

# Benchmarking Heathrow's Noise Position

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HCNG – Heathrow Communities Noise Group

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**Benchmarking Heathrow's Noise Position. Dave Gilbert (Teddington Action Group). Noise and Airspace Community Forum 23/11/2022.**

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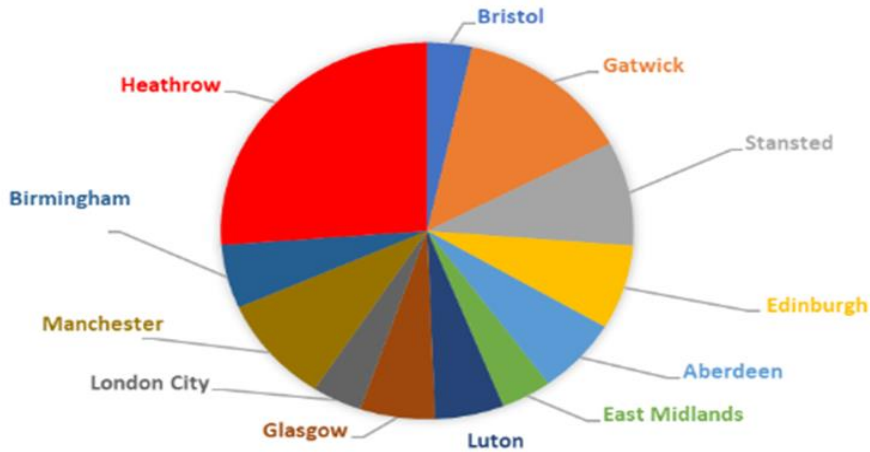
# **Benchmarking Heathrow's Noise Position**

## **- establishes context for actions to reduce noise**

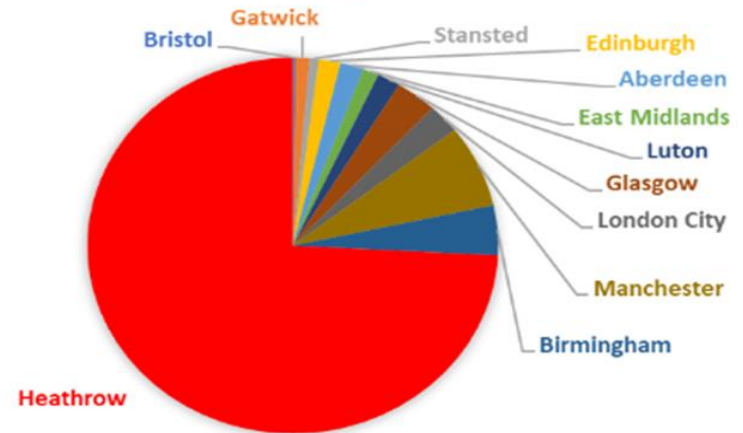
- Important to set Noise Action Plan in context
- Important to understand relative positions
- Comparisons with other airports allow new ideas or approaches to be brought into plans
- Current negative financial impact of noise important to understand vs cost (if any) of improvements
- Should use metrics that can describe annoyance

# Heathrow Compared to UK Airports

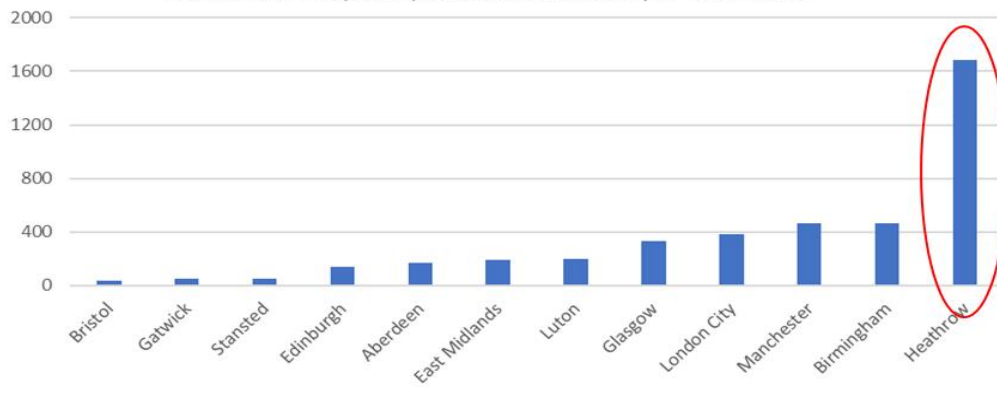
AIR TRAFFIC MOVEMENTS FOR UK AIRPORTS  
CONSIDERED BY AC NOV 2014 BASELINE TOTAL 1.7M  
**- HEATHROW IS ONLY AROUND A QUARTER**



