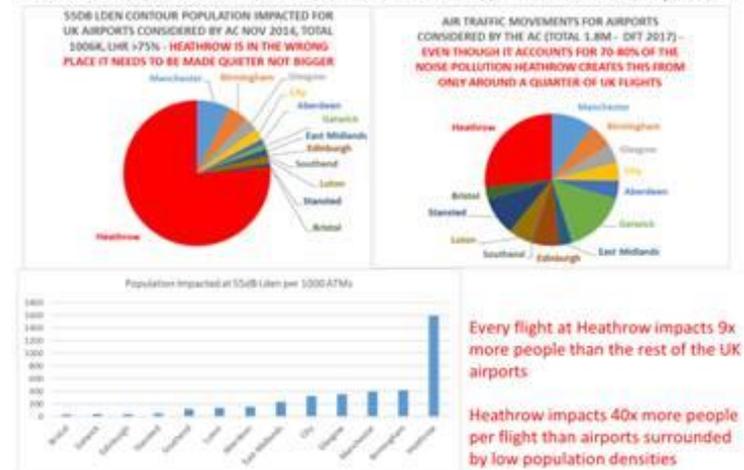
Should SoNA have considered Heathrow's PBN trials in 2014?

- Previous slides indicate the SoNA survey area **generally did not include areas that were impacted** by the 2014 PBN departure trials
- It is self-evident SoNA's annoyance level thresholds, which are used by the DfT for **assessing the impact of airspace changes**, were set far too high (as revealed by WHO)
- The CAA has suggested PBN changes at Gatwick would have been reflected in the overall results – however this area only included 31 respondents (in line with UK noise impact) in survey, therefore little impact in the context of 1847 total surveyed

Table 8: Respondents categorised by 2014 summer average mode $L_{Aeq,10h}$ (N=1,847)

Noise exposure variable average summer day $L_{Aeq,10h}$ (dB)	Airport									
	BHX	EMA	LGW	LHR	LCY	LTN	MAN	NCL	STN	Total
48.0 – 50.9			1	74			2		2	79
51.0 – 53.9	28	1	15	644	3	7	86	3	5	792
54.0 – 56.9	34	2	9	360	63	5	36	3	3	515
57.0 – 59.9	20		3	178	16	6	34	2	2	261
60.0 – 62.9	8	1	1	103	6	1	8			129
≥ 63	1			61	5	2	1		1	71
Total	90	5	31	1,419	93	21	168	8	12	1,847

Heathrow Noise Performance vs UK Airports



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Questions – the DfT did not answer

When we met senior officials of the DfT on 20 February 2019 we posed these questions;

1. Given UK & international evidence, on balance does the DfT accept that airspace change will increase the level of noise health impacts?

For us this seems obvious given the evidence and should have been part of any risk assessment as it has significant financial implications.

