

**Doc. No. SSE/6/a**  
**Case Ref. 2032278**

Appeal by BAA Ltd and Stansted Airport Ltd following the refusal by Uttlesford District Council of planning application UTT/0717/06/FUL

## **Proof of Evidence on behalf of Stop Stansted Expansion**

### **Air Noise Issues**

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## 1 INTRODUCTION

### 1.1 Personal details

- 1.1.1 My name is Martin Peachey and I appear at the Public Inquiry on behalf of Stop Stansted Expansion ('SSE'). I have been assisted in the preparation of this proof of evidence by other members of the SSE Noise Group, particularly Chris Bennett.

### 1.2 Qualifications and experience

#### Martin Peachey

- 1.2.1 MA Cantab Mechanical Sciences.
- 1.2.2 Now retired after 35 years in business development and management for commercial companies in airport systems, facilities management and air traffic management following 11 years in the Royal Navy as an engineer officer.

#### Chris Bennett

- 1.2.3 BA Oxon in Modern Languages.
- 1.2.4 SSE Executive Committee member and Chairman of SSE Noise Group from inception (2003) until 2007.
- 1.2.5 For the last 11 years I have lived approximately 13 miles from the airport under one of the Runway 23 approach routes.

## 2 SCOPE OF EVIDENCE

### 2.1 Core evidence

- 2.1.1 Our evidence relating to air noise impacts was originally set down in Chapter 5 of Volume 1 of SSE's submission to UDC, July 2006 [CD/201] which addressed the information provided by BAA in Volume 2 of its Environmental Statement [CD/11].
- 2.1.2 Further evidence on air noise issues was included in Volume 3 of SSE's submission to UDC, November 2006<sup>1</sup> dealing with the additional information provided by BAA in response to a Regulation 19 Notice from UDC [CD/22].
- 2.1.3 That evidence is superseded by this submission which incorporates more recent data now available and further analysis carried out.

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<sup>1</sup> CD/203, paras 2.3 to 2.6 and 4.1.

## 3 AIR NOISE IMPACTS

### 3.1 Background

- 3.1.1 The analysis of the impact of air noise presented in support of BAA's planning application as contained in Volume 2 of the BAA Environmental Statement [CD/5] is both incomplete and selective. Important items of information on noise impacts requested by UDC have either not been supplied or have been supplied with inadequate details. In other cases it is clear that the information supplied was quite simply incorrect.
- 3.1.2 Even from the information that has been supplied, it is clear that the impact of increased noise at 35mppa would be considerable. There would be over 50% more households in the 57 dBA Leq area when compared to the projected 'status quo' in 2014 (i.e. the 25mppa scenario). 57 dBA Leq is the noise contour identified by the Government as being related to the onset of significant community annoyance. However, other authorities including the World Health Organisation ('WHO') put the level lower, but we are unable to indicate the increased impacts at these levels as BAA has not provided sufficient information – despite UDC's requests.
- 3.1.3 The planning permission granted in May 2003 relied on the Condition AN1 noise cap limiting the 57 dBA Leq land area to a maximum of 43.6 sq km. This represented a massive overprovision at the time, such that the surplus headroom would now allow BAA, on its own projections, to accommodate more than twice the mppa that was envisaged at the time, while still keeping within the same 2003 land area noise cap. This conceals the true impact of the future noise disturbance for the community and is discussed in detail in Annex 2.
- 3.1.4 We explore below the implications of the incomplete information supplied by BAA and the selective and flawed analysis of the extent of the impacts. We conclude that the BAA proposal would have severe implications for adverse noise disturbance for the community.

### 3.2 Inadequate, missing or misleading information

- 3.2.1 CD/5, para 1.1.7 states that at the request of UDC a number of supplementary air noise analyses are reported in Appendix A4. However it is evident that many of UDC's original requests for supplementary analyses on air noise were originally ignored. Some of these were re-requested in the Regulation 19 Notice [CD/39], but even following BAA's response to this, much important environmental information is still lacking.
- 3.2.2 One of the important items requested by UDC was a series of noise contours showing the effects on various scenarios of an all-westerly day and all-easterly day (in other words disaggregating the effects of the modal split that relates to direction of runway use). Despite BAA's attempts to undermine the value of modal split noise contour maps in their Regulation 19 response [CD/22], SSE continues to maintain that such disaggregated maps are invaluable for demonstrating the noise impacts on communities on the days when they actually are being overflowed. This is because they strip out the diluting 'averaging' effects that are inherent in overall Leq contour maps.

- 3.2.3 UDC requested noise contours at 50 and 54 dBA Leq. Two token noise contour maps showing levels down to 54 dBA Leq are buried in CD/5, Appendix A4 as 'supplementary' assessments. Unlike the other studies, there are no benchmark maps or tables provided for 2004 in this study, an omission that is presumably in line with BAA's dismissive statement in CD/5, para A4.1.1 that:

*'there is no scientific evidence relating the 54 dB LAeq contour with any significant onset of community annoyance.'*

We disagree with this claim: see 3.4.8 below.

- 3.2.4 UDC also requested noise contours below the level of 50 dBA Leq to indicate where air noise would exceed ambient noise levels in tranquil rural areas in the district. These have not been provided with the result that there is no information available concerning the noise impacts of aircraft flying in airspace outside the close vicinity of the airport. Whilst having less significant impact than aircraft close to the airport, aircraft overflying these routes to and from the airport nevertheless cause a noise disturbance to a very much larger number of households. This is further discussed in Annex 1.
- 3.2.5 The omission of noise contours below 57 dBA Leq is even more regrettable in the case of the maps relating to the sensitivity tests<sup>2</sup> because the lower the noise contour, the more sensitive it is to changes in certain assumptions (e.g. with regard to routing) in the input data.
- 3.2.6 BAA's reply to UDC's Scoping Opinion [CD/24.1] stated that

*'The contribution of helicopter traffic is likely to be very small and will not be accounted for in the noise contours. The implications of helicopter movements will, however, be discussed in the assessment.'*

However a full text search of CD/5 failed to find a single instance of the word 'helicopter', in spite of the fact that CD/19 indicates that the average of 3-4 movements per day will continue. The absence of the promised discussion of helicopter noise is all the more regrettable in the light of the statement in PPG24<sup>3</sup>:

*'Helicopter noise has different characteristics from that from fixed wing aircraft, and is often regarded as more intrusive or more annoying by the general public.'*

PPG24 continues:<sup>4</sup>

*'Helicopter routes may be established over cities and near aerodromes, although often their use will not be mandatory. Planning applications for helicopter landing/take-off facilities should be accompanied by information about the proposed take-off/landing flight paths and air traffic routes where appropriate... Where such information does not accompany the application, but is considered necessary, the local planning authority should request it...'*

We believe that this PPG24 advice should be heeded.