55DB LDEN POPULATION IMPACTED FOR UK AIRPORTS  
CONSIDERED BY AC NOV 2014 TOTAL ~1M  
LHR > 75% - **HEATHROW IS IN THE WRONG PLACE IT  
NEEDS TO BE MADE QUIETER**



Numbers of People Impacted at 55dB Lden per 1000 ATMs

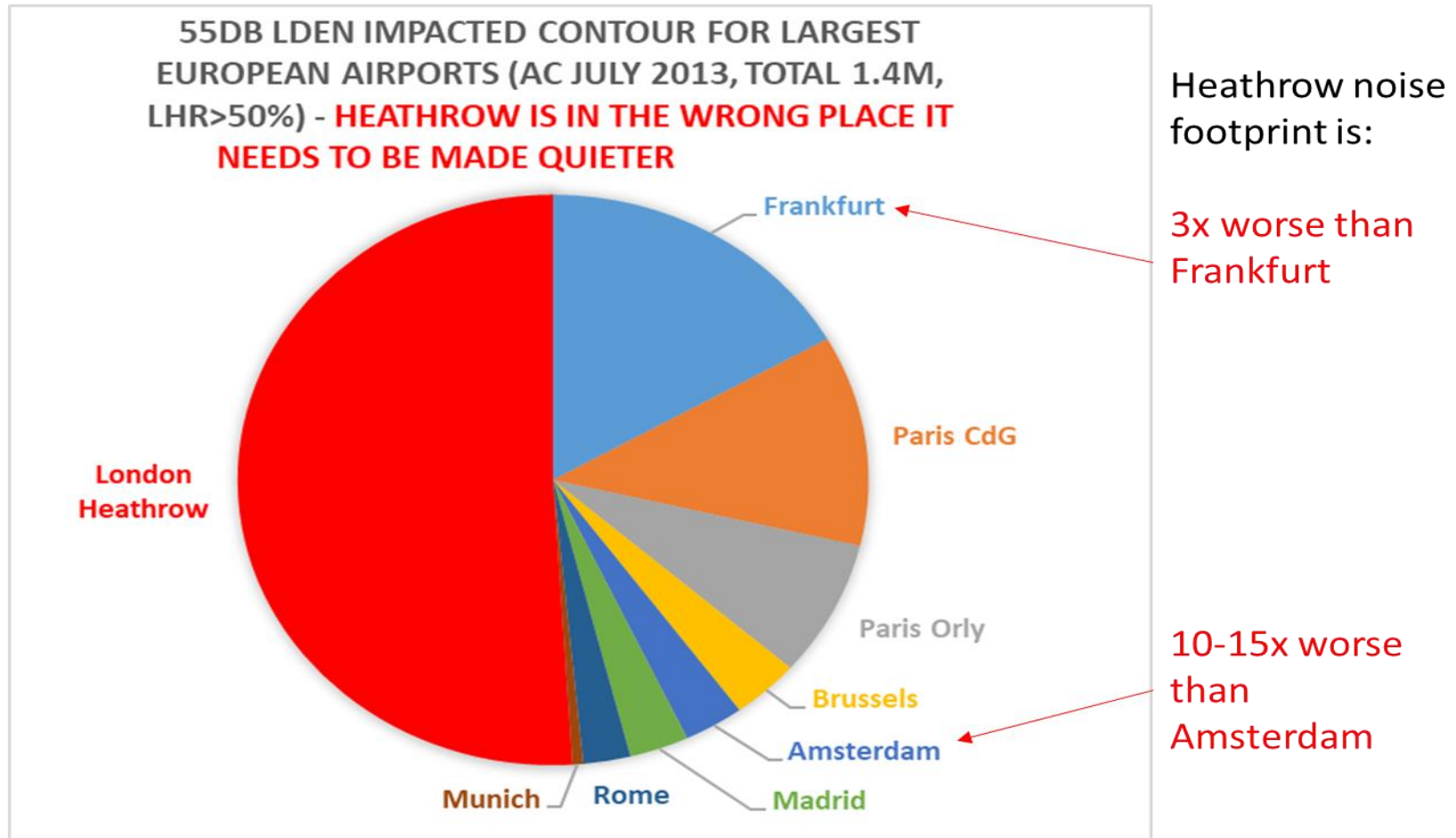


On average every flight at Heathrow impacts 9x more people and so is 9x more damaging than flights from the rest of the UK airports

This is because Heathrow is inappropriately situated as an airport in a highly populated area.

