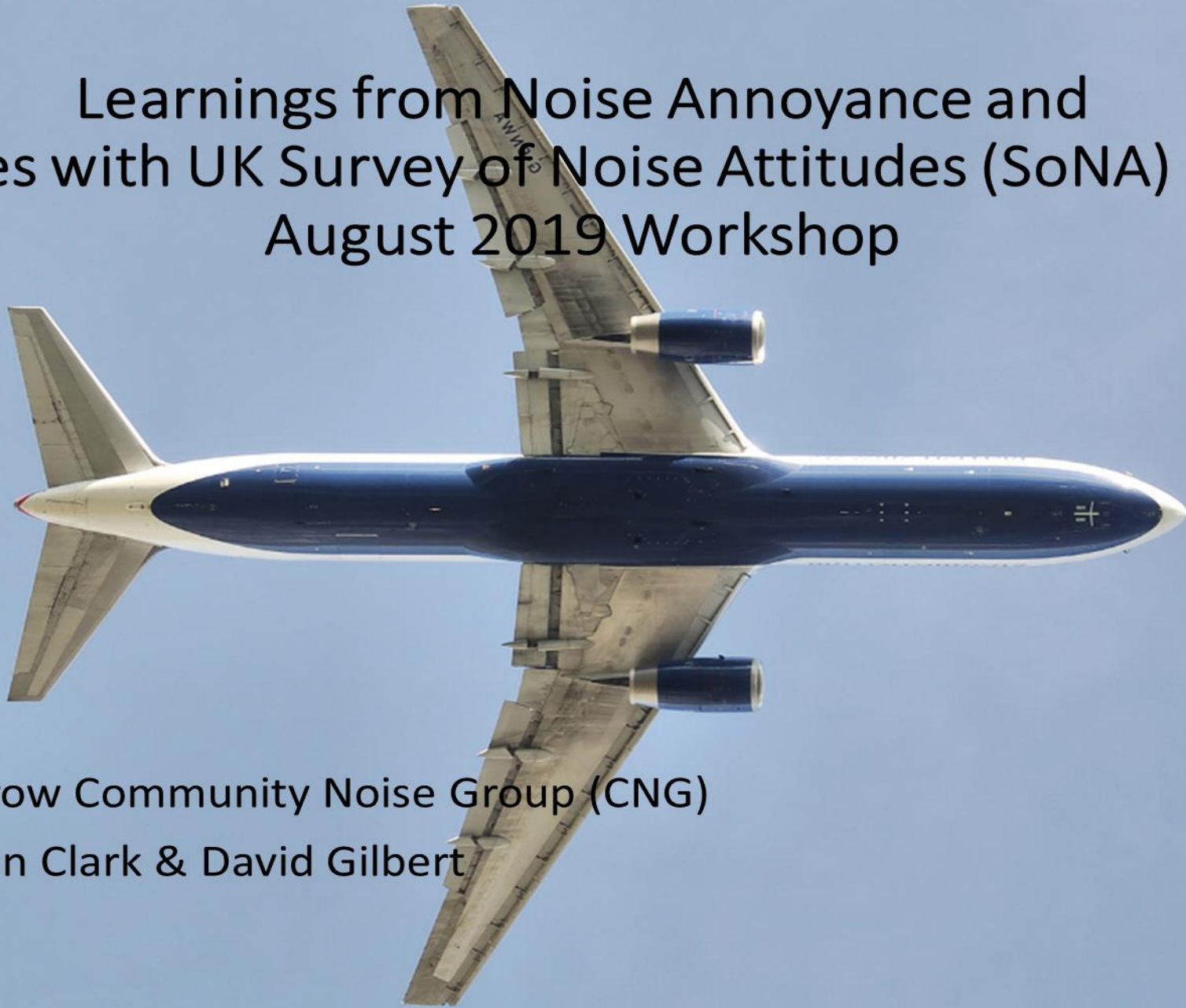


Learnings from Noise Annoyance and Issues with UK Survey of Noise Attitudes (SoNA) 14th August 2019 Workshop