- 3.2.7 We consider the provision of LAmax levels for only six locations, none of which is outside the 57 dBA Leq area, to be inadequate. The assessments of the numbers of noise events at specific LAmax levels are presented in the form of bell curve

<sup>2</sup> CD/5, Appendix A1, figures 9-15 inclusive.

<sup>3</sup> PPG24 Annex 3, para 16 [CD/110].

<sup>4</sup> Ibid, para 17.

graphs.<sup>5</sup> These show the numbers of aircraft exceeding specific decibel levels, shown in one decibel bands. These are not easy for the lay reader to interpret in detail, or even to see at a glance what the noise situation is likely to be at the six locations.

A close study reveals however that in the 35mppa case at Thaxted, to take one example,<sup>6</sup> there will be just under 300 noise events above 64 decibels, which is the approximate level that interrupts conversation. This measurement relates to a 16 hour summer day and equates to one interruption every three to four minutes.

- 3.2.8 The comparative lack of L<sub>max</sub> information is exacerbated by the fact that there are no separate indicators for L<sub>max</sub> night levels. Para 4.2.3 of the WHO's 'Guidelines for Community Noise'<sup>7</sup> [CD/286] states:

*'If the noise is not continuous, L<sub>max</sub> or SEL are used to indicate the probability of noise induced awakenings. Effects have been observed at individual L<sub>max</sub> exposures of 45 dB or less. Consequently, it is important to limit the number of noise events with a L<sub>max</sub> exceeding 45 dB. Therefore, the guidelines should be based on a combination of values of 30 dB LA<sub>eq,8h</sub> and 45 dB L<sub>max</sub>.'*

This point is echoed by the Department for Transport ('DfT') in para 8.7 of the June 2005 Night Flying Restrictions consultation [CD/115], which states that:

*'research has suggested that the incidence of sleep disturbance is especially associated with the loudest noise events.'*

This is hardly an unexpected conclusion but nevertheless the importance of the actual total of noisy night-time events has been ignored by BAA.

- 3.2.9 The 'Report of Consultation' [CD/26] indicates that NATS anticipates that its review of future airspace will enable CDAs (Continuous Descent Approaches) to be made to Runway 05. In addition, CD/5, para 9.2.9 states that:

*'At night the lower traffic levels may occasionally enable CDA operations to Runway 05 to be flown. NATS has undertaken to raise awareness amongst controllers that if conditions permit, a CDA descent should be considered.'*

Currently it is not normally possible to use CDA on Runway 05 due to the very restricted airspace to the north west of Stansted. This airspace is also used by both arrivals and departures into and from Heathrow, London City, and Luton as well as Stansted westerly departures. This results in more noise and air pollution.

The lack of CDAs on approaches to Runway 05 is of extreme concern to the residents of Ware, Harlow and surrounding areas. SSE accepts that the decision to introduce CDAs is ultimately in the hands of NATS but believes that pressure should be exerted on BAA to bring about its introduction on Runway 05.

At present there is very scant information concerning any proposals to improve this situation which would worsen if the airport expanded.

- 3.2.10 CD/5, paras 10.5.5 - 10.5.6 apparently seek to minimise the impact of the increases in ATMs in the sensitive morning shoulder period of 0600-0700. First, the increases are stated as an innocuous-sounding difference in the absolute number (an

<sup>5</sup> CD/5, Figures 25-30.

<sup>6</sup> CD/5, Figure 27.

<sup>7</sup> Birgitta Berglund, Thomas Lindvall, Dietrich H Schwela: Guidelines for Community Noise. (World Health Organisation, Geneva, 1999) [CD/286].

increase of seven in the hour, when comparing 35mppa with the baseline 2004 figure). However this actually represents an increase of 140%. Secondly it is implied that this is of little account on the basis that:

*'Arriving aircraft tend to generate fewer noise complaints compared to departure noise (in the last quarter of 2005 there were zero arrivals-related noise complaints compared to almost 400 departure complaints).'*

Following representations by SSE, the above statement has subsequently been clarified by BAA. It is now accepted that the statement was based on a quirk of the statistical framework used and BAA has confirmed that the correct statistics for the period should be 95 'arrivals' complaints and 287 'departures' complaints.

- 3.2.11 SSE does not accept the implication in CD/5, para 8.1.12 that the relevance of two noise sensitive premises located in contours greater than 60 dBA Leq is somehow discounted because one (a doctor's surgery) is aviation-related, and the other (an Adult Learning Centre) 'is supported by STAL'. The implication that financial support given to an establishment absolves noisemakers from their environmental responsibilities is clearly unacceptable.

### 3.3 Issues relating to planning policy

- 3.3.1 UDC Policy ENV11<sup>8</sup> states that:

*'Noise generating development will not be permitted if it would be liable to affect adversely the reasonable occupation of existing or proposed noise sensitive development nearby, unless the need for the development outweighs the degree of noise generated.'*

In other sections of our evidence we demonstrate that the 'need for development' is insufficiently proven and we conclude therefore that under ENV11 the increased development should not be permitted, given the considerable additional level of noise impact.

- 3.3.2 As quoted in CD/5, para 7.4.5, RPG9<sup>9</sup> Chapter 5 states that 'year-on-year improvements in noise pollution should be a strategic goal'. It is clear from BAA's data that if planning permission is granted not only will this goal not be met but there will be a substantial worsening of the year-on-year picture.

- 3.3.3 CD/5, paras 5.2.8 and 5.2.9, quote PPG24's Annex 1, Footnote 2:

*'For the same amount of noise energy, contour values [for aircraft noise] can be up to 2 dBA higher than those of other sources because of ground reflection effects.'*

SSE has long challenged the logic of this. Indeed in the forthcoming consultation on the revised version of PPG24, SSE will be making strong representations on this point, which has never been satisfactorily explained or defended by the ODPM (now DCLG).