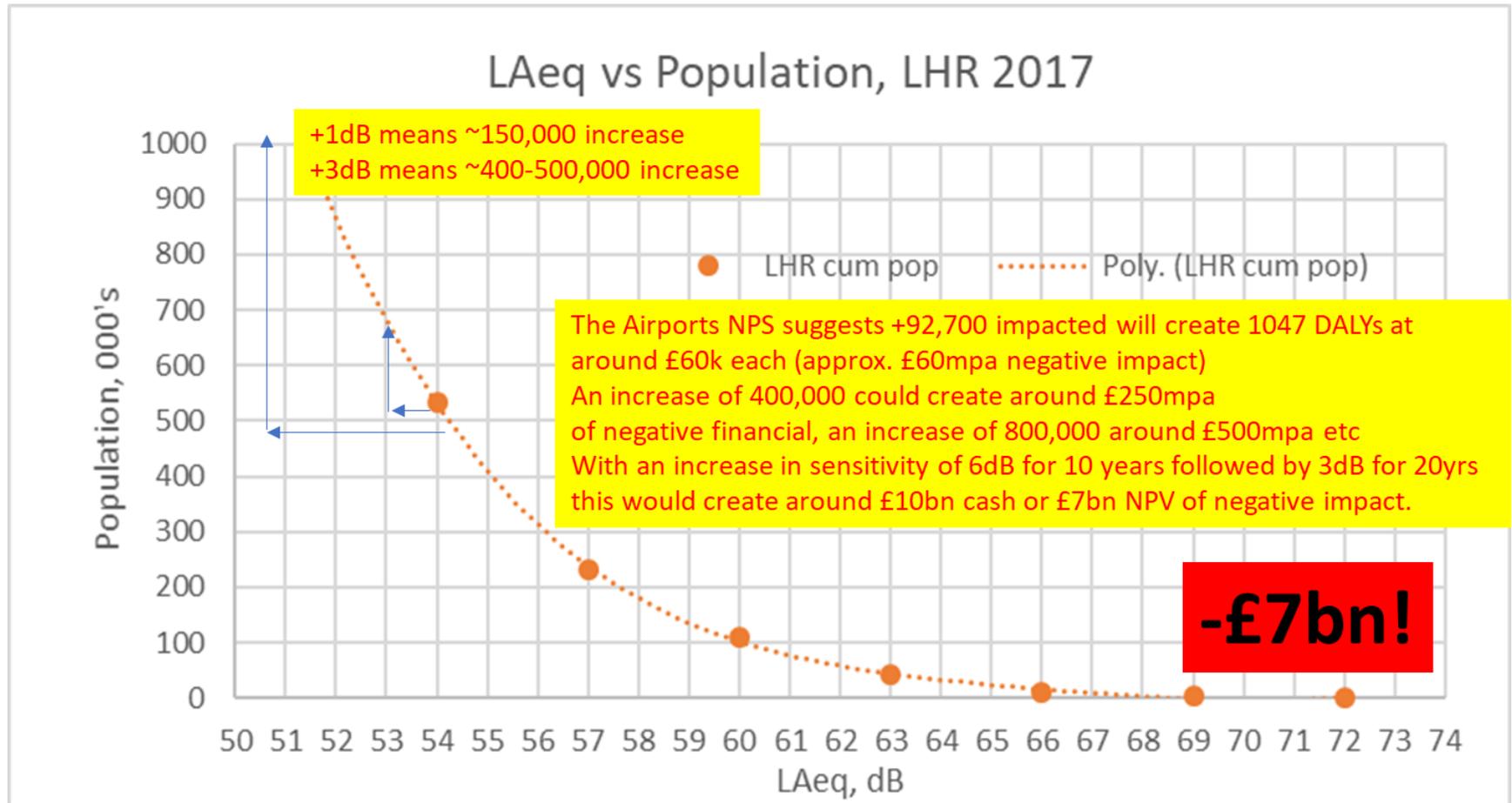
Further we understand the Government ‘Green Book’ policy requires (and any business would want) to understand the key risks in any decision so this should have been considered in the ANPS.

2. If so what range of changes in noise annoyance and for how long do the DfT think these might persist?

If one accepts change increases health impacts there is an open question on how long this would continue – we have evidence that this will be for many years.

Sensitivity to aviation noise and financial impacts

Context – Consider what either a 6dB L_{Aeq} increase due to change sensitivity which reduces with time will do to population impacted around Heathrow (noting WHO is around 9dB different to SoNA)



