# Major flaws in the UK Survey of Noise Attitudes are not being answered by the Aviation Industry Experts or Government prior to the expansion DCO – why not?

Dave Gilbert and Stephen Clark

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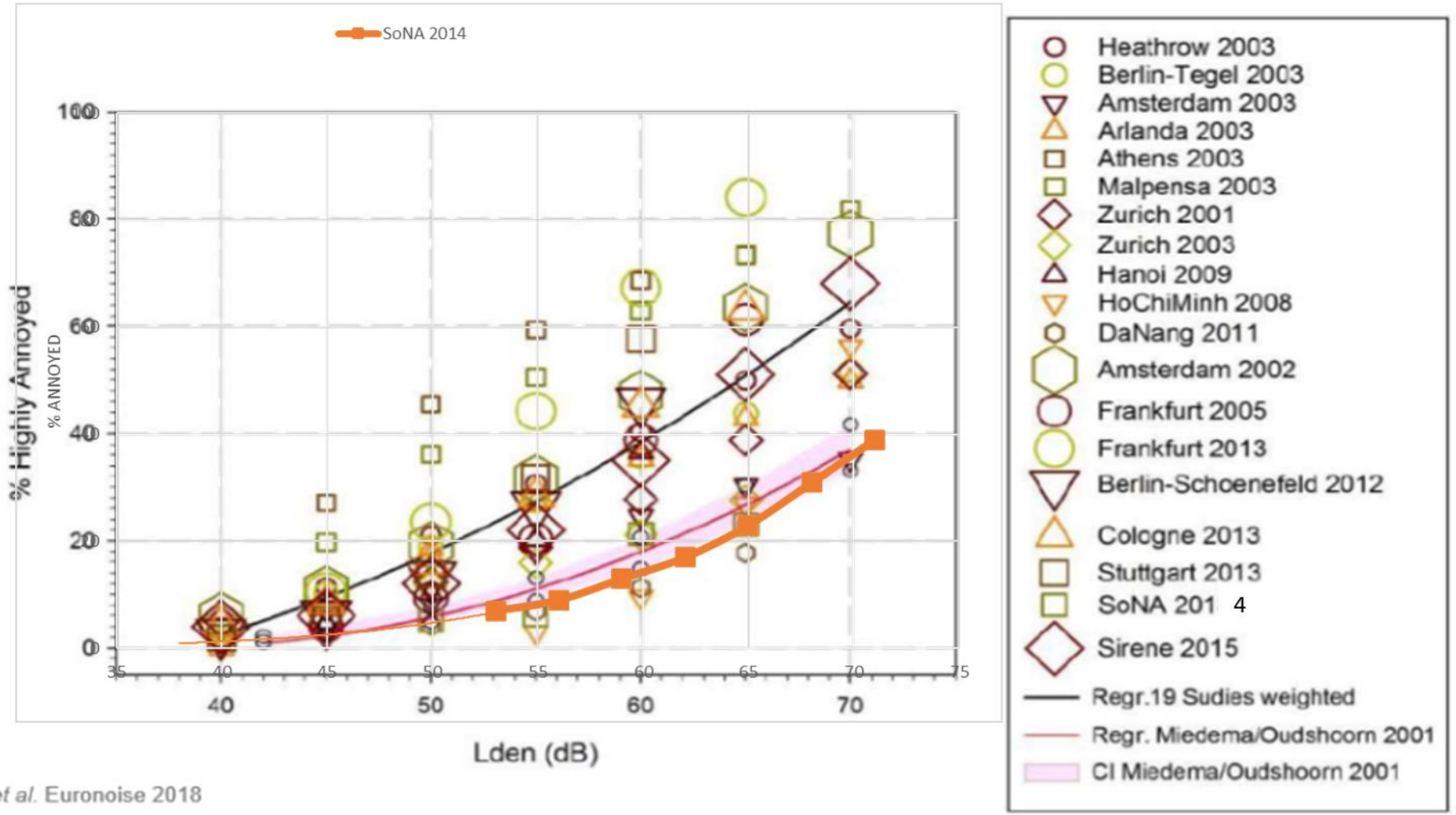
# History of challenges at HCNF and elsewhere – why no answers?