The rationale appears to be that 2 dBA should be subtracted from any aircraft noise reading obtained by a noise meter as these 2 dBA would relate to noise being reflected off the ground. This ignores the fact that the human observer would also hear this reflected noise and so the full, unadjusted reading is the one that actually

<sup>8</sup> Uttlesford District Local Plan Adopted 2005 [CD/57].

<sup>9</sup> Regional Transport Strategy (Chapter 9 of Regional Planning Guidance for the South East) [CD/68].

reflects the human noise experience. In the light of this, there appears to be no logic in putting the annoyance level up to 57 dBA Leq when 55 dBA Leq is the selected level for rail and road traffic noise.

Indeed there are strong arguments for reducing the threshold of aircraft noise annoyance as compared with road and rail. Research<sup>10</sup> indicates that, for the same noise measurements, aircraft noise is more annoying than other forms of transportation noise. The EU's Noise Working Group 2 builds on this research and finds that at a noise level of 50 dBA Lden, 19% of people are annoyed by aircraft noise, compared with 11% for road traffic noise, and 5% for rail traffic.<sup>11</sup> Finally an ISO Draft International Standard on this topic recommends a 3 to 6 dB penalty for aircraft noise compared with road traffic noise.<sup>12</sup>

### 3.4 Noise metrics

#### *Lden and dBA Leq*

- 3.4.1 CD/5, para A4.2.1 compares Lden noise contours with Leq contours and concludes that the fact that the former are larger 'does not imply a greater impact'. This is highly misleading as the Lden metric was devised precisely in order to illustrate more accurately the likelihood of noise annoyance. With this end in view, the Lden metric gives additional weighting to evening noise events and yet further additional weighting to night events. This is predicated on the perfectly reasonable assumption that during these periods there is a greater likelihood of annoyance as background levels are lower and expectations of quiet are greater. Consequently although the resulting Lden contours are indeed larger, this is because that is precisely the rationale behind them.

#### *Problems of the Leq metric concept*

- 3.4.2 We contend that the Leq metric in general and the 57 dBA Leq contour in particular is an inadequate indicator of likely annoyance from aircraft noise. It is clear from several years of anecdotal evidence presented repeatedly to SSE that changes in the numbers of overflying aircraft are far more noticeable, important and intrusive than small changes in average noise levels of each aircraft. Yet the Leq metric masks this effect.
- 3.4.3 The main drawbacks of the dBA Leq may be summarised as follows:
- it does not represent the potential noise impacts in a manner that can be intuitively grasped by the lay person;
  - it equates the effects of changes in decibels with the effects of similar proportional changes in the number of aircraft movements in an unrealistic and unintuitive way. This is because the Leq metric factors in the periods of quiet between the intermittent noise events in a process akin to averaging.
  - it masks the differential noise effects of the alternating directions (north east and south west) of runway usage;

<sup>10</sup> Finegold, Lawrence S., C. Stanley Harris, and Henning E. von Gierke, 'Community annoyance and sleep disturbance: Updated criteria for assessing the impacts of general transportation noise on people', *Noise Control Eng. J.*, 42(1), 25-30 (1994 January-February). This is corroborated by Miedema and Vos who researched an even bigger sample and found that for the same noise level, aircraft noise tends to be significantly more annoying than other forms of transport noise. (*Journal Acoustic Society of America*, Dec 1998, pp 3432-3445).

<sup>11</sup> EU Noise Policy WG2, Position Paper on Dose Response Relationships between Transportation Noise and Annoyance, 20 February 2002.

<sup>12</sup> ISO, *Acoustics—Description, measurement and assessment of environmental sound* (Geneva, December 2000).

- as an ‘averaging’ metric, it does not adequately reflect the annoyance caused by intermittent, ‘peaky’ noise such as noise from aviation (as, for instance, contrasted with road noise);
- similarly when measured over a 16 hour period (as is standard for aviation related daytime Leqs), it gives a wholly unrealistic impression of the effects at peak times which may last for an hour or more and may also be at particularly sensitive times (early morning or late evening);
- the ‘A’ weighting used inadequately reflects the contribution of low frequency noise from aircraft.

More details of most of the above objections can be found in SSE's Response to the SERAS consultation<sup>13</sup> [CD/261], sections 4.3.1 to 4.3.3 inclusive, or, in the case of the 'A' weighting in Hacan Clearskies document *The Quiet Con - 'A' Weighted Leqs as the Index of Aircraft Noise Annoyance'*.<sup>14</sup>

- 3.4.4 The lack of intuitiveness of the Leq metric leads to further difficulties and confusion. As an example, the 'Master Volume' of the BAA Environmental Statement [CD/4] states:<sup>15</sup>

*'Noise difference contours between the two cases [SSE Note: i.e. the cases for 25 and 35mppa] show that no locations would see an increase in noise exposure of more than 2 dB and that a population of 3,350 would experience increases of between 1 and 2 dB. PPG24 considers that a change of 3 dB is the minimum perceptible under normal circumstances.'*

The implication of this statement is that these 3,350 people will not notice the difference as it is below the minimum perceptible. However BAA is misusing the text of PPG24 [CD/110]. The quotation is taken from the PPG24 glossary and it clearly relates to decibels in terms of single impact events (LAmax measurement). The additional 1-2 dB exposure referred to by BAA clearly relates to multiple intermittently occurring sounds ‘averaged’ over a period of time (Leq measurement).

Furthermore, owing to the logarithmic basis of the calculations involved, ‘the minimum perceptible’ 3 dB Leq change referred to by BAA could result from, say, either increasing the noise levels of all aircraft concerned by 3 decibels, or from doubling the number of their movements. As stated by PPG 24, the former would not normally be perceptible; however doubling the number of flights at an airport is of course significantly noticeable. Indeed residents from wide areas across East Anglia have told SSE that increasing the number of flights by a much smaller factor – say 10 or 20 percent – has been highly noticeable. Indeed it is clear from the map in Annex 1 that the last four years have seen a dramatic increase in the areas complaining to the airport’s Flight Evaluation Unit.