Heathrow Community Noise Group (CNG)
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Context

WHO v SoNA 9.4% Highly Annoyed (HA) at 45dB L_{DEN} compared to 7% HA at 51dB L_{Aeq} (equivalent to 53dB L_{DEN})

Challenges made at HCNF previously

- Change increases Annoyance
- LOAEL far too high

CAA accepted SoNA static at AEF (intentionally and since T5 inquiry)

CAA agreed at HCNF that change is an important factor

Noise Annoyance Workshop did not resolve issues - need to find a way forwards

Workshop outcomes and issues arising

3 learnings

- The combination of L_{Aeq} and intermittency or noise events gives better correlation with Annoyance (from R Guski presentation at workshop)
- It was suggested that non acoustic factors can account for 30% of noise annoyance
- SoNA was undertaken in 2014 during the AC's work; it was been argued this may have affected the survey (although SoNA did not address areas that had experienced actual change)

Questions that have not been answered

- To what extent did the AC's work affect SoNA and how much real airspace change does SoNA have account for?
- Justification to set LOAEL at 51dB L_{Aeq} seems arbitrary. Why weren't areas below considered?
- SoNA sampling issues about types of household and locations were not addressed in detail
- How can rewrites of SoNA during drafting, showing different conclusions, be explained?
- How can WHO and SoNA be reconciled?

Recommendations at workshop

- When asked at the noise workshop what one piece of research would help Stephen Turner responded that he would repeat SoNA but start wider

Noise Annoyance – including intermittency improves correlation

Data from 'Survey of Noise Attitudes 2014: Aircraft CAP 1506, published 2017' otherwise referred to as SONA

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

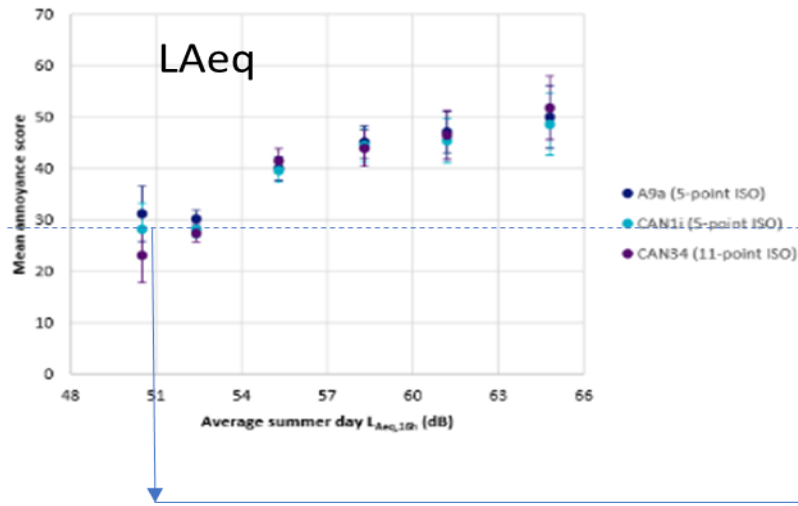
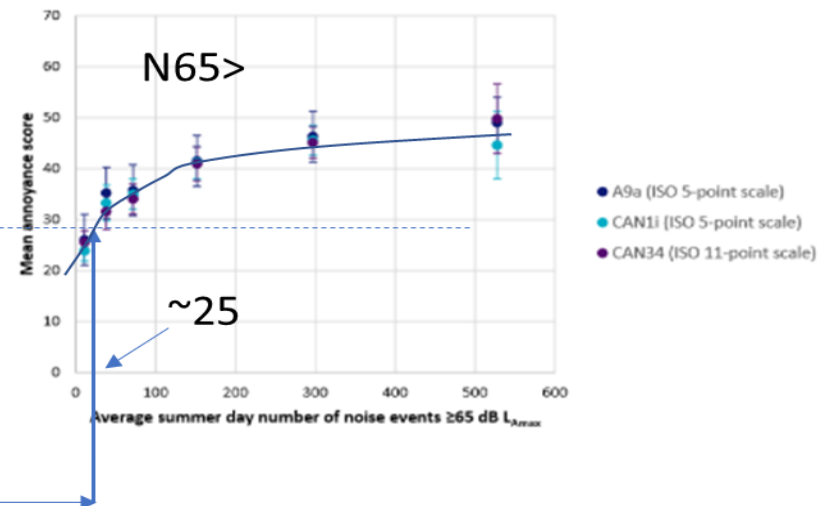