- Nov 2018 HCNF – '**SoNA vs WHO vs SoNA Noise Guidelines**' identifying major differences and suggested identifying the reasons
- Jan 2019 HCNF – '**SoNA follow up**' showed airspace change a big factor and problems with lowest observable affect levels (LOAEL) – Heathrow suggested a meeting with DfT
- Feb 2019 CNG & DfT – '**SoNA follow up**' but DfT refused to answer because of JR
- March 2019 AEF Noise Conference – '**Understanding the implications of changes in air space; WHO, SoNA and the missed evidence**' – showed sampling problems by SoNA and how Heathrow 2014 PBN trials increased sensitivity but have not been included into Govt thinking
- March 2019 HCNF – '**Deficiencies in SoNA and PBN trials**' – as above showed sampling problems in SoNA, confirmed change an issue by playing back results of PBN trials to Heathrow showing increased sensitivity
- Most recently 5th June to HCNF - '**SoNA a low rate of change survey vs high rate of change ANPS & Aviation 2050 Scenarios**' SoNA plotted against WHO and recent studies, experts arguing about 6-9dB change impacts, SoNA not an appropriate study to be used for change (ANPS) - Heathrow agreed to organise a meeting with experts prior to the next (July) HCNF

# Recap - Recent and old studies show SONA as an outlier

The most recent evidence (including post WHO sources) shows the divergence between SoNA and current international research even more markedly.

SoNA is an outlier (the mauve curve is based on a 20 year old research)




Guski *et al.* Euronoise 2018

# Recap - A key factor is that change increases noise sensitivity not assessed by SoNA – leading Noise experts are arguing about the level (not the effect)

Quote from International Journal of Environmental Research and Public Health 'A Systematic Review of the Basis for WHO's New Recommendation for Limiting Aircraft Noise Annoyance' December 2018 Truls Gjestland SINTEF DIGITAL, N-7465 Trondheim, Norway; truls.gjestland@sintef.no; Tel.: +47-932-05-516

*'Gelderblom et al. [20] have applied this "high-rate/low-rate" classification to 62 aircraft noise annoyance studies conducted over the past half century. They show that there is a difference in the annoyance response between the two types amounting to about 9 dB. To express a certain degree of annoyance people at a high-rate change (HRC) airport on average "tolerate" 9 dB less noise than people at a low-rate change (LRC) airport. Guski et al. [2] report a similar but somewhat smaller, 6 dB, difference. Any attempt to develop an average dose–response curve from at set of studies will therefore be highly dependent on the types of airports that are included.'*

Ref 2 Guski, R.; Schreckenberg, D.; Schuemer, R. 'WHO Environmental Noise Guidelines for the European Region. A systematic review on environmental noise and annoyance' Int. J. Environ. Res. Public Health 2017, 14(12), 1539

Ref 20 Gelderblom, Femke B.; Gjestland, Truls; Fidell, Sanford; Berry, Bernard 'On the Stability of Community Tolerance for Aircraft Noise' Acta Acustica united with Acustica, Volume 103, Number 1, January/February 2017, pp. 17-27(11)

**A 6dB difference is equivalent to 4x more flights of the same loudness, a 9dB difference 8x more**

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# Recap - The UK Govt does not seem to have included change in its development of airspace policy by only using SoNA

"…It is therefore not possible to determine the "exact value" of %HA for each exposure level in any generalized situation. Instead, data and exposure–response curves derived in a local context should be applied whenever possible to assess the specific relationship between noise and annoyance in a given situation. If, however, local data are not available, general exposure–response relationships can be applied, assuming that the local annoyance follows the generalized average annoyance."

