# LAANC

Local Authorities' Aircraft Noise Council

AIRPORTS COMMISSION "Discussion Paper 05: Aviation Noise"

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| What is the most appropriate methodology to assess and compare different airport noise footprints? | The question is unclear. The term noise footprints is normally understood in the UK to mean the noise shadow cast on the ground from a single aircraft passing overhead with respect to a single decibel reference value - such as 90dBSEL.- this is typically shown at figure 5.2 in the discussion document. Paragraph 5.39 of the discussion document further uses the term in its commonly understood fashion - to describe the shadow cast on the ground by a single aircraft type with respect to 90dB SEL. The discussion document however also applies the "footprint" term to time and energy averaged noise dose values around a number of airports Some consultees will find this confusing as these areas are more commonly described both in the UK and the EU as "contours" - such contours frequently delineating bands of equal energy expressed in terms of dB over a base map.<br><br>There is currently a confusing mixture of footprints and contours which form part of UK aviation policy. For example contours are currently used to identify areas of community annoyance around airports in the UK. The onset of community annoyance has historically been set by successive UK governments by sole reference to the average mode 16 hour energy average contour drawn at 57dB(A) - the 57 dB contour. In similar fashion government policy defines areas of medium annoyance as starting from the 63dB contour and levels of high noise being from 69dB. The definitions of low and high noise are used as qualifying factors to trigger daytime compensation awards both for residential and community use buildings.<br><br>The advantage of such an approach is that it enables an easy read-across from airport to airport as well as year-on-year visual assessments of the extent to which the areas contained within the contours change - again a simple read-across is possible with a shrinking contour size indicating less noise energy overall. This is as set out at Appendix C in the discussion document. By linking the contour areas to population data bases this also enables easy head counts of populations affected.<br><br>However this approach, as acknowledged by the commission, has a number of fundamental weaknesses – not least because the equivalent sound energy principal (leq), which has been used since 1990 in the computation of the 57dB and above contours, facilitated dramatic annual increases in aircraft numbers from 1982 to 1994 while at the same time overall contour areas at all the major airports were shrinking. At Heathrow a 70% increase in numbers between 1982 and 1994 was accompanied by a threefold reduction in contour area. These facts have been interpreted by policy makers to mean that noise annoyance in terms of area and numbers of people affected has also reduced. This is an incorrect assumption which is not supported either by those residents who are regularly overflown in the UK, the report of the Heathrow Terminal 5 inspector or by reference to the most recent scientific investigation into this matter - the ANASE study. LAANC urges the Commission to |

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| | make its own mind up about the ANASE study which was in fact carried out under far more rigorous scientific scrutiny than the previous 1982 "ANIS" study. LB Hillingdon invited the ANASE researchers to respond for the first time to the peer review criticisms that that were directed at them in 2007. We urge the commission to study this review as we believe the findings go a long way to explaining the paradox surrounding community reaction at major airports both in the UK and abroad.<br><br>We are not asking the commission to adopt recommendations of the ANASE study without question (as the ANASE study data themselves may now be out of date) - but what we do ask is that is that it commissions a new social survey ("ANASE check study") in relation to aircraft noise. There is time to do this before any decisions on major expansion schemes involving new airports or runways have to be made.<br><br>There is also a UK policy vacuum in terms of night flights and night noise annoyance. Leq-type contours have never been validated for community annoyance in the UK. The current 6.5hr 48dB (55km2) contour around Heathrow is used as a limit value (a bespoke contour cap) but it has no scientific basis for representing annoyance. The imposition of quota numbers and quota points at Gatwick Stansted and Heathrow likewise have no scientific basis as indicators of community acceptance. So far as Heathrow is concerned, the numbers quota simply represents the numbers of night flights that were permitted to fly at the airport in 1988. Despite repeated requests the airlines refuse to consider rescheduling any of their pre 06:00 flights even though it is estimated that every day of the week around 20,000 residents around Heathrow are disturbed by the 16 or so flights that arrive before 06:00. This figure does not include those residents of Ealing who are regularly disturbed by late running day flights that are not scheduled to take off after 23:30 but are nevertheless granted dispensation to do so on a regular basis.<br><br>It is understood that the commission will need to get on with assessing the various schemes and options that have been submitted before the results of any new social survey can be delivered. We therefore suggest that, so far as noise annoyance is concerned, the commission could proceed with greater degree of confidence in terms of the size of the annoyance at the UK's major airports (and hence the potential cost of mitigation) if it were to adopt as an interim standard for annoyance the EU Lden and Lnight contour levels of 55dB Lden and 50dBLnight. Both of these values represent action levels at which mitigation and or compensation is commonly adopted around major airports across Continental Europe. The Lden standard has been subject to recent social study work (as identified at Figure 3.3 in the ANASE update report 2013) where good correlation has been demonstrated. However ongoing adverse community reaction to night flights around Frankfurt airport would seem to require that a precautionary approach be adopted for any new airports or runway where night flights are permitted and where such flights are proposed an action level as advised by the EU of 40dBLnight should be adopted for assessment and compensation purposes. |
| What metrics or assessment | We have studied the Commission's "scorecard" approach as set out at 3.21 and 3.5 in its discussion document. So far as we |