#### **57 dBA Leq as an indicator of annoyance**

- 3.4.5 With regard to the actual level of Leq chosen as an indicator of annoyance (i.e. 57 dBA Leq), we would highlight that the WHO Guidelines for Community Noise, 1999<sup>16</sup>, para 4.3.1 states that *‘to protect the majority of people from being moderately annoyed during the daytime, the sound pressure level should not exceed 50 dBA Leq... indeed the lower sound level [40 dBA Leq] should be considered the maximum sound pressure level for all new developments whenever feasible’*.

<sup>13</sup> 'The Case Against Irresponsible Growth', SSE, June 2003.

<sup>14</sup> p11-13 [SSE/6/c Appendix 1].

<sup>15</sup> para 10.1.39.

<sup>16</sup> CD/286.

- 3.4.6 Our reservations concerning the 57 dBA Leq contour are supported by the Inspector at the Heathrow T5 Public Inquiry whose summary report<sup>17</sup> stated:

*'The survey on which the use of the LAeq 16-hour is based was carried out in 1982 and the relationship between the LAeq and community annoyance was statistically weak even at that time' (para 21.3.32)*

*'...it does seem likely that the weight attached to the 57dB LAeq by the Department [for Transport] as the measure of the overall noise climate is greater than the original research would support.'(para 21.3.32)*

*'...[the LAeq 16-hour index] was the subject of severe criticism much of which I consider to be well-founded. ...I believe that it fails to give adequate weight to the number of aircraft movements' (para 21.3.34)*

*'Even the Department [for Transport] recognised the deficiencies of the LAeq system (para 21.3.32-33). They also accepted that it is difficult to establish the true relationship between the noise of individual events and their number and that it would have been useful if further social surveys had been carried out';*

*'If parties are to have confidence in the indices used to measure the noise climate they need to be founded on a sound basis of up-to-date research. Unfortunately the Department's own evidence suggests that this does not apply to the use of LAeq, in spite of their argument that research had guided the choice of noise indices since 1967' (para 21.3.35)*

- 3.4.7 A further illustration of the inappropriateness of the 57 dBA Leq contour as an annoyance indicator may be obtained from the illustration in Annex 1 which shows the enormous disparity between the official 'noise annoyance' of 57 DBA Leq (the area in blue) and the much larger area from which complaints were made about Stansted aircraft noise.
- 3.4.8 CD/5, A4.1.1 states that 'there is no scientific evidence to relate 54 dBA Leq contour with significant onset of community annoyance' and CD/5, para 5.2.7 misquotes the WHO Guidelines for Community Noise as stating that daytime outdoor noise levels of less than 55 dBA Leq are desirable to avoid significant community annoyance. In fact Table 4.1 of the WHO Guidelines uses the words 'serious annoyance' in its assessment. It is not necessary to debate the relative interpretations of 'significant' or 'serious' in this context since the WHO Guidelines go on to state that levels above 50 dBA Leq will cause **moderate** annoyance. This is clearly in direct conflict with CD/5, para 5.2.7 and indeed with BAA's claim in CD/5, para 5.2.11 that the WHO supports the use of 57 dBA Leq as an indicator of the onset of annoyance.

It should be noted that the UK is a signatory to the 'WHO Charter on Transport, Environment and Health'<sup>18</sup> [CD/285] which binds signatories 'to introduce targets that take into account recommendations contained in WHO guidelines on noise' and 'keeping night-time sound levels in residential areas within WHO recommended night-time values'.

- 3.4.9 This particular issue concerning noise contours at lower levels is important in the context of potential effects of aviation noise impacts on schools which was in fact originally raised in the Scoping Opinion and repeated as the subject of one of the Regulation 19 enquiries made by UDC. BAA's refusal to comply was based on its

<sup>17</sup> Report of the Inspector at the Heathrow Terminal 5 Inquiry', Dec 2000 (published 2001) para 21.3.32-35 [SSE/6/c Appendix 2].

<sup>18</sup> WHO Charter on Transport, Environment and Health (1999), Clause IV A 3 and Annex 4 (Noise (c) [CD/285]).

claim that contours at these lower levels would be misleading. However this reply is difficult to reconcile with the fact that BAA **have** provided contours down to the level of 48 dBA Leq for the night period.

- 3.4.10 Although BAA has refused to provide 16 hour noise contours below 54 dBA Leq, it can be seen that even the 54 contour considerably increases the affected area when compared to the 57 contour.

**Table 1 Areas within Noise Contours**

<b>Case</b>	<b>57 Leq land area in sq km</b> (Vol 2: Tables 5,6)	<b>54 Leq land area in sq km</b> (Vol 2: Tables A4.1,2)	<b>Increase</b>
25 mppa	27.5	47.5	+73%
35 mppa	33.9	58.3	+72%

It can therefore be readily imagined that the 50 dBA Leq contour representing the WHO's moderate annoyance level would represent yet another significant increase in the land area affected. Indeed noise modelling carried out by SSE using INM, the world industry standard software for mapping noise contours, at the time of the SERAS consultation in 2003 indicated that 50 dBA Leq land areas for the various SERAS options were between 2.5 and 3 times as large as 57 dBA Leq land areas. Again, the 'complaints' map in Annex 1 supports the case for the recognition of these much larger areas of noise disturbance.

### 3.5 Noise control and mitigation: general

- 3.5.1 We completely refute the entire statement in CD/5, para 13.1.1 which says

*'It will have been seen throughout this technical volume that the majority of controls on aircraft noise are held and exercised by the Secretary of State for Transport. It will also be seen that there are already substantial mitigation measures in place and that the basis of the restrictions is to strike a reasonable balance between the interests of the aviation industry and those of the local communities affected by aircraft operations. No additional mitigation is therefore proposed to that already in place.'*

Not only do we believe that these claims are not substantiated, but we consider that even if they were, the final sentence would be unacceptable.

Should BAA persist in using the above reasoning to seek to evade its obligations, it should be referred to the Air Transport White Paper ('ATWP') [CD/87] which states in para 3.6 that:

*'Local controls should operate within these principles to manage the environmental impact of aviation and airport development so that noise impacts are limited and where possible **reduced over time.**' (para 3.6) [our emphasis].*

SSE believes that this policy must be rigorously applied in order to fully protect the community.