Figure 4: Plot of mean annoyance scores in SoNA 2014 survey as a function of average summer day, 16 hour N65 noise exposure



Rainer Guski showed better correlation with annoyance if intermittency is included – SoNA data supports this position both LAeq and N> metrics correlate with annoyance.

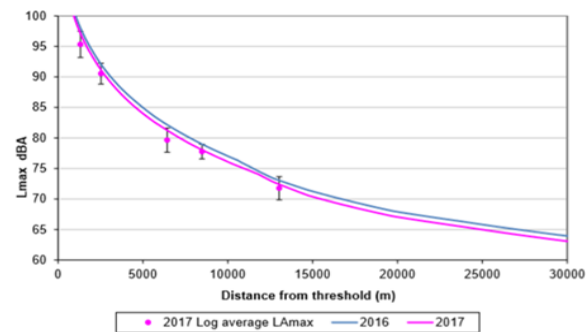
Although communities believe LOAEL should be much lower if the Government set LOAEL at 51dB LAeq then it should **also set an N65 events level of around 25 events a day**. The lower of either metric should define LOAEL.

Further context - what does a 51dB L_{Aeq} level of noise mean?

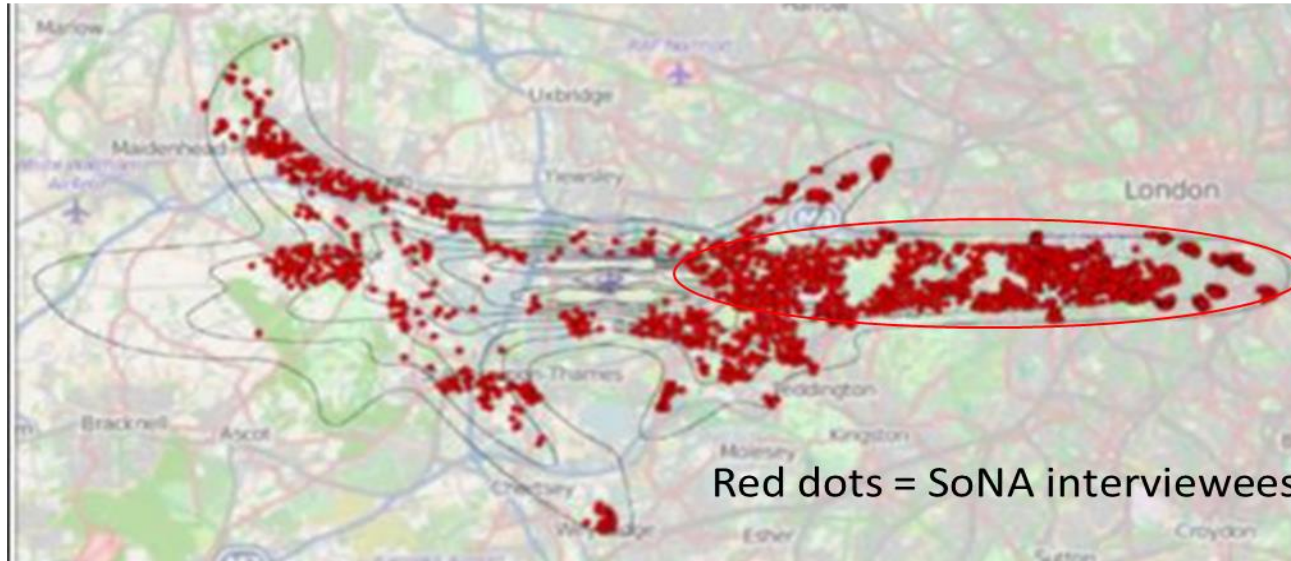
Event Types	Single events All 65dB L_{Amax} / SEL of 75dB	Indicative Mix 65dB (75%) & 70dB (25%) SELs of 75 & 80dB
<i>Planes an hour</i>	14	9
<i>Minutes between planes</i>	4.3	6.5
<i>Planes in a 16hr day</i>	224	149
Planes only 70% of the time (e.g. arrivals scenario)		
<i>Planes an hour</i>	20	13
<i>Minutes between planes</i>	3	4.6
<i>Planes in a 16hr day</i>	320	208
With 50% respite, during time with planes (e.g. arrivals scenario today)		
<i>Planes an hour</i>	40	26
<i>Minutes between planes</i>	1.5	2.3
<i>Planes in 8hr period</i>	320	208