From WHO (2018) Environmental Noise Guidelines for the European region

SoNA (2014) is a UK based survey with 75% of respondents from around Heathrow it could be considered 'local'. However SoNA (2014) provides **a static (LRC) measure** of annoyance.

**The ANPS and 'Aviation 2050' are expansion scenarios, each involving an extremely high rate of change (HRC)**

It is not appropriate to apply SoNA to either the ANPS or airspace modernisation. In reality annoyance levels will occur 6-9dB lower and in consequence the **significant adverse impacts will be far higher than recognised in UK aviation policy**.

**The Government needs to re-evaluate its decisions on the basis of this clearly proven research**
**Heathrow as a responsible corporation needs to apply latest understanding of airspace impacts in its planning**

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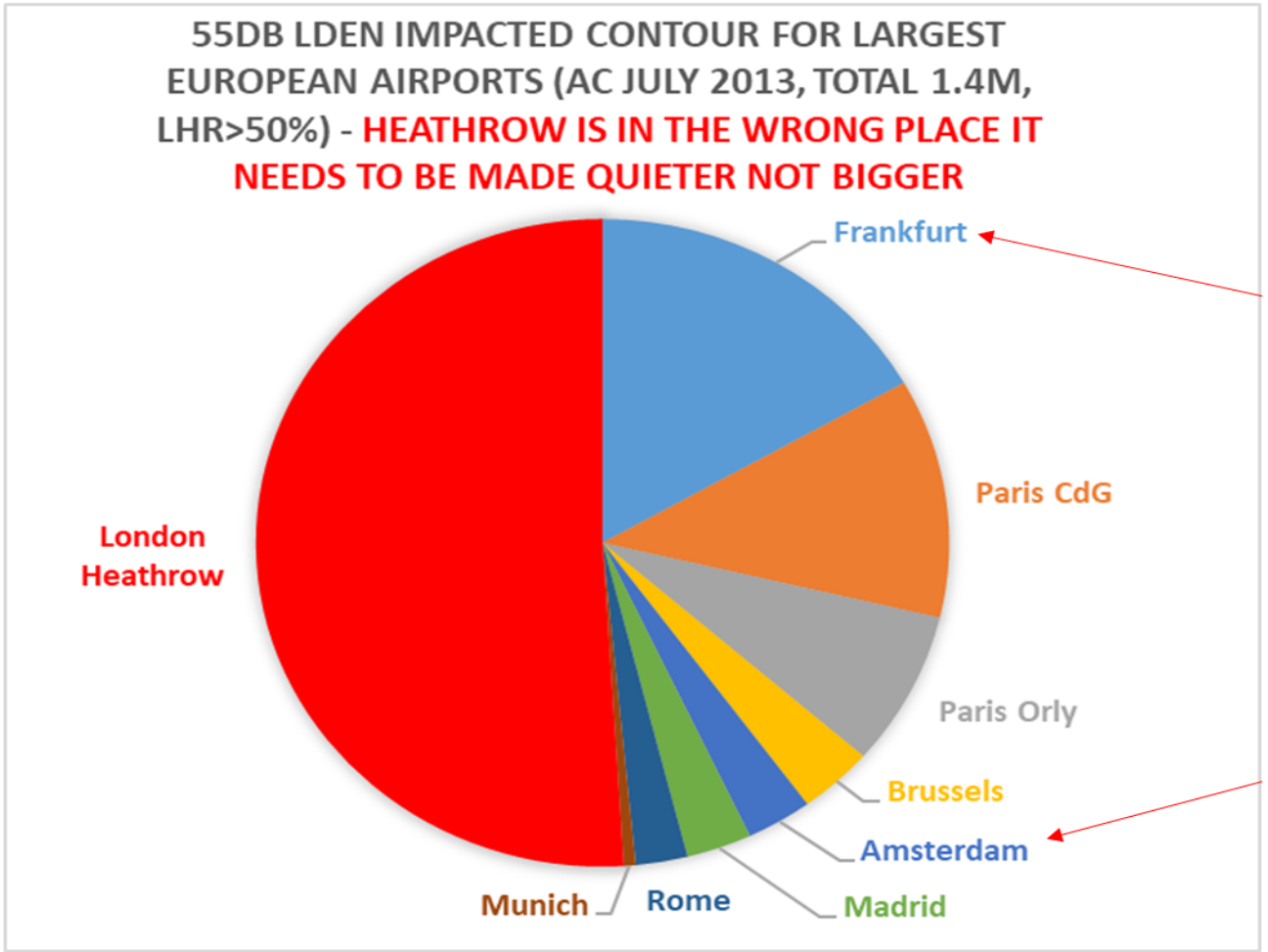
# Why is this so important - Heathrow vs European Airports