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| method would an appropriate "scorecard" be based upon? | can recall this is the first time this approach has been set out in an aviation consultation. We believe that as a decision making tool - the noise efficiency rating of an airport is an interesting new concept. |
| To what extent is it appropriate to use multiple metrics and would there be any issues of contradiction if this were the case? | We caution against the use of multiple metrics. However the production of $L_{Amax}$ histograms for a given location would be useful to residents who wish to check their own readings – for example the Widenoise project being trialled by RB Windsor and Maidenhead - against the official range of levels for different aircraft types. Such histograms would also enable interested residents to see just how much less noise the new generation are supposed to generate compared with older types. The evidence is that that in-service noise levels for the A 380 are not materially better in terms of their dB impact over the ground than for the older types still flying such as the Boeing 747-400 ( with Rolls Royce Engines). |
| Are there additional relevant metrics to those discussed in Chapter 3 which the Commission should be aware of? | Yes – we urge the commission to reconsider the findings of the ANASE report (2013 update attached to this response) in relation to the Noise and Number Index (NNI). We believe that NNI contours for future scenarios are likely to provide a more robust indication of levels of annoyance at any airports where expansion is proposed. |
| What baseline should any noise assessment be based on? Should an assessment be based on absolute noise levels or on changes relative to the existing noise environment? | It has been custom and practice both in the UK and in continental Europe to base noise impact assessment for new airport and expanded provision by reference to the area contained within the 57dB contour (absolute levels). In continental Europe this has been by reference to the 55dBLden contour / 50dBLnight. Recent events around Frankfurt must question even the extent to which even the 55dBLden/50dBLnight adequately describes the noise impact for communities who will potentially be newly impacted by extra runways and / or new airports. The UK has no recent experience in this field, the last new runway in the UK being at Manchester. Evidence from both Manchester and Frankfurt would appear to support a hypothesis which says that newly overflown communities can be expected to be significantly more sensitive to new air noise than for communities who have experienced some air noise before. We believe that there is a case for assessing air noise impact in newly affected areas by reference to existing background levels (L90).<br><br>What any assessment needs to clearly show is, at a given point in the future, the numbers of people impacted both with and without expansion. As an example, the last proposal for expansion via an additional runway at Heathrow ("Adding Capacity at Heathrow", 2007) indicated, in 2030, a 57dB contour area of 77sq kms with no expansion, rising to 112.9sq kms with expansion. The implications of the runway proposal were to put an additional 63,500 people into an area denoted as suffering from annoyance. This falls foul of the Aviation Policy framework policy of "to limit and , where possible, reduce the number of people in the UK significantly affected by aircraft noise" and also the Noise Policy Statement for England which seeks to avoid significant adverse effects. |