- 3.5.2 Our reservations above about the underlying rationale for the use of the 57 dBA Leq contour as an indicator of community annoyance are given further weight by our

examination in Annex 2 of the use of the 57 dBA Leq land area cap of 43.6 sq km which was imposed as condition AN1 in the 2003 planning permission.

Annex 2 shows that the relationships between the 57 dBA Leq land area and ATMs and numbers of passengers can sometimes alter counter-intuitively. Indeed they can vary markedly even to the extent of moving in opposite directions and the Table shows clearly that the 43.6 sq km land area cap was a gross over-provision.

We conclude from the above that it would be virtually impossible to arrive at a land area cap attached to a specific Leq level that would be both within the likely bounds of reality and acceptable to all parties. Consequently we suggest that an alternative method is used for measurement and capping of noise impacts, if the question of conditions arises.

- 3.5.3 The assessment of the number of households who will suffer increased noise (CD/5, para 10.4.5 and Table 14) uses a baseline of 2004. However when addressing insulation measures, the ATWP [CD/87] states that the Government expects airport operators to

*'offer acoustic insulation to any residential property which suffers from both ... 63dBA Leq or more and a large increase in noise (3dBA Leq or more).'*

and goes on to say that

*'relevant airports should use **2002** noise contours as the base year when applying these measures related to further growth.'* [our emphasis]<sup>19</sup>.

BAA has incorrectly provided difference contours based on a 2004 baseline instead of a 2002 baseline.

### 3.6 Noise control and mitigation: night flights

- 3.6.1 CD/5, para 10.5.2 states that:

*'STAL does not seek to vary the DfT night noise quota system and therefore the 35mppa case complies with the DfT's statutory night noise requirements.'*

Far from being evidence of a generous offer by BAA, this is of course no more than a restatement of one of the existing S.106 obligations from the 2003 planning permission. In addition, the quotas set by the DfT's Night Flying Restrictions ('NFR') regime has always offered considerable headroom over actual utilisation and therefore is not, in practice, a rigorous cap.

- 3.6.2 It should also be noted that reference to the DfT night quota limits is in part not relevant, because 2014/15 (the date chosen for BAA's illustrative scenarios) is three years after the end of the new DfT NFR regime. Moreover the number of movements permitted at night (currently 5 per hour, on average) should be seen in the context of the Government's stated commitment to remove night movements limits, as set down in para 3.14 of the ATWP [CD/87]:

*'The Government intends that new legislation should be introduced ... [including] an amendment to section 78 of the Civil Aviation Act 1982 so that controls such as night restrictions could, subject to public*

<sup>19</sup> ATWP [CD/87], paras 3.24 - 3.25.

*consultation, be set on the basis of noise quotas alone, without a separate movements limit'.*

The Government failed in its first attempt to secure this legislation (within the 2006 Civil Aviation Bill) due to strong opposition, particularly in the Lords. However it remains Government policy and five years remain for another legislative attempt.

- 3.6.3 Although BAA's projections indicate compliance with the DfT's exceptionally generous Night Flights Regime ('NFR') as applied to a 6.5 hour night period, this is not the case with an 8 hour period. Although the NFR regime currently operates over a 6.5 hour period, it is expected that the UK will in due course adopt an 8 hour period in order to harmonise the NFR with EU requirements for producing Lden measurements. BAA is well aware of this, and indeed CD/5, para 9.1.2 covers the possibility of an 8 hour Night Quota Period ('NQP') when considering Leq land area caps.

However, BAA is not so forthcoming in discussing the movements and Quota Count ('QCs') for an 8 hour night period. Page 40 of the DfT's June 2005 Second Stage Consultation document [CD/115] outlines the DfT proposals for limits relating to a potential 8 hour NQP. The following table shows these DfT '8 hour night' proposals for 2011-12 (the last year in its table in para 7.48 of the Second Stage Consultation document) compared with BAA's predicted 8 hour night totals in the Lden tables in CD/19, Appendix A3:

**Table 2 Night Flights – BAA Projections vs DfT Proposals (8-hour night period)**

Scenario	8 hour night ATMs <sup>20</sup>	Difference from DfT proposal	8 hour night quota count (QC) <sup>21</sup>	Difference from DfT proposal
DfT NFR proposed night limits for 2011/12	21,120	-	14,150	-
BAA 25mppa (2014/15)	26,711	+26.5%	16,450	+16.3%
BAA 35mppa (2014/15)	30,563	+44.7%	17,964	+27.0%
BAA 'Sensitivity' (2014/15)	30,865	+46.1%	18,881	+33.4%

It is clear from the above that BAA's claim in CD/4, para 10.1.29 that the 35mppa case 'would not exceed the current and potential future DfT night noise limits currently being consulted on' is careless at best: BAA's proposals would most definitely ignore the spirit of the DfT's potential '8 hour night' QC system, even if the use of this longer night period has not yet been translated into the letter of the law.

- 3.6.4 CD/19, Table A1.12 indicates that cargo movements (CATMs) represented 19% of all night (2200 – 0600) movements in 2004. However Table A1.14 predicts that in the 35mppa scenario cargo will represent 20.8% of all night movements. Although

<sup>20</sup> The DfT's 8-hour night period is 2300-0700, whereas BAA's is 2200-0600. However taking arrivals and departures together, the two hours 2200-2300 and 0600-0700 have broadly similar numbers of ATMs (see Vol 16: Tables A1.13 and A1.14 adjusted for BST).

<sup>21</sup> Source: Night ATMs used in the calculation were taken from CD/19 Appendix A3 L<sub>den</sub> tables. QC ratings taken from DfT June 2005 Stage 2 NFR consultation [CD/115]. Certain future aircraft types QC ratings are based on best guess estimates and we have in addition assumed the extension of the introduction of new quieter QC bands following the precedent of the newly introduced 0.25 band. Where a single row in the Vol 16 ATM tables relates to more than one aircraft type, and these types have different QC ratings, we have distributed the ATMs equally between the aircraft types.

apparently a small rise when viewed in percentage terms, this actually represents a 9.5% increase in the CATM share of night traffic.

