

Appendix 1: Aircraft Noise and the 57dBA Leq contour

A fundamental point against the Consultation Document is the assertion that the 57dBA Leq contour measures the area significantly affected by aircraft noise. That appears to be a pure invention on the part of the DfT. There is no scientific evidence to support such a statement. Not even the DfT, when it manipulated the conclusions of its earlier noise study, ANIS (1985), had the temerity to go that far. The best they dared manage was - carefully hedged as one suggestion, not a rigid prescription - that 57dBA represented the onset of community disturbance. They did not define what they meant by community disturbance (the WHO defines community noise as that which occurs from outside the industrial workplace) but, if one looks at the actual results from ANIS, one finds that the choice of 55dBA 24hour (equivalent to 57dBA 16 hour) was essentially arbitrary and corresponded to about 20% of the population very much annoyed, with 25% finding that level “not acceptable” and nearly half at least moderately annoyed, so clearly not the onset of anything. BAA, in a minuted meeting with HACAN last year, agreed that the contour “does not delineate community noise annoyance”.

In ANIS, 57dBA Leq was in part chosen arbitrarily to fit in with past practice. It was concluded that 57 Leq corresponded approximately to 35 NNI, said in para. 9.12 of ANIS to having been taken by the Wilson Committee (in the report Noise: Cmnd. 2056, 1963) to indicate “low disturbance” and described in the Consultation document as “generally regarded as the onset of annoyance” (Annex E, 34). But 25% of the population finding something unacceptable does not correspond to low disturbance or the onset of annoyance. The reference to the Wilson report needs to be seen in context. Appendix XI gives subjective descriptions of certain NNI levels, e.g. -3 not noticeable; 12-21 noticeable; 26-36 intrusive; 37-47 annoying, etc. It also defines 0 NNI as zero annoyance. That wording seems a bit woolly because persistent intrusion (e.g. one noise event every one or two minutes) can be annoying. ‘Noticeable’ might correspond to ‘onset of disturbance’. 35 is near the top of the ‘intrusive’ range - not the same as ‘low disturbance’. In order to assess the area significantly affected by aircraft noise it is appropriate to look for situations where aircraft noise affects a significant minority of the population. That was an objective in ANIS (paragraph 8.1, ignored in the conclusions) but in effect was achieved in the ANASE study, which reveals significant disturbance at around 40 to 43 dBA Leq, e.g. in paragraph 1.3.1 of the Executive Summary and in Section 8 of the Final Report. A similar conclusion can be inferred from the data in ANIS, although the ANIS data is not so comprehensive as that in ANASE.

The Government has accepted two of the findings from ANASE: “that people are more annoyed by all levels of aircraft noise than they were in 1982 when the ANIS study was carried out and also that there is no particular threshold of noise at which people become especially annoyed – even relatively low levels of noise can cause some annoyance, which rises as the noise increases“. The two findings quoted above, alone, show that a fresh look at the situation in the real world is overdue. In ANIS, the choice of 57 dBA was partly based on an alleged “step” in response at that level. As the DfT’s Chief Economist has said, the ANIS evidence for the “step” was slender, and now it is shown not to exist. ANASE also confirms the conclusion of the 1963 Wilson Report that the number of noise events is a significant determinant of annoyance, more so than just the effect of number on the average noise. That also is accepted by the DfT’s Chief Economist: “the study provides indicative evidence to suggest that people may be more concerned about the numbers of aircraft (and slightly less concerned about the sound level of an individual aircraft) than the present LAeq indicator assumes“. Leq has other limitations, for example it does not measure the benefit provided by runway alternation half way through the day. Apart from those considerations, the use of Leq calculated for the 16 hours from 7am to 11pm ignores the busy hour from 6am to 7am, when many arriving aircraft are the heavier and noisier types.

Even if there are some limits to the “firm quantitative conclusions” from ANASE, there are very clear directions. ANASE confirms the T5 inspector’s reservations about the Leq contour, based on about 10,000 objections. The Chief Economist acknowledges that the study “contains innovative

and ground breaking work” and suggests that it is perhaps inevitable, given the significant analytical challenges, that there remain some material differences of view between the study team and the peer reviewers on the robustness and interpretation. The T5 Decision Letter, November 2001, para. 60, in connection with the proposed new study, mentioned the government’s desire to earn “the greatest possible confidence”. To achieve that, it would have been necessary for the outstanding issues to have been pursued to the satisfaction of the peer reviewers.