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| | Airport ground noise assessments have historically been undertaken using this approach. Typically such assessments identify the likelihood of complaints as being strong where the new noise (in terms of LAeqT) is 10dB or more above the existing background when assessed over any 1 hr (day) or 5min(night period). |
| How should we characterise a noise environment currently unaffected by aircraft noise? | The EU recommend states to work towards the achievement of WHO community noise standards. Therefore we recommend that such areas can be described as WHO compliant (for aircraft). |
| How could the assessment methods described in Chapter 4 be improved to better reflect noise impacts and effects? | As indicated above we believe that a 4.5dB change in noise exposure for a doubling or halving of aircraft movements as set out in the Noise and Number Index was within hindsight a more reliable metric in terms of assessing community annoyance than Leq.<br><br>We urge the commission to undertake further work on this. It is accepted that this would be a novel approach and would challenge some established professional views but clearly none of the Leq based metrics (including Lden) are adequately dealing with the paradox across the EU where increasing numbers of air movements (by apparently quieter aircraft) are resulting in increased levels of annoyance rather than the opposite.<br><br>The view is often promoted that the UK ANIS project represented some sort of Gold Standard that other work has to be calibrated against. However the original ANIS study was not peer reviewed. In fact, the ANIS study (DR Report 8402) was itself subject to much criticism at the Terminal 5 public inquiry for reasons including:<br>• It combined results from Heathrow having segregated use of two runways with results from Gatwick and other airports having mixed mode use of a single runway.<br>• Noise exposure at Heathrow from days of different mode operation were "stitched" together to form complete days of one mode; ANIS was unable to measure response reactions to runway alternation; exclusion of Cranford site.<br>• Sites at around 57 dB $L_{eq}$ were systematically excluded, possibly resulting in false inferences about significance of 57 dB.<br>• Original ANIS relationship was with 24 hour $L_{eq}$, subsequently changed to relationship with 16 hour $L_{eq}$.<br>• Use of cross sectional rather than longitudinal social surveys.<br>• Exclusion of aircraft sound exposure levels for aircraft noise events below 67 dB $L_{Amax}$.<br>• Use of manual measurement approximations to determine sound exposure level because equipment could not directly integrate; attended and unattended noise equipment differences of up to 2.5 dB.<br>• Noise exposure in common noise areas varied by up to 3 dB.<br>• ANIS study has become uncalibrated with passage of time because of changes in people's reactions and aircraft |

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| | traffic.<br><br>We believe that the ANASE study had an important bearing on the previous airport policy studies (SERAS). Failure to take account of ANASE was we believe contributory to a flawed proposal to expand Heathrow. If one of the key findings of the ANASE study (that annoyance from aircraft noise is greater than previously thought according to the ANIS study) had been taken into account in the SERAS consultation, expansion of Heathrow may not have been chosen, with one of the other expansion alternatives such as at Gatwick or Stansted being preferred. |
| Is monetising noise impacts and effects a sensible approach? If so, which monetisation methods described here hold the most credibility or are most pertinent to noise and its various effects? | The ANASE study involved stated preference and willingness to pay. Again it would appear that the results of this work were disregarded as the monetary values exceeded those expected and would have caused conflict with road transport compensation values. We urge the commission to review the ANASE work before embarking on yet another study. At the time the ANASE study was published further work was promised by the last government- this has never been done. ANASE is the only recent study undertaken in the UK on monetising aviation impacts. The study was subject to international peer review throughout the life of the project and we believe should be the starting point for further consideration of this subject, |
| Are there any specific thresholds that significantly alter the nature of any noise assessment, e.g. a level or intermittency of noise beyond which the impact or effect significantly changes in nature? | Yes - the loss of regular respite such that would occur at Heathrow in the event of the introduction of mixed mode would not change the overall area within either the UK 16 hour average mode 57dB contour or the EU 55dBLden contour. However the loss of half days' respite would result in a significant change in the nature of the soundscape for communities directly under the flightpaths. Public response to the temporary loss of respite during the freedom trials was very antagonistic. |
| To what extent does introducing noise at a previously unaffected area represent more or less of an impact than increasing noise in already affected areas? | By definition, if a development would result in aircraft regularly flying over places where they have not done so before, the irretrievable loss of the relative quiet in those places, must mean that the proposals should be considered as resulting in a significant adverse noise impact and appropriate weight placed upon that outcome. It does not require detailed discussion of decibel changes to reach that conclusion and the results of failing to adequately account for this have been experienced both in the UK and in Germany. In the case of the UK the 2nd runway at Manchester is curtailed in terms of movements and times. At Frankfurt failure to properly consider this point has led to protracted legal battles and currently a legally enforced night time curfew.<br><br>It should be noted, however, that it is not acceptable to put forward assessments which are based upon an assumption that if an area is already noisy then it matters less if this is increased. The impacts from noise are more than the word annoyance |