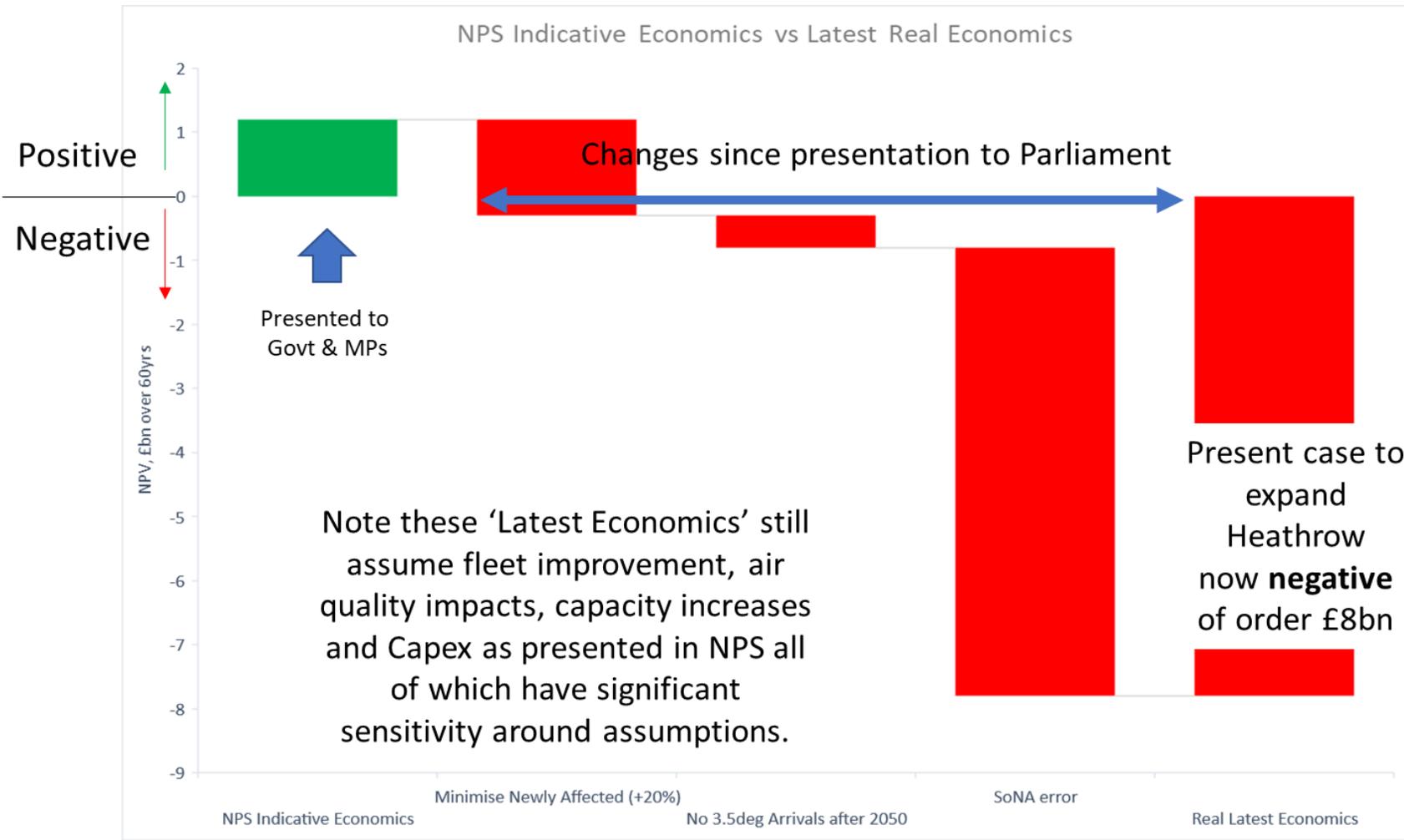
CNG Mar 2019

Data Source: CAA/ERCD 1801 Heathrow Airport 2017 Summer Noise Contours

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Impact of realistic health costs on the economics of LHR Expansion - NPV basis as in NPS £bn



CNG Mar 2019

The introduction of concentrated flight paths using PBN will make an expanded Heathrow's impacts so much worse

There are no successful precedents over densely populated areas such as Heathrow anywhere in the world

Phoenix Noise



Mayor of Phoenix Greg Stanton and his representatives explain FAA's policy of disregard for United States citizens.

Boston Noise



U.S. Rep. Steve Lynch in dogfight with FAA over NextGen aircraft noise and pollution. Calls FAA most unresponsive agency in government.