Furthermore this 20.8% share of night traffic contrasts sharply with the 7.8% (for the 35mppa scenario) CATM share when measured over the full 24 hour period. In general cargo aircraft are heavier and noisier than the average aircraft at Stansted. It bodes ill for light (and even not so light) sleepers in the area for tens of miles around that CATMs would take place in such disproportionate quantities at night.

## 4 CONCLUSIONS

- 4.1 Even allowing for the partial and questionable information supplied, BAA acknowledges that 35mppa will lead to more noise. A proper analysis of the noise impacts of 35mppa and associated movements taking full account of the points we have raised would show a totally unacceptable amount of noise nuisance.
- 4.2 If planning permission were to be granted, the noise impacts of BAA's proposal would be considerable and would have severe implications in terms of noise disturbance for the community. BAA relies on the cloak of its planned increases not exceeding the 2003 planning permission's Condition AN1 noise cap to conceal the true impacts of its proposals. This condition limits the 57 dBA Leq land area to a maximum of 43.6 sq km. However as Annex 2 makes clear, this represented a massive overprovision at the time – and would continue to do so even under the 35 mppa scenario.
- 4.3 This over-high noise cap would be unlikely to have been breached by 2014 even if there were to have been no improvements in aircraft noise technology between 2003 and 2014. Yet there have already been some improvements in individual aircraft noise levels and more will slowly follow; in addition a major operator at the airport has re-equipped, and continues to re-equip, with quieter aircraft. Both these factors combine to put the AN1 land area cap even further into the realms of fantasy as a realistic constraint going forward from the present position.
- 4.4 Under BAA's proposals none of the benefits of these technological advances is afforded to the community: instead BAA proposes to keep to itself the potential benefits of improvements in aircraft noise technology in order to facilitate yet ever higher numbers of ATMs. Far from noise levels falling, as the first section of the red line (57 dBA Leq land area) in Figure 1 below would lead one to expect, they would rise, and rise dramatically, if permission were granted to expand beyond 25 mppa.
- 4.5 Finally, noise impacts needs to be looked at in the round – the combination of air noise, ground noise and surface access noise – in order to fully assess and understand their scale. BAA has declined to provide the information that would enable us to do that. Nevertheless, there is enough information to indicate that the overall noise impacts of the proposed development would be wholly unacceptable.

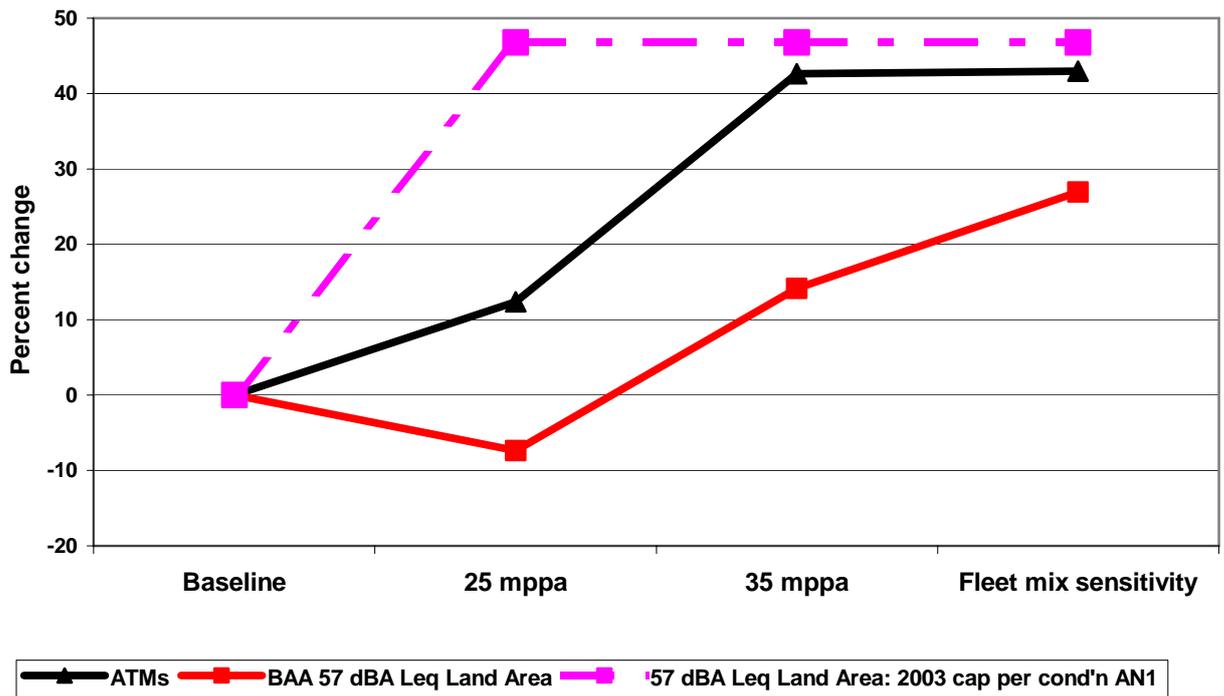


Figure 1: Growth rate of ATMs vs 57 dBA Leq land area

Baseline data source notes:

- ATMs: 2004 traffic figures i.e. 192,000 ATMs [CD/19, Appendix A3].
- BAA 57 dBA Leq land area: 2004 figure i.e. 29.7 sq km [CD/5 Table 12, p.25]
- 57 dBA Leq land area cap: 29.7 sq km (as above). The land cap data therefore compares the area of the '2003 permission' land cap to a baseline of the actual land area for 2004.

## **ANNEX 1: Noise impacts from aircraft on routes to and from the airport**

Aircraft departing from Stansted airport are confined to fly in airspace limited to 3km wide swathes of Noise Preferential Routes (NPRs) until a certain required height is reached. There are six NPRs in use at Stansted Airport, three routes for each of the two directions of the runway. These six NPRs were designed to avoid centres of population in the airport vicinity and have remained unchanged since they were laid down in 1988 following public consultation. Aircraft may leave the NPRs when they have reached 4,000ft on these routes and at 3,000ft on the two westerly routes (Buzad) during the day. BAA's information states that on five of the six NPRs, over 95% of all departures keep within the swathes and that financial penalties can be levied for infringements.