Source data [https://www.eea.europa.eu/data-and-maps/data/data-on-noise-exposure-4/noise-exposure-information-under-the/end\\_df4\\_df8\\_results\\_2012\\_150630.zip](https://www.eea.europa.eu/data-and-maps/data/data-on-noise-exposure-4/noise-exposure-information-under-the/end_df4_df8_results_2012_150630.zip)  
LDEN is a measure of noise combining day, evening and night exposure with extra weightings in the evening and night periods used across Europe. AC = Airport Commission

# Heathrow Compared to European Airports



As Heathrow, Frankfurt and Amsterdam all have similar amounts of air traffic movements this shows **Heathrow's noise performance is the worst in Europe at every level**

# Question & Benchmarking Suggestion?

- Is this still the relative position? - 2017 UK & European data is now available
- Suggest 2017 data should refresh these graphics & the progress of Noise Actions Plans in the future should also be assessed versus other airports

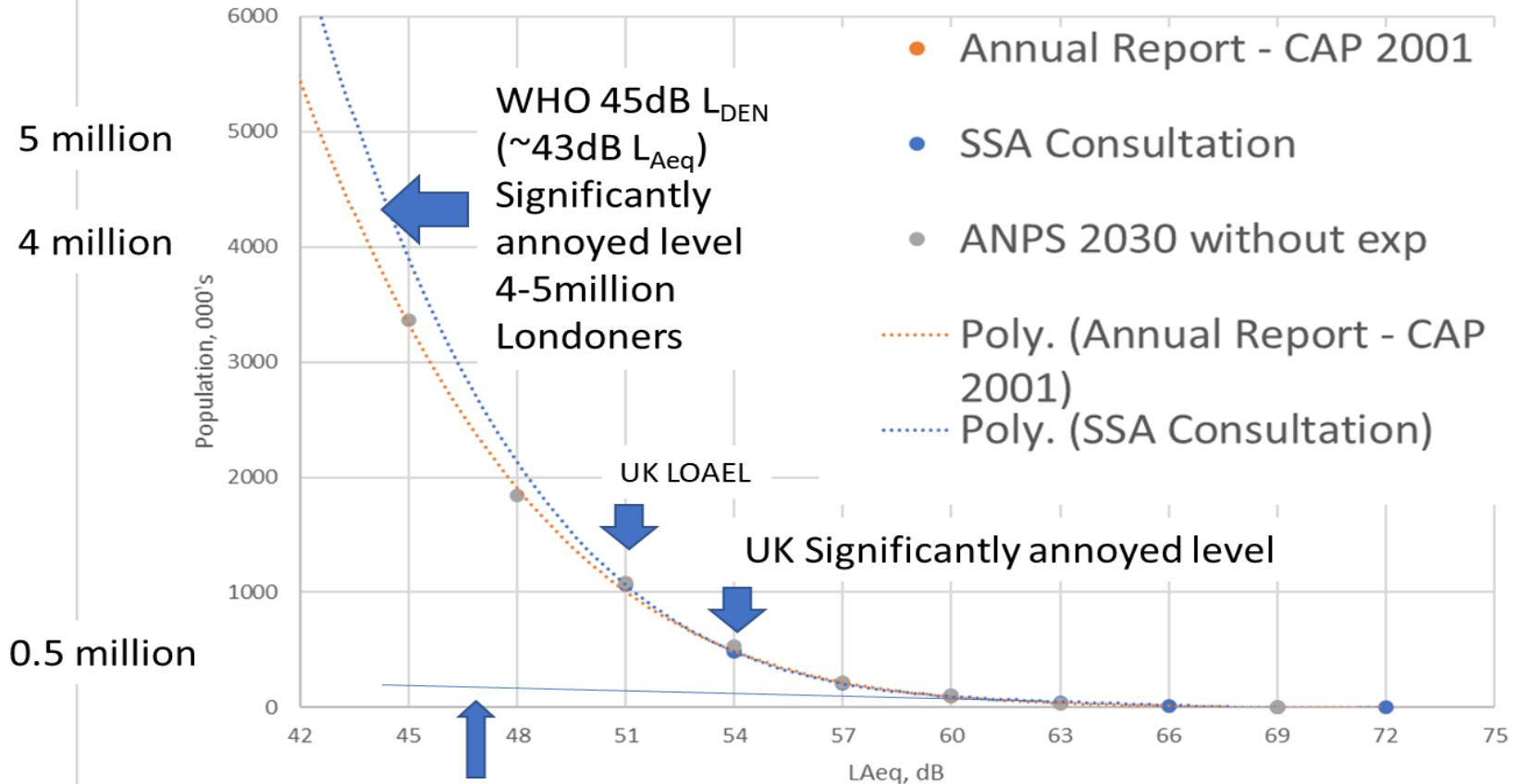
However, it is recognised that annoyance and health impacts go well below 55dB  $L_{DEN}$ . SoNA 2014 is being updated so current assumed UK annoyance levels likely to change....