In 2017 Heathrow impacted
**182 sq km**
in and around London
at 55dB $L_{DEN}$
or above.

**699,600 people**
are being impacted
at this level




Heathrow noise footprint is;

3x worse than Frankfurt

10-15x worse than Amsterdam

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 as it impacts so many people**

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# The impact of change in Heathrow's flight paths would be massive because they fly over London's high population density

## Static SONA

- Significant Annoyance Threshold - presently set at 54dB
- 550,000 people
- Lowest Observable Adverse Effect Level – presently set at 51dB
- 1,000,000 (~2x) people

WebTAG impact today £350-400mpa

**CHANGE Brings 6-9dB increased sensitivity**

## 'Change' ANPS/Aviation 2050

- 45-48dB Significant Annoyance Threshold
- >2,000,000 people?
- 42-45dBdB LOAEL – Lowest Observable Adverse Effect Level
- >4,000,000 people?

WebTAG financial impact after change >£1bn a year?

In ANPS terms that could reduce the NPV by order £10-20bn+ on an already marginal case.

Note Decibel levels are average sound energy levels or LAeq's not loudness
Population impacts based on 2030 figures obtained through FoI

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# The DfT 'view' is isolated

## DfT

- Our view is that noise metrics based on [static] 'SoNA' levels are suitable
- This apparently applies to flightpath changes, expansion and aviation 2050

## Wide ranging evidence from UK Trials, Leading Noise Experts, Other UK Govt Depts, UK Noise Consultants

- CAA have confirmed they avoid change when undertaking noise surveys (such as SoNA 2014) as it distorts [increases] the annoyance levels
- Heathrow have shown the massive impacts of change during the 2014 PBN trials, Andersen Acoustics confirmed increased sensitivity seen; 6-9dB below SoNA 'significant annoyance levels' – trials had to be abandoned
- WHO and subsequent studies shows SoNA is an outlier – with differences of 11dB in thresholds proposed. A key factor is airspace change.
- Europe's top Noise experts are debating whether change produces a 6 or 9dB difference (not whether there is an effect)
- Public Health England (PHE) in its submission to the Heathrow Expansion DCO scoping documents notes;

*"There is a growing evidence base on a "change effect" with respect to annoyance reactions to aviation noise. In order to more accurately predict impacts on health and quality of life, PHE suggests that the population affected by aviation noise is split into four categories…. [including those who experience change both in terms of average noise and flight numbers]'*

*'and the best available evidence with respect to the change effect used to quantify the associated health impacts…"*

- Leading UK consultancies (Ricardo & Andersen Acoustics) are arguing that SoNA was based on those 'habituated' to noise and therefore incorrect to apply to a change situation (see Manston DCO documents)

And it is also COMMON SENSE that airspace change brings about increased noise sensitivity!

