AIRCRAFT NUMBERS MATTER

One of the most significant, and most welcome, sentences in the Government's Aviation Green Paper (1) is this:

"the government recognises that statistics showing past and future improvements in noise do not necessarily match the experience of some people living under flightpaths, for whom the benefits of quieter aircraft can be cancelled out by greater frequency of movements or the effects of concentrated traffic associated with more accurate navigation technology"

It is official recognition that, for many people, it is the number of planes overhead that can be the all-important factor in how disturbed they are by the noise.

And the Government expects a big increase in aircraft numbers by 2050:

	Scenario: High No. of average summer day movements							
Airport	2006	2016	2025	2030	2040	2050	% change 2006-2016	% change 2016-2050
BHX	316.4	307.6	360.8	410.6	568.9	564.8	-2.8%	+83.6%
EDI	333.3	342.1	308.7	334.6	374.5	424.2	+2.6%	+24.0%
GLA	301.2	275.4	287.2	279.8	288.0	310.4	-8.6%	+12.7%
LGW	701.7	770.6	792.5	791.6	815.2	826.6	+9.8%	+7.3%
LHR NWR	1,248.0	1,266.7	1,296.2	1,982.5	2,008.6	2,022.0	+1.5%	+59.6%
LTN	288.5	337.9	321.6	311.2	295.8	317.2	+17.1%	-6.1%
MAN	638.2	543.5	628.0	652.8	774.5	990.7	-14.8%	+82.3%
STN	522.2	451.6	502.8	559.4	530.3	528.4	-13.5%	+17.0%
Total (with LHR)	4,349.5	4,295.3	4,497.8	5,322.5	5,655.9	5,984.3	-1.2%	+39.3%
Total (without LHR)	3,101.5	3,028.6	3,201.6	3,340.0	3,647.2	3,962.4	-2.4%	+30.8%

The table, taken from a major study the Government commissioned from the CAA (2) shows increases at individual airports of up to 83% (with an average just under 40%).

The CAA study found that, despite the projected increase in flight numbers, the numbers people impacted by noise would fall.

			Year						
Metric	Period	Level	2006	2016	2025	2030	2040	2050	% change 2016-2050
Traffic (ATMs)	Average summer day 16h*	-	4349.5	4295.3	4497.8	5322.5	5655.9	5984.3	+39.3%
	Average summer night 8h*	-	454.3	522.0	549.4	616.2	656.4	700.2	+34.1%
Noise emission (Quota Count)	Average summer day 16h* QC	-	2998.7	2470.5	2453.1	2614.0	1998.3	1922.9	-22.2%
	Average summer night 8h* QC	-	301.3	299.6	281.8	286.6	202.2	207.7	-30.7%
Area exposure (Km²)	Average summer day LAeq16h*	>54 dB	530.4	490.2	497.1	523.2	440.6	440.5	-10.1%
	Average summer night LAeq8h*	>48 dB	419.6	473.0	482.6	473.2	409.7	420.1	-11.2%
	Average annual 24h Lden	>55 dB	615.6	575.1	583.7	610.8	520.3	524.5	-8.8%
	Average annual 8h* Lnight	>50 dB	268.0	258.7	245.6	258.4	216.9	223.2	-13.8%
Population exposure (Numbers exposed to noise level)	Average summer day LAeq16h*	>54 dB	825,400	782,300	802,700	846,000	771,000	796,000	+1.8%
	Average summer night LAeq8h*	>48 dB	521,700	655,500	605,300	589,600	557,800	604,100	-7.8%
	Average annual 24h Lden	>55 dB	997,300	950,000	963,400	1,007,200	920,700	953,200	+0.3%
	Average annual 8h* Lnight	>50 dB	304,600	323,600	288,100	310,100	299,900	329,300	+1.8%
	Average summer night 8h* N60	>10 events	1,215,900	1,473,400	1,457,100	1,622,500	1,580,900	1,645,200	+11.7%
	Average summer day 16h* N65	>10 events	2,449,500	1,965,000	2,134,000	2,145,000	1,946,000	1,955,000	-0.5%
	Average summer day 16h* N70	>10 events	974,600	838,700	880,100	794,400	675,500	658,500	-21.5%
	Average Individual Exposure (70)	>10 events	61.6	79.5	80.6	84.6	88.6	95.4	+20.0%
	Person Events Index (70)	>10 events	64,098,100	69,457,300	75,795,300	83,375,000	75,499,400	80,896,600	+16.5%
Noise impact (Numbers exposed to noise level)	Highly sleep-disturbed average annual 8h* Lnight	>45 dB Lnight	73,600	76,900	74,600	76,600	72,100	76,300	-3.3%
	Highly annoyed (daytime) average annual 24h Lden	>54 dB Lden	160,500	173,200	174,100	183,100	168,500	174,000	+0.5%

*16h: 0700-2300 and 8h: 2300-0700

The study, the most comprehensive ever undertaken to assess future noise levels, found that the fall would be greater if it weren't for the fact that a lot of new homes will have been built in the impacted areas by 2050.

The CAA study also found that the number of people highly annoyed by noise would fall at most airports.