Aircraft arriving at Stansted airport are not confined to NPRs. There are no set routes for arriving aircraft and air traffic controllers can use all available airspace to route aircraft to sequence arrivals according to established separation criteria and weather conditions. Nonetheless, there are well defined routes established to and from the Lorel and Abbott holding points near Barkway and Sudbury from which aircraft inbound to the airport leave at around 6,000ft.

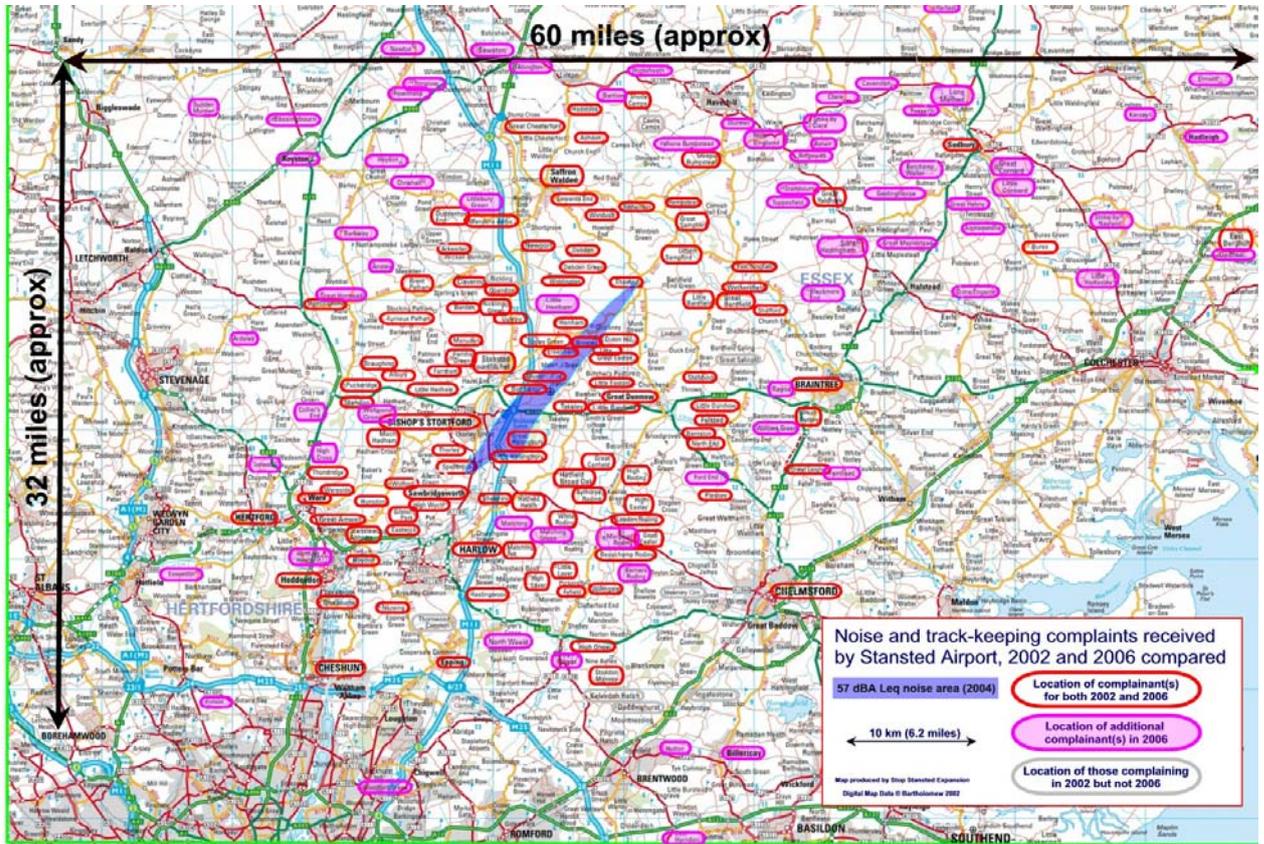
The noise impact of aircraft flying on all these routes around Stansted Airport is now significant due to the increased number of aircraft movements which has outweighed the advantage gained by the phasing out of noisier aircraft. Furthermore, the area affected is not restricted to the close proximity of the airport. Whilst those living and working nearby are most affected by aircraft noise, the extent of the area affected by noise annoyance is clearly indicated by those who complain to Stansted's Flight Evaluation Unit. This area is approximately 60 miles (E/W) by 32 miles (N/S) and is illustrated below.

Movements can occur on average every 80 seconds during the several peak periods which occur each day between 0700 and 2300 and in the shoulder periods of the night regime from 0600 to 0700 and from 2300 to 2330. During these periods runway utilisation is frequently at its maximum of 45 movements per hour and any further expansion can therefore only be achieved by operations extending into the bulk of the working day – thus resulting in yet more 'peak periods'.

Very little quantifiable information in respect of the 25 mile radius airspace area around Stansted has been provided, despite UDC's request in the Scoping Opinion [CD/24] for noise contours below the level of 50 dBA Leq to indicate where air noise would exceed ambient noise levels in tranquil rural areas in the district. Whilst having less significant impact than aircraft close to the airport, aircraft overflying these routes nevertheless cause a noise disturbance to a very much larger number of households from both departing and arriving flights. This overflying is much more of a nuisance when the background noise levels are low, especially during the hours of 2330 to 0600. This period is covered by the Night Noise Regulations and current limits are not at present fully utilised. Noise is also significant in the shoulder periods of 0600 to 0630 and 2300 to 2330 and during the quieter weekend times. For these reasons, many European cities have a total ban on night flying between 2300 and 0630 and some extend to 8 hours.

With regard to airspace considerations, the Lorel holding point near Barkway, which is also a main departure beacon, is currently used by Stansted and Luton air traffic and is becoming inadequate to handle the increasing activity at both airports. New flight paths and an additional holding point to the north of Stansted are anticipated to be recommended this summer by the CAA. This will have to take account of the military airspace serving Mildenhall and Lakenheath

and in the St Ives area and will increase flying distances for aircraft approaching Stansted from the north, south and west. Information is currently very limited on proposals for the airspace around Stansted to be able to handle the increased air traffic forecast in BAA's proposal and several unsuspecting communities may well find themselves under a new holding point and associated flight paths.