According to CAA modelling a 777 (twin engine wide bodied long haul plane) on arrival creates a loudness (L_{Amax}) event of 65dB even at 25km from touchdown and 70dB 16km from touchdown

Figure E8 Boeing 777-300ER/GE engines arrival L_{max}



Non Acoustic Factors



Suggestion that non-acoustic factors can account for 30% of experienced annoyance

A key non-acoustic factor in SoNA, which is dominated by those on arrivals over London, is the runway alternation for those on arrivals which can give 50% respite

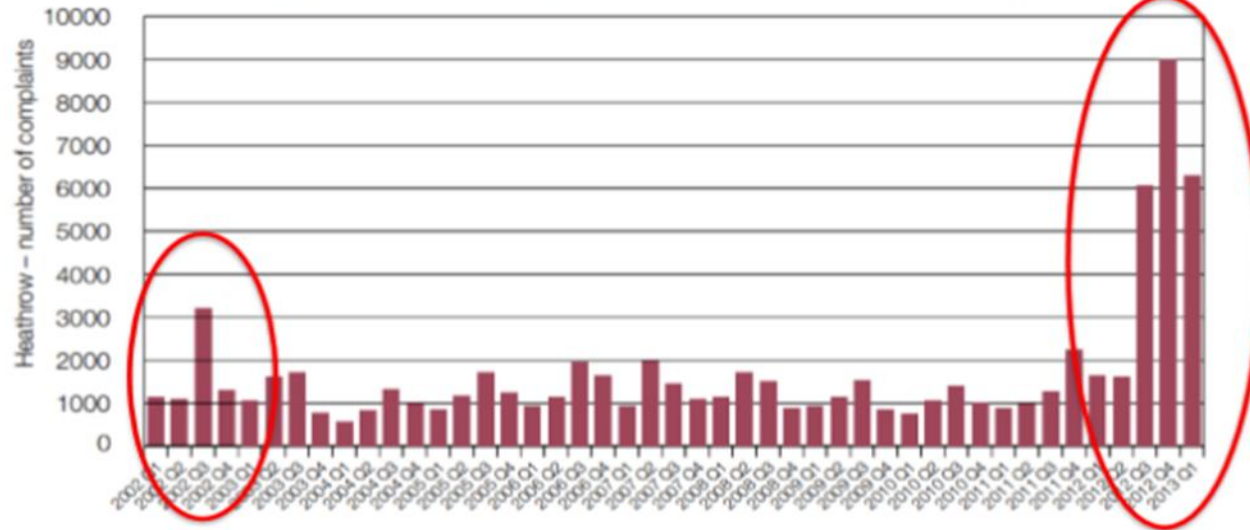
Heathrow are suggesting reducing respite to 25% - how is this being factored in?