Santa Cruz Noise



Santa Cruz attorney cites destruction of prairie natural habitat by FAA's dirty NextGen transportation system.

Washington, D.C.



Arizona Senator John McCain sends letter to FAA Administrator Huerta urging changes to noisy flight tracks.

California



California Bay Area Resident files lawsuit against Federal Aviation Administration for unbearable aircraft

Chicago Noise



Chicago political activist Jas Charlier challenges Mayor Emanuel to come out from hiding re: O'Hare jet noise.

San Diego Noise



San Diego taxpayers give FAA hell over NextGen aircraft noise and pollution. FAA sits stone-faced, deaf and mute.

Chicago



Chicago political activist John Kane says meeting with Mayor Rahm Emanuel over aircraft noise a waste of time.

Chicago



Convenient for Chicago Mayor Rahm Emanuel: Air traffic over his home delayed until 2021.

Chicago



Chicago residents sing their

New York Noise



N.Y. Rep. Grace Meng introduces "Quiet Communities Act of 2015" to benefit all communities across U.S.

New York



New York Congressman Steve Israel calls the FAA the "Federal Arrogance Administration."

Brooklyn Noise



Park Slope, Brooklyn resident says FAA and Port are greenwashing filthy NextGen air transportation system.

Air France



Air France sponsors Paris UN climate conference, but who are they really kidding?

Washington, D.C.



Washington, D.C. Congresswoman Eleanor Holmes

Chicago



Congresswoman Schakowsky says if you are not at the table then you are inevitably on the menu re: aircraft noise.

Maryland



Maryland residents in for rude awakening from FAA's NextGen aircraft noise and aircraft pollution strategy.

Toronto



Toronto residents unite to fight for their airspace saying Nav Canada appears very accountable to the airline industry.

Germany



German protesters flow into the streets opposition to airport expansion and aircraft noise and pollution.

Germany



Protesters protest against aircraft noise error in the busy airport terminal. Loudly, just like the jets disturb their peace and quiet.

Living beneath constant air traffic and loss of quiet enjoyment from FAA's NextGen.

Chicago



Chicago residents join forces to reduce property tax due to O'Hare aircraft noise and FAA's NextGen.

Santa Cruz



Santa Cruz Save Our Skies: "An incense assault... you feel helpless... you can't stop it... you can't go outside"

Chicago



Chicago residents break U.S. record, logging more than 1 million O'Hare noise complaints!

Charlotte, N.C.



Charlotte, North Carolina residents bombarded by FAA NextGen noise and pollution.

Is a bad neighbor for Queens' residents.

New York



New York State Senator Tony Avella from Queens to Federal Aviation Administration: "This is not acceptable!"

Washington, D.C.



New York's U.S. Senator Charles Schumer sells out New Yorkers and all of America in his 2012 FAA Reauthorization bill vote.

New York



Queens, NY jet engine sound monitors reveal residents suffer from levels of jet noise considered unhealthy.

New York



NYC Councilman Dromm together with Queens environmental groups, criticize FAA NextGen aircraft noise and misery.

New Zealand



Auckland, New Zealand families starting to feel the pain and misery of living under NextGen aircraft noise flight tracks.

Heathrow recognised this in its 2016 European consultation response

Nothing has changed

https://www.easa.europa.eu/sites/default/files/dfu/CRD%202015-01_0.pdf

comment

103

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.