# Heathrow impact to WHO 'Significantly Annoyed Level'

(note webTAG DfT's financial model asks for data down to a similar 45dB  $L_{Aeq}$  level)

L<sub>Aeq</sub> vs Population, LHR Contours

Note - Estimates from different data sources – Modelling should Confirm Numbers

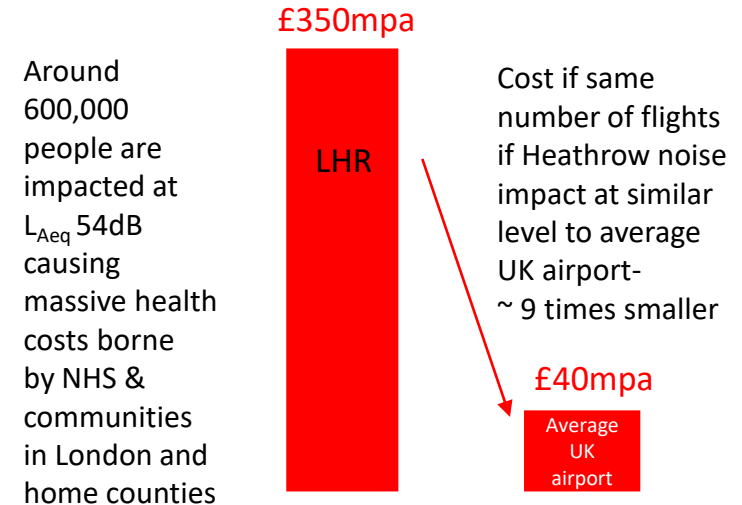


Note LDEN is a measure of noise combining day, evening and night exposure with extra weightings in the evening and night periods when annoyance is increased, this metrics is used across Europe.. While L<sub>Aeq</sub> day or 16hrs is used to set UK thresholds. To approximately convert L<sub>Aeq</sub> to LDEN, 2dB is added.

# webTAG/TAG - Negative Financial Impacts of Noise

Financial Cost to the NHS & communities - The dis-benefit of noise

- Baseline important for comparison
- Previous evaluation suggests LHR has negative impact due to noise of £350m/pa on communities & NHS
- Compared to average UK airport with same number of flights this would be of order £40m (impact ~1/9)
- If the polluter paid for the pollution caused at LHR, each ATM would charge its passengers around £730 (£350m/480k), so if 150 pax/flight then £5 each
- Suggestion to use recent data (2019) to calculate webTAG financial impact of LHR (to include impact of daytime to 45dB  $L_{Aeq}$ )



Using DfT WebTAG  
AEF & NPS analysis  
DfT stated at HCNF they  
'do not know financial  
impact of present operations'

£350mpa of  
dis-benefits is equivalent  
to £21bn cash over 60yrs

# Benchmarking Suggestions

- Confirm 2019 London population impact to SoNA 2014 and WHO annoyance levels (of order 4-5 million)
- Understand baseline financial impact – using 2019 data in webTAG (of order £350mpa or £5 passenger)