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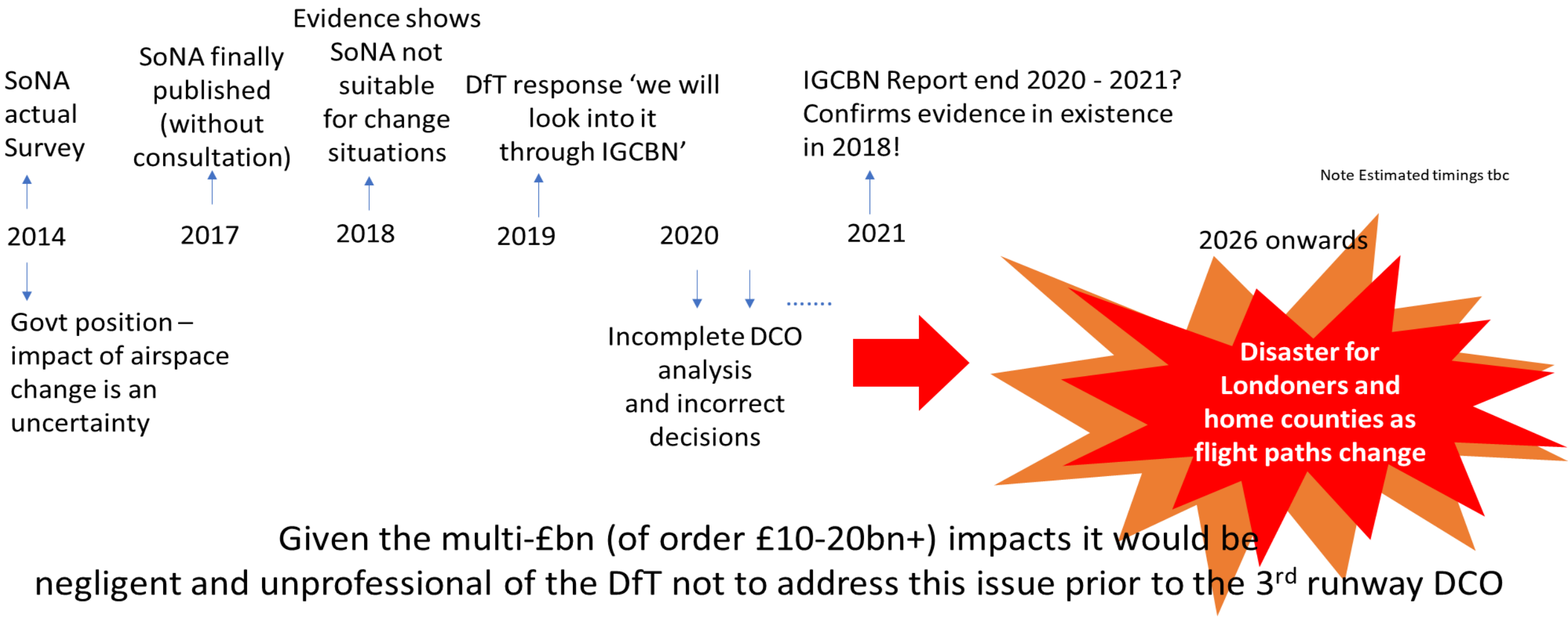
# Timelines – flaws in SoNA




Given the multi-£bn (of order £10-20bn+) impacts it would be negligent and unprofessional of the DfT not to address this issue prior to the 3rd runway DCO

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# Questions to Experts

- **Andersen Acoustics (AA)**

- AA have shown increased sensitivity to noise from the abandoned 2014 PBN trials
- AA have argued that SoNA is inappropriate to be used in change situations as it measured annoyance level of those habituated to noise

Question - What level of impacts due to change would you be advising Heathrow to incorporate in its DCO development which will involve large changes in airspace?

- **CAA**

- CAA have confirmed SoNA is undertaken in conditions to avoid change as change distorts [increases] noise annoyance

Question 1 - What level of impacts due to change would you be advising Heathrow to incorporate in its DCO development which will involve large changes in airspace?

Question 2 - What level of impacts due to change would you be advising the Government to incorporate in its thinking if it is suggesting changing airspace?