response

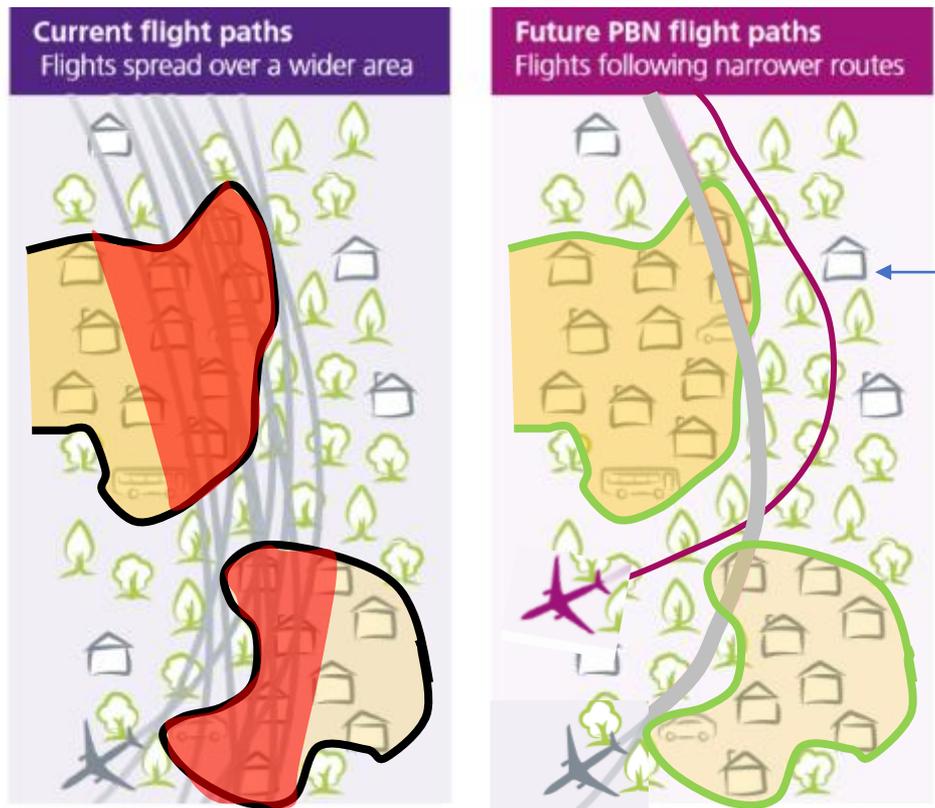
Noted.

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Where might PBN work?