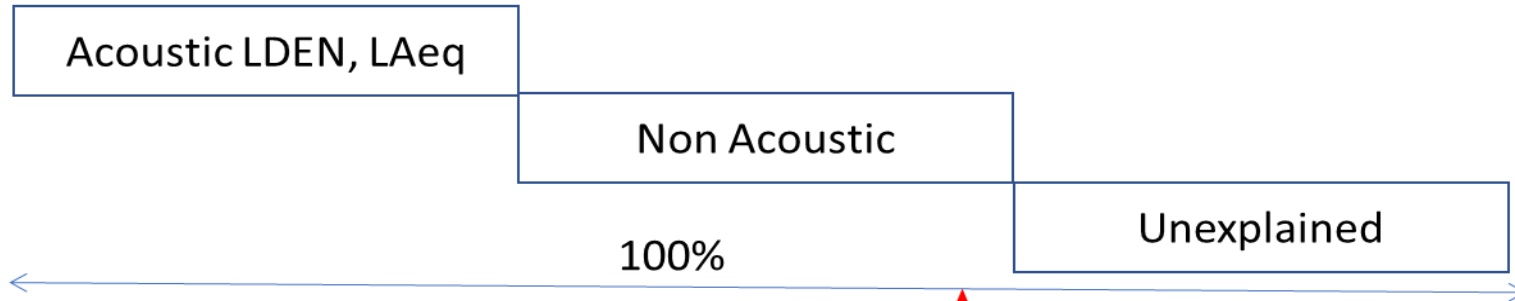
However, these benchmarks are based on average sound levels, which only explain 30% of annoyance, for example event based metrics are a better describe departure noise annoyance...