Announced and Real Airspace Change Impacts

Proposed changes can also have an effect on attitudes to aircraft noise



Figure 2.3: Variability in number of complaints over time at Heathrow airport



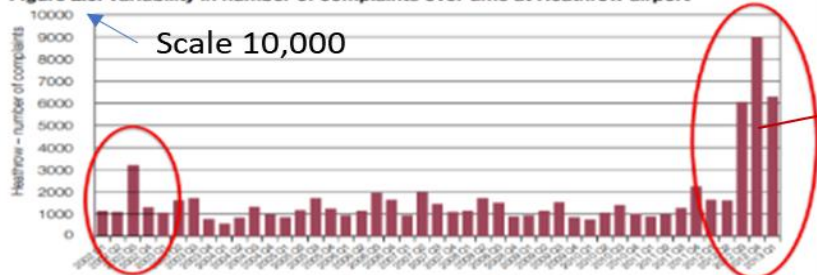
From Discussion Paper 05: Annoyance, Airports Commission

CAA have suggested that 'expected changes' can increase peoples annoyance level as shown by complaints, so worth investigating complaints further.....

Continue complaints analysis into 2014

Proposed changes can also have an effect on attitudes to aircraft noise

Figure 2.3: Variability in number of complaints over time at Heathrow airport



From Discussion Paper 05: Annoyance, Airports Commission

Complaints

(based on Heathrow published numbers Q2 2013 onwards & CAA presentation)

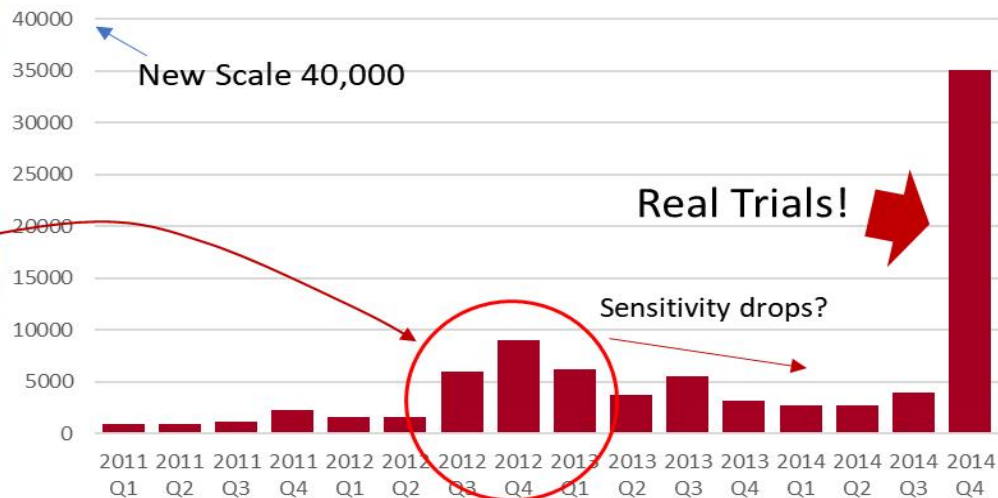


Table 8.1: complaints and complainants about departures by direction of operation

Complaints		Month ^[1]					Total
		Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	
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 ^[4]	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.

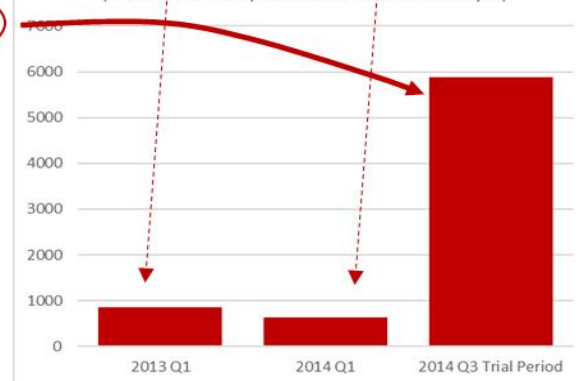
[3] The westerly operations trials began on the 25 August and ended on the 12 November 2014.

[4] Complaints are reported in the table for the period 28 July to 12 November 2014.