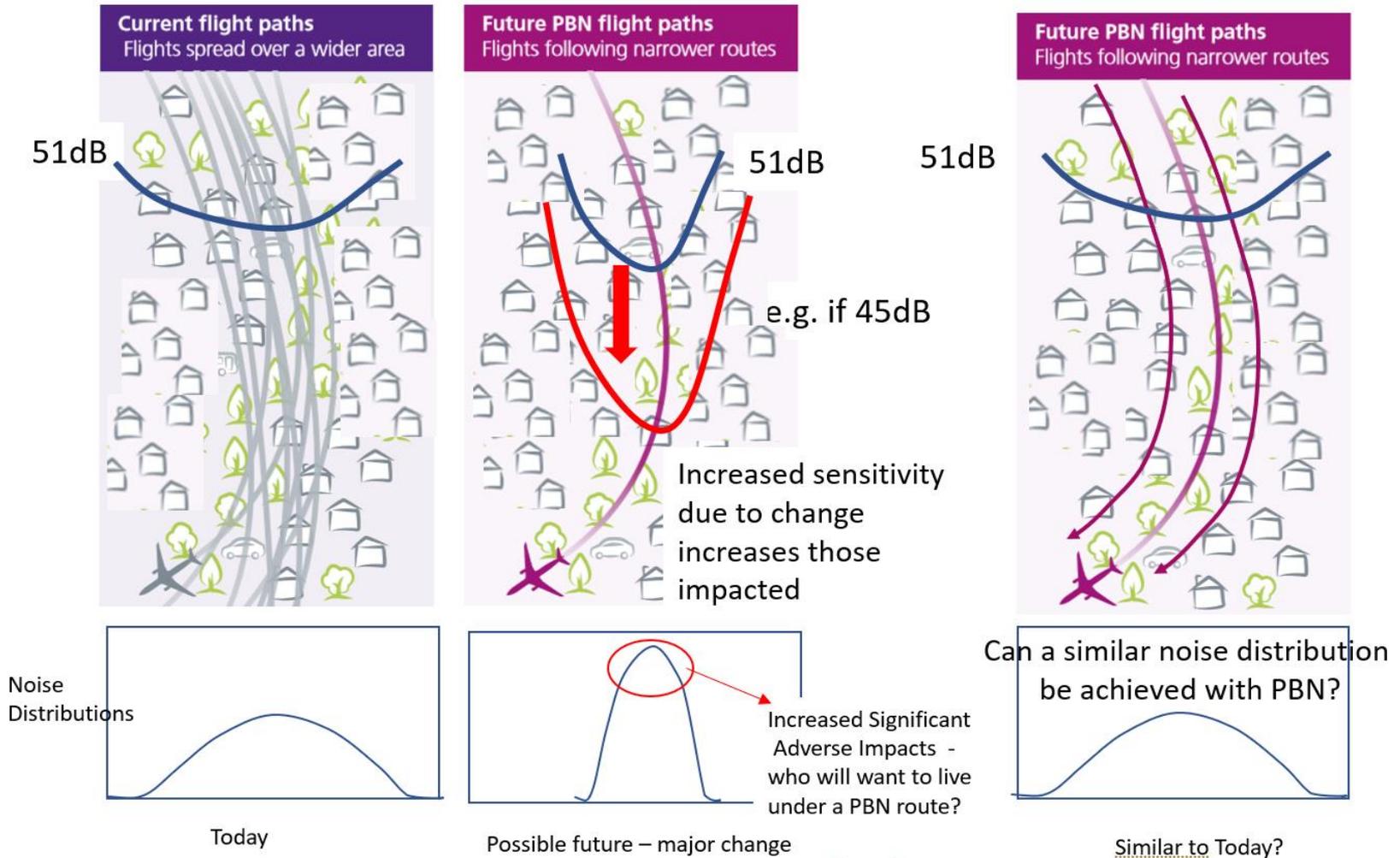


If change made those affected **people will need significant compensation** or the **choice to have their properties acquired**

Opportunity to use PBN over rural setting to manage noise impacts
- if villages and towns can be avoided

Figure is indicative

Why PBN does not work over high population densities



**THIS CANNOT BE
MITIGATED OVER LONDON**



Figure is indicative

What conclusions can be drawn?

SoNA is an inadequate evidence base for UK airspace modernisation where a multitude of fundamental airspace changes will occur. It did not address with an open mind whether annoyance occurs below 51 dB L_{Aeq} or the evidence of Heathrow's trial departures

The clear implication of Anderson's report on the 2014 trials is that **annoyance occurs well below 51 dB** and that in particular **change is associated with circa 6dB L_{Aeq} increased sensitivity**

As strongly recommended in WHO guidance it is evident **the UK's LOAEL and 'annoyance' thresholds for aviation need to be lowered**

Overall average L_{Aeq} should not be used to assess the impact of changes **over high density populations under departures**. Single mode analysis and $N>65$ metrics are required to understand the impacts

A full understanding of the particular impacts of extreme concentration involving the use of PBN is essential before airspace changes over high density populations are permitted.

What should happen next

The DfT must accept that airspace changes increase sensitivity. Static measures cannot be used to assess dynamic change situations. The current version of webTAG should not be used in its present form to assess airspace modernisation around Heathrow

Noise thresholds for 'annoyance' and LOAEL must be reset **prior to the DCO Enquiry**

The Government also needs to **undertake a full Treasury 'Green Book' risk analysis** of the ANPS using updated noise evidence as a matter of urgency

Single mode and $N > 65$ must be considered as the key metrics to assess the impact of proposed airspace changes, particularly in relation to departures around Heathrow. The use of overall **average L_{Aeq} is not appropriate in these circumstances**

Nobody has identified a way of satisfactorily introducing PBN over high density populations. Before any airspace change decisions are made **Heathrow needs to find and demonstrate with successful trials, acceptable solutions to introducing PBN over dense populations**