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| | suggest, they are based on health impacts and this must be taken into account appropriately. The fact that the area is already subject to noise from other sources is irrelevant in terms of significance and this approach demonstrates a fundamental misunderstanding of how aircraft noise itself impacts on communities.<br><br>The previous proposal to expand Heathrow via a third runway would have brought a further 63,500 people into an area defined as onset of community annoyance than if no expansion had occurred. This is significant and should be given sufficient weight in any decisions as to where expansion is most appropriately placed. |
| To what extent is the use of a noise envelope approach appropriate, and which metrics could be used effectively in this regard? | Noise envelopes are not new - their concept been implemented at UK airports for over 30 years in terms of a decibel limit averaged on the Leq16hr basis. Noise envelopes (without a corresponding movement cap) do not address the problem of the impact from unequal spread of movements during the day. At Heathrow the 06:00hr to 07:00hr period currently sees around 50 arrivals on both runways during which time the noise dose from these 50 movements is not computed into the official UK noise contours. The previous government authorised Terminal 5 subject to the noise contour limit and ATM limit recommended by the Inspector. The authorisation letter of November 2001 made it clear that the government was applying the ATM limit as a precautionary measure and would not rely solely on the noise contour (envelope) limit for mitigating future air traffic noise at Heathrow:<br><br>*59. In accepting the Inspector's recommendation for an ATM limit of 480,000 per year, the Secretary of State notes the reservations expressed by the Inspector in his conclusions at section 3 of chapter 21 of his report about the Leq noise index. The Secretary of State further notes that this was one of the Inspector's reasons for recommending in chapter 21 of his report an ATM limit as well as a noise contour limit. The Secretary of State recognises that the number of flights handled by Heathrow, which is by far the busiest UK airport, has risen considerably since the empirical work underlying the Leq index was undertaken.*<br><br>*60. In the light of the Inspector's views on the adequacy of the Leq index,* ***the Secretary of State thinks it right to adopt a precautionary approach****. As noted above, he accepts the Inspector's recommendation for a condition limiting ATMs to 480,000 per year. He does so on the basis of the Inspector's concerns about noise, particularly the weighting of the number of aircraft movements relative to noise within Leq. He notes the Inspector's views expressed in paragraph 32.5.41 of his report that the ATM limit would have benefits in terms of other factors such as surface access, air quality and public safety but the Secretary of State does not consider it necessary to express a conclusion on these matters. The Secretary of State has already announced his intention, independently of Terminal 5, to conduct a new study on aircraft noise and the perception of people subject to it. On 8 May 2001, in response to a Parliamentary Question asking the Secretary of State what plans he had to* |

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| | *carry out a new study to update the Aircraft Noise Index Study of 1985, Mr Bob Ainsworth, then Parliamentary Under Secretary in the Department of the Environment, Transport and the Regions, said: "My Department is to carry out a major study to reassess attitudes to aircraft noise.* ***This new study underlines the Government's commitment to underpin our policy on aircraft noise by substantial research that commands the widest possible confidence". It is envisaged that the results of this study will help to show whether the Leq index does in fact have the weaknesses suggested by the Inspector. The results would also inform any future consideration of the ATM condition.*** (emphasis added)<br><br>The results of the ANASE study confirmed that the leq index does indeed exhibit an inherent weakness as suggested by the T5 inspector. |
| To what extent should noise concentration and noise dispersal be used in the UK? Where and how could these techniques be deployed most effectively? | UK air noise policy should encourage dispersal as far as possible within existing NPRs and STARs. As explained above the dispersal of flights over areas not previously overflown is not supported, as such changes can be expected to cause high levels of dissatisfaction and complaint from those newly affected. However there is some potential for the principle of managed spread within the width of the current Heathrow NPRs as a way of burden sharing. It is envisaged that such a scheme could be combined with a N70 or similar approach which could limit numbers of movements on an hourly or part day basis both on individual NPRs and STARs.<br><br>Given our experience that small changes in operation at Heathrow can have varying impacts on different parts of the surrounding communities, full consultation with affected communities must be carried out as a part of the overall decision making process. There will be winners and losers and they must be identified and consulted on the likely impacts before any decision is made to adopt such an approach. |
| What constitutes best practice for noise compensation schemes abroad and how do these compare to current UK practice? | The recent Aviation Framework Consultation showed that current noise impacts at Heathrow are many times greater than at Gatwick and Stansted. Also, adding a third runway at Heathrow would be akin to adding a whole new airport since ATMs for the third runway would be higher than currently at Stansted, and not far short of Gatwick's. Given that aircraft noise is a primary issue and that more residents are affected by aircraft noise at Heathrow than other potential runway sites (by a factor of at least 10) it is important that there is a better understanding of the meagreness of the current compensation schemes at Heathrow when compared to other major airports - for example Charles de Gaulle (and other major French airports) where grant entitlement to compensation is triggered at the 55dBLden contour. Other EU cities also consider that "night" starts at 22:00 hours - such as Frankfurt which triggers the start of the curfew period - which itself can be considered as "active compensation". Caution is required however regarding Night Flights as even at the EU levels of insulation widespread complaints are still received about Night Flights at airports such as Frankfurt and Charles de Gaulle |