Table C.15 (a): Number of people highly annoyed exposed to at least 51dB L_{den}. High Scenario 2016 population database

	Scenario: High with 2016_Pop No. of people highly annoyed Lden 51 dB							
Airport	2006	2016	2025	2030	2040	2050	% change 2006-2016	% change 2016-2050
BHX	13,400	14,400	17,800	18,000	18,800	19,600	+7.2%	+36.3%
EDI	3,900	4,600	3,900	3,800	3,200	3,500	+15.6%	-23.5%
GLA	11,400	9,800	11,400	10,400	8,900	9,000	-14.0%	-7.9%
LGW	3,900	4,500	4,400	4,000	2,700	2,600	+15.2%	-41.1%
LHR NWR	182,500	172,400	159,900	165,700	143,500	131,200	-5.5%	-23.9%
LTN	3,200	8,300	8,900	13,400	5,200	5,200	+161.8%	-37.4%
MAN	23,100	23,700	25,100	24,600	25,500	30,300	+3.0%	+27.6%
STN	2,700	2,500	3,300	3,300	2,100	2,100	-5.6%	-18.2%
Total (with LHR)	244,000	240,200	234,600	243,200	210,100	203,500	-1.6%	-15.3%
Total (without LHR)	61,500	67,800	74,800	77,500	66,600	72,300	+10.1%	+6.7%

Table C.15 (b): Number of people highly annoyed exposed to at least 54dB L_{den}. High Scenario 2016 population database

	Scenario: High with 2016_Pop No. of people highly annoyed Lden 54 dB							
Airport	2006	2016	2025	2030	2040	2050	% change 2006-2016	% change 2016-2050
BHX	9,000	9,900	12,400	12,400	12,700	13,300	+10.0%	+35.2%
EDI	2,300	3,000	2,300	2,200	1,800	2,100	+28.4%	-29.7%
GLA	9,300	7,300	8,900	7,900	6,400	6,500	-21.4%	-11.2%
LGW	2,300	2,600	2,700	2,500	1,800	1,700	+10.9%	-35.4%
LHR NWR	136,700	125,600	112,800	117,800	102,900	88,900	-8.1%	-29.2%
LTN	1,600	4,900	6,000	10,500	2,500	2,700	+217.4%	-44.8%
MAN	17,600	18,300	19,700	19,400	20,300	24,600	+3.7%	+34.9%
STN	1,700	1,600	2,100	2,100	1,300	1,200	-3.1%	-25.1%
Total (with LHR)	180,500	173,200	166,800	174,800	149,700	141,100	-4.0%	-18.5%
Total (without LHR)	43,800	47,600	54,000	57,000	46,700	52,200	+8.7%	+9.6%

The main reason why the CAA expects numbers to fall is the progressive introduction of less noisy aircraft.

It is not the purpose of this blog to criticise the CAA's study. It would be arrogant and ignorant to do so. It is an impressive piece of work. **All this blog wants to do is make the case that the total number of aircraft passing over a community may be the all-important factor.**

The prime – and very often only concern – for most people is how many planes go over their own community. They are much less interested in the total number of aircraft using the airport or even how many runways it has. And many of them have little interest in other communities.

The challenge, therefore, for the industry and government is to find a way to cap number of flights over any one community.

This is likely to require the introduction of multiple flight paths. This can be made possible by new technology. Across the world airports are moving from ground-based technology to a satellite system to guide planes in and out of airports. It is known as Performance Based Navigation (PBN). PBN will mean the introduction of narrow, precision flight paths. If a number of them can be introduced at any airport, they can then be rotated, to give each community some respite from the noise and thereby cap the number of aircraft going over any one area. It would allow for some growth at the airport while protecting local communities.

The Green Paper not only proposes multiple flight paths **as an option for airports to consider but also proposes a** noise cap **or** noise reduction plans **for airports.**

These all could be useful tools for capping flight numbers over communities.

A noise cap can be more than a movement cap. The Green Paper says: *"A noise cap (also known as a noise envelope) is any measure which restricts noise. In its crudest form this could be a simple movement cap, but the government proposes advocating caps which are based on setting maximum noise exposure levels (such as contour area or noise quota)."* It could also include heights of aircraft, compensation packages and night flights.

But, while there is a clear upside to capping, there are two downside which would need to be addressed. The first is the introduction of multiple flight paths might necessitate the creation of flight paths over new areas. In my view, the latter should be avoided wherever possible – it is a brutal act to create a new flight path and would result in a lot of people becoming very angry and annoyed. It should only be done if it is the only way to benefit communities currently under a flight path.

The second is that at single runway airports – the vast majority in most countries – people under the final approach path cannot by definition benefit from multiple flight paths. They should be first in line for a generous compensation and mitigation package. But, if the time comes when any of these communities, even with good mitigation, cannot tolerate any more noise, perhaps that it is the signal that their particular airport has reached the point where further growth is no longer an option, certainly until much quieter aircraft can be introduced.

Bobby Seagull, who shot to fame in *University Challenge* a couple of series ago, said that his book *The Life-Changing Power of Numbers* is part biography, part a love letter to numbers. I'm not sure I love numbers like that but I suspect aircraft numbers will be critical to the future noise climate experienced by communities.

John Stewart

References:

(1) Green Paper:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/765253/aviation-2050-web.pdf

(2) CAA Study:
http://publicapps.caa.co.uk/docs/33/CAP%201731%20Aviation%20Strategy%20Noise%20Forecast%20and%20Analyses.pdf