“We believe that the ANASE study’s conclusions offer no reason to change our policy....”. (3.34). Then: “we need to take account of the ANASE findings in how we treat aircraft noise as a factor in future aviation development”. Isn’t this consultation about future aviation development? Again therefore, the ANASE findings in broad principle should be accepted now, in accordance with the T5 Decision Letter.

“There is no evidence in ANASE for increasing or reducing the the 57dBA contour limit” (3.38). On the contrary, there is plenty of evidence for reducing it - but apart from that, as explained above, there was no valid reason for adopting the limit in the first place. Even without ANASE, it is clear that the limit should be below 50dBA Leq 16 hour, and measured over one week, not 3 months.

One interesting point from ANASE is that there seemed to be the intention to make assessments at places experiencing what any Heathrow-sufferer would reckon to be very low noise: 120 aircraft above 65dBA Lmax over a 30 day period (paragraph 5.2.5 of the Final Report). Just four per day, giving an Leq of about 38. Unfortunately the locations actually selected are in areas quite close to the 57dBA contour, mostly affected by departure noise or not actually overflown. Areas further out significantly affected by arrivals seem to have been carefully excluded. (The locations are shown in Appendix A5, page 122). So neither ANIS nor ANASE have information about areas further away from Heathrow, affected more by arrivals than by departures. For example, there is widespread resentment of Heathrow noise pollution in the Greenwich/Blackheath/Lewisham area, some 8 miles outside the contour, but badly affected by westerly arrivals. The DETR ANMAC Report 1999 notes that “noise from arriving aircraft has become an increasingly prominent component of the total noise environment, and communities have increasingly focused their attention on this point” (para. 1.3.5). That was followed by work at NATS to improve CDA achievement, and the industry code of practice Noise from Arriving Aircraft, 2nd edition, November 2006, but in recent years the DfT and the BAA have systematically ignored complaints and representations about arrivals noise.

Another interesting aspect of ANASE is the evaluation of how much people would be prepared to pay (hypothetically) to eradicate aircraft noise, leading to the conclusion that it would be somewhere in (or above, depending on the analytical technique used) the range £270 to £700 per household per annum. Quite naturally, some people objected to the concept of such payments because of the accepted principle that the polluter should pay. Clearly however, an amount some people would pay to be rid of pollution identifies an environmental cost, so if "users pay the full environmental costs of their journeys" (Eddington, 1.7 of the Consultation Summary) then the payments should be real, not hypothetical.

Inaccurate or inappropriate statements about the 57dBA Leq contour occur throughout the document. Some examples are:

1. The 57dBA contour “is the focus of this consultation.” (3.102) That avoids the issue. The focus of the consultation should be the areas significantly affected, not an arbitrary measure of high noise disturbance.
2. The 57dBA contour is alleged to be a “strict condition” (5.3). In fact it is scarcely any condition at all, not even a lax one.
3. The onset of community annoyance “assumed” to be 57dBA Leq (1.20). Policy should not be based on such assumptions.
4. None of the estimates for area or people significantly affected in Tables 9-11 is valid because they are all based on the 57dBA contour.

Also of course there are the current WHO guidelines. The following extracts are from Section 4:

“To protect the majority of people from being moderately annoyed during the daytime, the outdoor sound pressure level should not exceed 50 dB LAeq for a steady, continuous noise. These values are based on annoyance studies, but most countries in Europe have adopted 40 dB LAeq as the maximum allowable level for new developments. Indeed, the lower value should be considered the maximum allowable sound pressure level for all new developments whenever feasible.

“Noise measures based solely on LAeq values do not adequately characterize most noise environments and do not adequately assess the health impacts of noise on human well-being. It is also important to measure the maximum noise level and the number of noise events when deriving guideline values. If the noise includes a large proportion of low-frequency components, values even lower than the guideline values will be needed, because low-frequency components in noise may increase the adverse effects considerably. When prominent low-frequency components are present, measures based on A-weighting are inappropriate.”