Note Heathrow reported complaints seem lower and offset vs AA detailed report

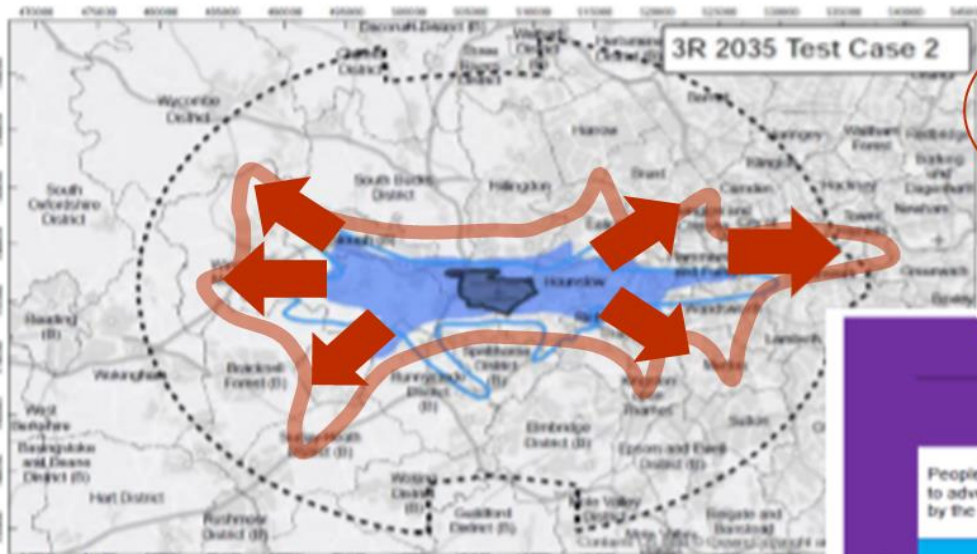
Complainants

(based on Heathrow published numbers and AA analysis)



Our Conclusion - In the UK real change has much larger impacts than expected change

NO WORSE THAN 2013 (POLICY REQUIREMENT)



▭ Daytime LAeq,16hr 54 dB - 2R 2013 baseline
▭ Daytime LAeq,16hr 54 dB - 3R 2035 Test Case

Indicative 3R 2035 including change impact

Policy aim is not met

– massively more people are annoyed

Communities view remains that change must be taken into account

Numbers based on FoI information and 6dB increased sensitivity

Table 17.26: Summary of daytime effects on residential receptors in terms of health and quality of life (annoyance) due to DCO Project compared to 2013 policy baseline. Presented as a range across all test cases.

2035 ALL INDICATIVE AIRSPACE TEST CASES – 740,000 ATMs DAYTIME				
Total population in study area: 6,002,800				
	Policy baseline	DCO Project	Difference between 2035 and 2013	
	2013	2035	Change	% change
People removed from exposure to adverse effect noise levels by the Project	-	321,200 ¹ - 468,100	-	-
LOAEL				
People exposed to adverse effect noise levels	1,139,200	>4,000,000	>2,860,800	+249% ² +11%
Of which, people exposed to noise levels above onset of significant community annoyance (54 dB LAeq,16hr)	649,000	>2,000,000	>1,351,000	+208% ² +11%
SOAEL				
People exposed to significant adverse effect noise levels	65,200	49,200 ¹	-16,000	-25%
UAEL				
People exposed to unacceptable adverse effect noise levels	1,800	300 ²	-1,500	-83%

¹ Significant adverse effect on health and quality of life avoided by mitigation measures and noise insulation
² Unacceptable adverse effect due to the DCO Project would be prevented by DCO providing compulsory acquisition powers to install full noise insulation in the event that offer to install the insulation is not taken up

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Heathrow Expansion

How do we resolve the 'change' high impact and high risk issue?

At the workshop it was argued by some experts that the effect of the Airports Commission work in 2014 may have introduced some 'expected change' in SoNA results

Communities (based on PBN trials) believe that physical changes must be taken into account and that the impacts on people exposed to new or more intense noise exceed the benefit received by areas that get less noise (winners and losers)

How do we gather evidence to inform and resolve these fundamental differences for this high risk and high impact issue?

Proposed Route forward

Heathrow approve resources for Stephen Turner (and possible other members of the NERG) to work with communities to propose routes to resolve differences