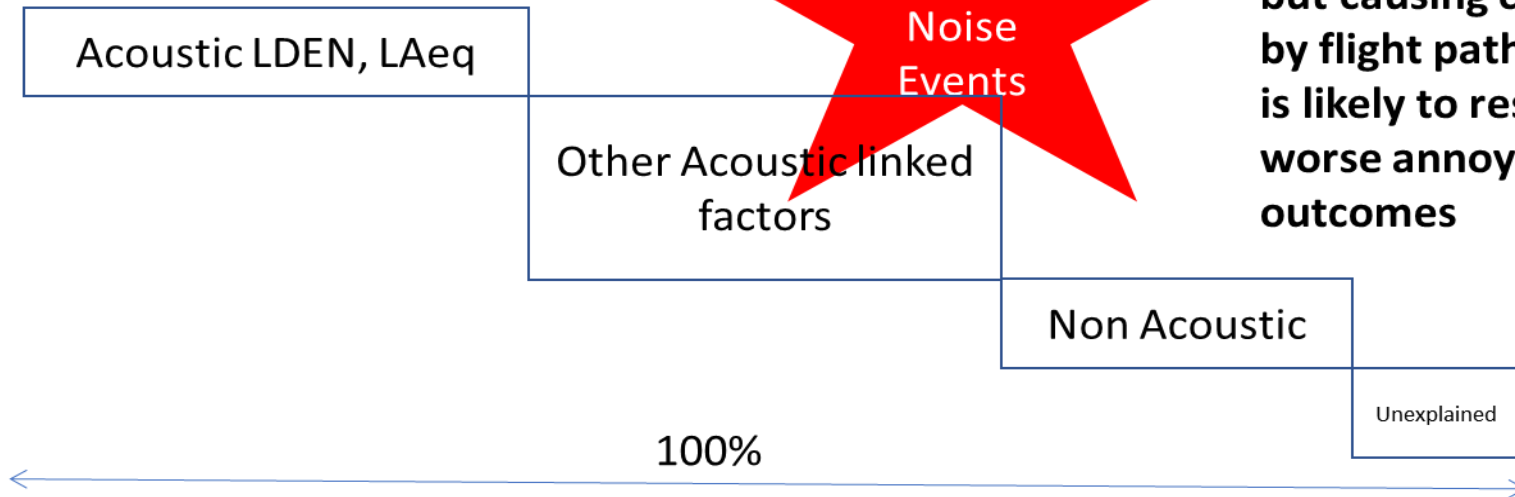
# Understanding of Annoyance

– Factors linked to annoyance

ICAO white Paper on Noise



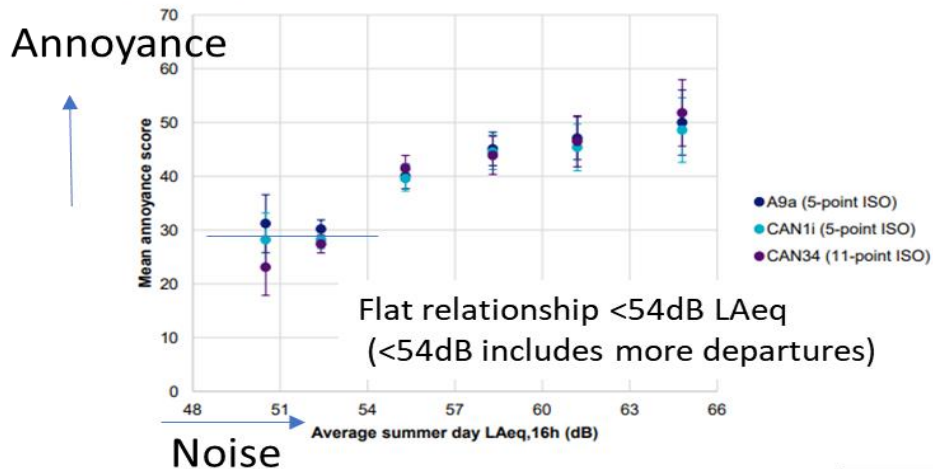
Andersen Acoustics & others work over several years;



# Benchmarking should use metrics that describe Annoyance

- for example for Departures using data from SoNA 2014

Figure 1: Plot of mean annoyance scores in SoNA 2014 survey as a function of average summer day  $L_{Aeq,16h}$  noise exposure



SoNA 2014 LAeq 16hr	Average Numbers of N>65dB Events			
	1-25	25-50	50-100	>100
48-51	75%	16%	9%	
51-54	44%	23%	24%	9%
54-57		6%	28%	66%
57-60				100%
60-63				100%
66-69				100%
69-72				100%

Figure 3: Plot of mean annoyance scores in SoNA 2014 survey as a function of 16-hour  $N_{70}$  noise exposure