**Figure 2: Map showing origin of complaints made to Stansted Airport's Flight Evaluation Unit compared with extent of Department for Transport's official 'noise annoyance area'**

Figure 2 illustrates that the 'official' area of annoyance (i.e. the 57 dBA Leq area, in blue) bears scant relationship to the huge area where residents are actually complaining about aircraft noise; and even although this 57 dBA Leq area has shrunk in recent years, the areas where complaints originate from have grown considerably between 2002 and 2006 particularly to the north-east of the airport.

## ANNEX 2: Factors affecting Leq Land Area Cap

The 2003 planning permission imposed a condition (AN1) which stated that the land area contained by the 57 dBA Leq contour should not exceed 43.6 square kilometres (sq km).

Noise contours are generally fairly resistant to even quite dramatic changes. For instance a doubling of movements, if accompanied by a decrease of just 3 decibels in each of those movements,<sup>22</sup> would result in no change to the area contained by the 57 dBA Leq.

It can be seen from the first section of Table A2.1 on the following page that the envisaged increase in Leq land area was a gross overprovision: an increase of 36.7% in the Leq contour land area being allowed to provide for an increase of 49.4% in total air traffic movements (ATMs). Subsequent events have confirmed this overprovision, as shown by the second section of the table which demonstrates that in the ensuing two years,<sup>23</sup> although the ATMs have increased by over 17%, the Leq land area has actually reduced by nearly 14%.

This historical reality depicted in the second section of the table contrasts vividly with the contents of the bottom section of the table, which show what is implicitly planned by BAA in the current application.<sup>24</sup> The bottom section of the table shows that BAA's demands would represent an increase in the 57 dBA Leq land area (when measured from 2005) at a faster rate than the rate of increase in ATMs (58.5% increase in 57 Leq land area compared to 42% increase in ATMs). This represents an even bigger percentage increase for the Leq land area than in the grossly over-provisioned 2003 condition.

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<sup>22</sup> The three-decibel change referred to is a measure of the change in sound energy as measured at the point of emission of the sound, for a single noise event. The difference is barely perceptible to the human ear (as noted by BAA in CD/5 para 10.6.1). (See also discussion of this point in 3.4.4 above.)

<sup>23</sup> At the time of writing, the official noise contours for 2006 have not yet been published.

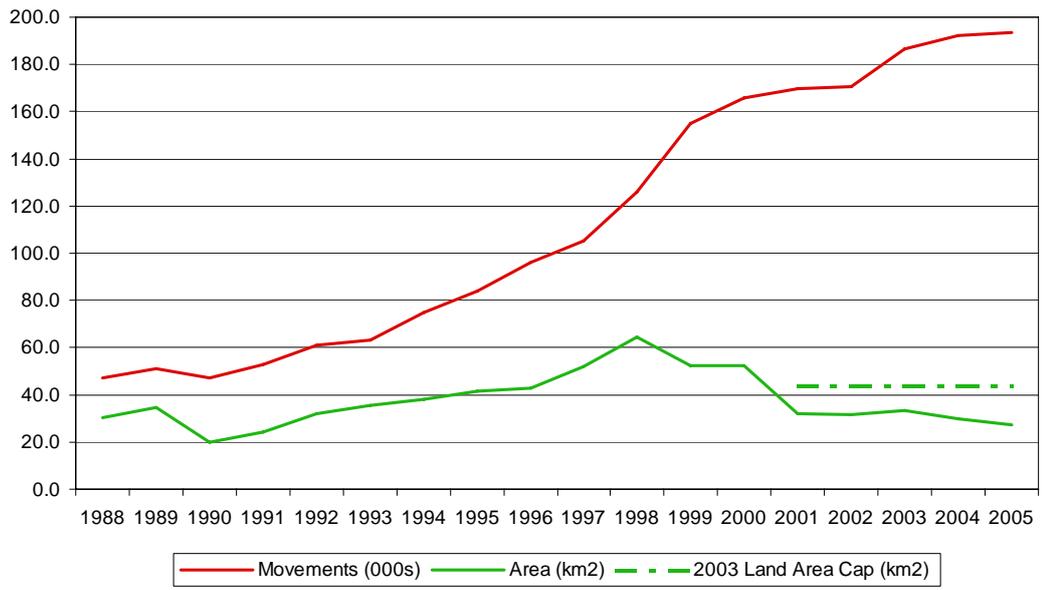
<sup>24</sup> Based on the Environmental Statement's intermittent references to the noise effects of expansion still being able to be contained within the '2003 Permission' land area cap.

Table A2.1: 57 dBA Leq land area cap

	Date	Status	57dBA Leq land area (sq kms)	Total ATMs	millions of passengers (mppa)
What was asked for in 2002/3	2002 baseline	Latest available official contours (published Jul 2003)	31.9	164,000	15
	2003	25 mppa planning application: conditions/BAA predictions	43.6	245,000	25
	Percentage change		+36.7%	+49.4%	+66.7%
What has actually happened	2002 baseline	Official contours published Jul 2003	31.9	164,000	15
	2005	Latest available official contours (published Feb 2007)	27.5	193,000	22
	Percentage change		-13.8%	+17.7%	+46.7%
What is currently being asked for	2005 baseline	Latest available official contours (published Feb 2007)	27.5	193,000	22
	2006-7	Current planning application: BAA implied condition	43.6	274,000	35
	Percentage change		+58.5%	+42.0%	+59.0%

Further details of the historical trends may be obtained from Figure 3 on the following page.

Setting the 57 dBA Leq land area cap



**Figure 3: Decoupling of ATMs and 57 dBA Leq land area trends, illustrating excess headroom in '2003 Permission' land area cap**  
 Source: ERCD report 0603 with line indicating 2003 permission land area cap added by SSE

Appeal by BAA Ltd and Stansted Airport Ltd following the refusal by Uttlesford District Council of planning application UTT/0717/06/FUL

## **Air Noise Issues**

### **Appendices**

- Appendix 1**      *'The Quiet Con - 'A' Weighted Leqs as the Index of Aircraft Noise Annoyance', HACAN Clearskies*
- Appendix 2**      **Report of the Inspector at the Heathrow Terminal 5 Inquiry', Dec 2000 (published 2001) para 21.3.32-35**