The WHO guidelines therefore indicate that a the appropriate Leq value would be below 50dBA, that other factors should be taken into account, and that A-weighting may not be appropriate.

The pattern of sources of complaints about noise from Heathrow air traffic also confirms that the area significantly affected greatly exceeds that enclosed by the 57 dBA Leq contour, as shown on the appended plot with the contour and complaint sources. If people from all those sources outside the contour were not significantly affected, why were they complaining?

Concentration of arrivals, Alternation, CDA, SIDs and NPRs

NPRs and SIDs for departures were designed to avoid “noise sensitive areas” (Annex E, 19) and “to avoid over-flight of built-up areas, wherever possible” (E, 21). Also, traffic is divided between from 4 to 6 widely-spaced NPRs for each direction of operation. By contrast, arrivals are all concentrated on two closely-spaced routes to the extent that the noise footprints overlap except for the last few miles where alternation helps. It follows that the extent of such concentration should be kept to a minimum instead of being extended out to 25 miles as apparently would be required for mixed mode. Concentration of arrivals beyond the minimum would not be an acceptable policy.

It has been acknowledged by the BAA that it “recognises that adherence to Alternation is highly valued by the local community” (Flight Evaluation Report 2004/05 page 19). Alternation is crucial towards preserving a decent quality of life for people under the last few miles of the approach paths. The proposals to dispense with it are not acceptable. Our answer to Q6 is therefore not at all, beyond the use of TEAM as at present.

Paragraph 3.95 describes a proposal for “two independent parallel arrival streams - a new concept for UK airspace“. That might be acceptable for approaches over the sea, but in the case of Heathrow it would mean the concentration of all arrivals over highly populated residential areas. This is a grossly cynical proposal, a concept that should be dropped forthwith. The average figure for total westerly arrivals is 538, over 16 hours, with at least a further 32 between 6am and 7am. That includes 24% of days with none (easterly wind) so on westerly days there would be more than 750 arrivals over the 17 hour period. That is about one every 80 seconds all day from 6am to 11pm, and the ones on the southern approach would be in level flight at 4,000 ft. Many areas further out would be significantly affected by both streams because of the overlapping noise footprints at 65 to 70dBA Lmax with typical background noise levels of around 40 - 45 dBA. That would be intolerable. The proposed two streams would also be very poor for fuel efficiency.

CDA “widely regarded as good practice... both to reduce noise and fuel burn on approach” and

“The main noise benefits from CDA are felt further from the airport, typically 8-25 nautical miles from touchdown“ (3.102) That is confirmed by the Code of Practice, November 2006. The reduced fuel burn is a plus but not the only reason for the emphasis given to CDA. The use of CDA is also described in Annex E, 23, concluding “Maximising the use of CDA procedures is important in reducing noise impacts and is actively encouraged”. Experience with CDA is described in CAA Papers 78002 and 78006, 1978. The suggestion that it should be dispensed with for the southern runway approach with a 8 mile level segment at 4,000 ft. (3.103) would not be consistent with the Code of Practice. If it is true that CDA is so beneficial, it would put the clock back more than 30 years and is not acceptable. Fig. 21, showing a downwind leg also at 4,000 ft, indicates that an even larger area would be significantly affected.

It is stated in Annex E, 23, that some of the measures discussed would require SIDs/NPRs to be changed. Figures 10a, 10b and 11 indicate that the changes for the third runway would be substantial, thus contradicting the principle set out in E, 23 and paragraph 2.14 that “stability is regarded as important”. That is another reason for not building a third runway.

SIDs and NPRs are not mentioned in the White Paper, while there is only a passing reference to mixed mode and alternation (section 11.66), with no indication of the huge impact mixed mode would have.

Summary

Any further expansion at Heathrow would have an environmental noise impact out of all proportion to the additional capacity. There should be no further expansion, and in particular, no third runway. The 57dBA Leq contour does not measure the area significantly affected and should not be used for the assessment of the extent of significant disturbance. Mixed mode should not be introduced. Alternation between the two runways half way through the day should continue. The DfT should concentrate on “bearing down on noise” (as it has claimed to do) to reduce the severe problems caused at the current level of operation.