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| | Spain has far more generous arrangements for night time compensation than at any UK airport - for example under its "Norma Básica de Edificación" insulates to achieve 30 dB(A) Leq inside bedrooms, 40 dB(A) Leq inside other house areas at night time. This compares with the Heathrow scheme of 90dBSEL (95$^{th}$ percentile) - which typically equates to 65dBLMax in bedrooms - i.e 20dBLamax above WHO recommended guidelines. .<br><br>Sydney has a night curfew and a decibel limit value on flights over the city (60dBLmax night / 70dB Lmax day). The night restrictions also last for 7 hours<br><br>If Heathrow is to continue as the UK's major hub airport the issue of night flights has to be addressed once and for all. Experience from abroad shows that other airports close to major cities have to accept night curfews - we urge the commission to ensure that the cost of introducing a night curfew at Heathrow is included as part of the decision making process for where any additional capacity can be provided.<br><br>Heathrow never has been and never can be suitable for 24 hour working due to its location. This is not unique to the UK - the problems being seen in other EU states such as Germany (Frankfurt) and France (Nantes) are due to attempts by policy makers to create major airports close to existing residential communities. |
| What noise assessments could be effectively utilised when constructing compensation arrangements? | EC Directive 2002/49/EU is clear - The 55dB Lden contour represents the EU standard for representing the point at which air noise exposure is regarded as the intervention level. It is the point at which states are required to limit or reduce the number of people significantly affected by the harmful effects of noise. The level has been validated by recent EU social surveys (See ANASE update 2013). It is also clear from EU studies that levels of annoyance vary from airport to airport and these levels can be influenced by "virtual" factors as well as the physical factors such as numbers of movements and decibel levels. Potential loss of property values are also important. Currently the UK has an ancient and ineffective transport noise compensation framework which attempts to cover road, rail and air transport in a way that ensure that no one transport mode is seen to be "more generous" than another. This has to change. The evidence from the EU is that at the 55dB Lden limit value some 27% of people are highly annoyed compared with just 6% road and 4% by rail.<br><br>There is emerging evidence from both the UK and across continental Europe that chronic long term exposure to noise impacts adversely on human health. WHO has issued guidelines for the protection of human health. We are disappointed that the commission appears to have conceded, without question, that it is not possible to introduce even the WHO interim standards for community noise. This does not reflect the UK's policy commitment as a signatory to the WHO standards. We do not accept that it would be necessary to require a complete shut down of the transport system between 13:00 and 07:00. Away from main roads even in a city the size of London background levels can be quite low (40dBL908hr or less). This is why at locations such as Putney the arrival of the first night flight at around 04:30 am emitting typically 75dBLamax has such a |

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| | devastating effect on local residents. The aircraft noise is some 15 - 20 dB(A) above the background noise. In these areas compensation to WHO interim standards should be provided as arguably it is only the presence of night flights that is preventing achievement of the WHO standards. |