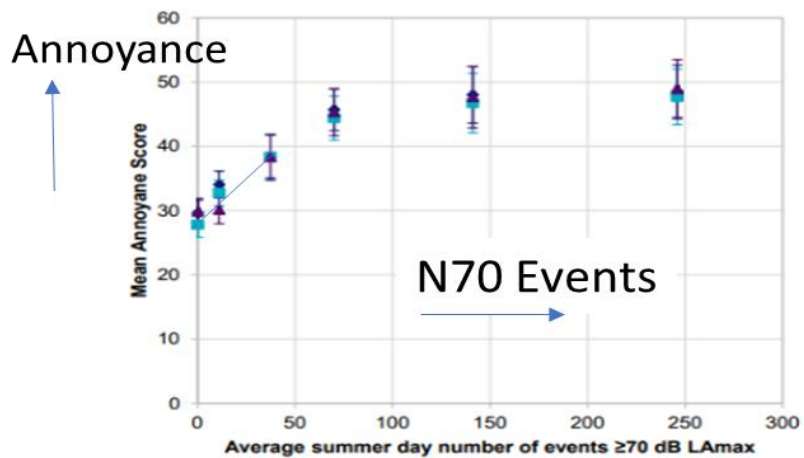
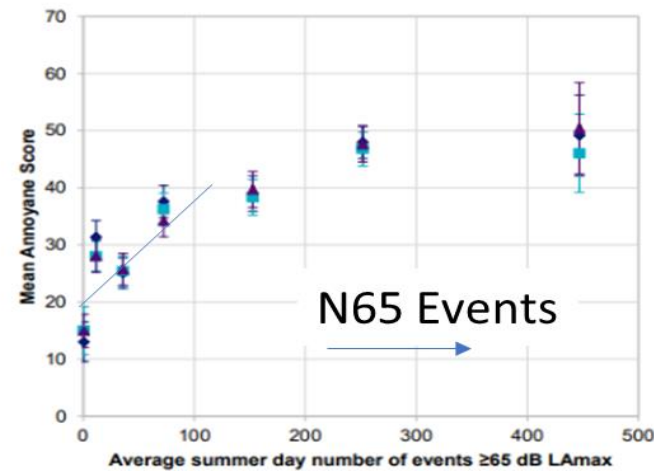
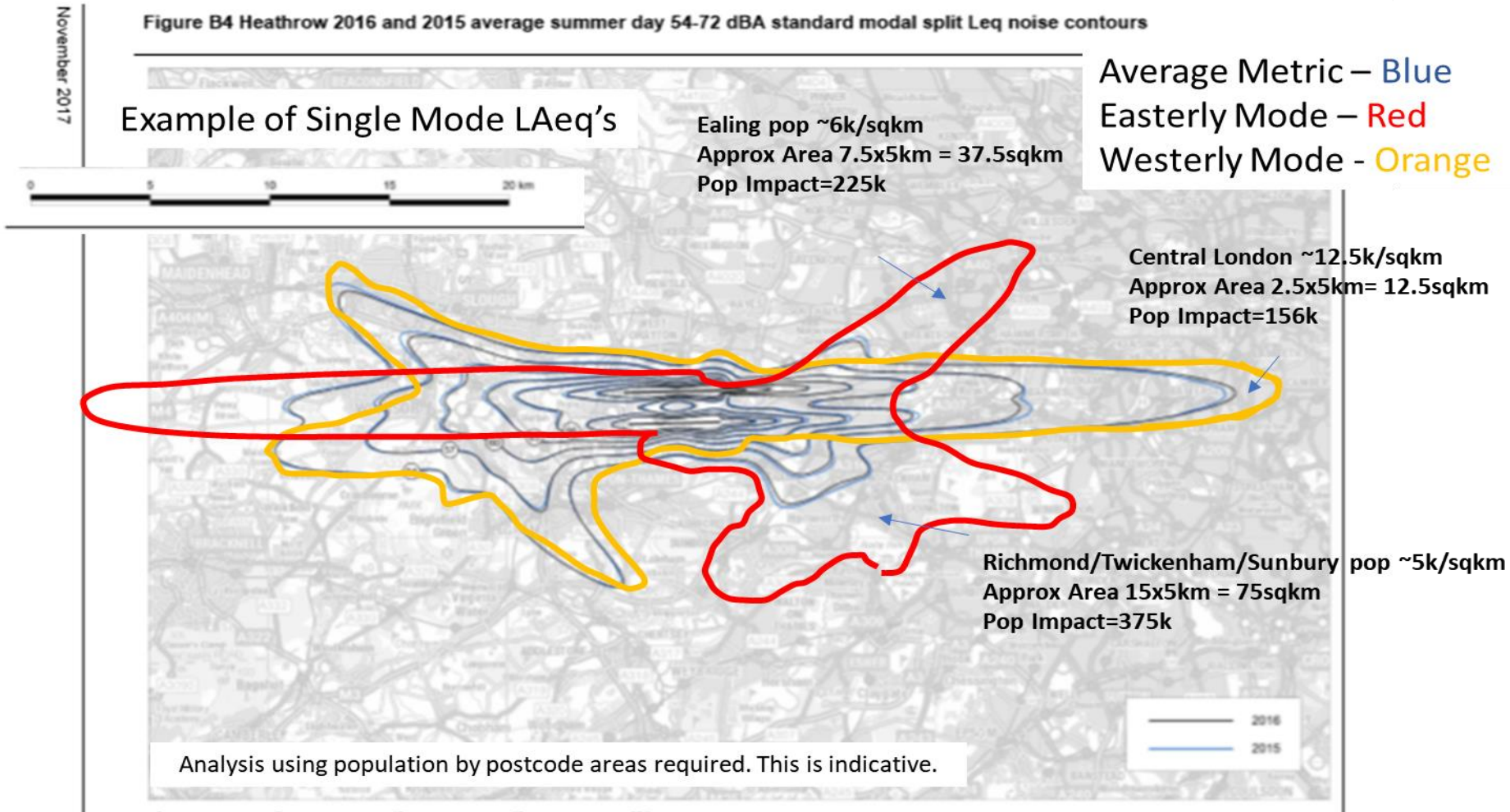


Figure 4: Plot of mean annoyance scores in SoNA 2014 survey as a function of 16-hour  $N_{65}$  noise exposure



Annoyance from Departures can be reduced with lower numbers of noise events

# Single Mode Metrics and Noise events



## Benchmarking Suggestion – Establish Single Mode Event metrics N70, N65 day and N60 night

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# Benchmarking Suggestions

- Use latest UK and pan European data to understand relative performance of Heathrow's vs other UK airports and European airports
- Confirm 2019 London population impact to levels used in DfT webTAG/WHO levels (expect of order 4-5 million)
- Understand current financial impact – using 2019 data in webTAG (expect of order £350mpa or £5/passenger)
- Provide Baseline Single Mode Event Contours N65/N70 daytime and N60 night time
  
- Use Independent Consultants
- Improve the understanding of Annoyance from Noise