

**Doc. No. SSE/7/b
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

Summary Proof of Evidence on behalf of Saffron Walden Friends of the Earth and Stop Stansted Expansion

Air Quality Issues

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30 April 2007



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1 INTRODUCTION

1.1 Personal details

- 1.1.1 My name is Dr Patricia Elliott and I appear at the Public Inquiry jointly on behalf of the Saffron Walden branch of Friends of the Earth and Stop Stansted Expansion ('SSE').

1.2 Qualifications and experience

- 1.2.1 MD, MFOM, DPH, DIH.
- 1.2.2 Formerly Medical Director, Harlow Occupational Health Service, providing occupational health and hygiene services to firms and public authorities in Harlow, Bishop's Stortford and Hoddesdon. Occupational Health Adviser to Kings College Hospital, London.
- 1.2.3 I am now retired.

2 SCOPE OF EVIDENCE

2.1 Core evidence

- 2.1.1 My evidence relating to air quality impacts was originally set down in Chapter 6 of Volume 1 of SSE's submission to UDC, July 2006 [CD/201] which addressed the information provided by BAA in Volume 3 of its Environmental Statement [CD/6].
- 2.1.2 Further evidence on air quality issues was included in Volume 3 of SSE's submission to UDC, November 2006¹ dealing with the additional information provided by BAA in response to a Regulation 19 Notice from UDC [CD/22].

2.2 New evidence

- 2.2.1 A highly relevant report, *'The Report of the Airport Air Quality Technical Panels, The Project for the Sustainable Development of Heathrow'*, has become available since the submission of our original evidence on air quality and so also have the three reports that supported the information set down in CD/6:
- *'Future Emissions Analysis for Stansted Airport in 2014'*, Dickinson and Christou (QuinetiQ), 2005; [CD/277]
 - *'Stansted Air Quality beyond 25mppa: Modelling Test Report'*, Underwood et al (Netcen), 2006; [CD/278]
 - *'Stansted air quality beyond 25mppa. Methodology Report'*, Underwood et al (Netcen), 2006; [CD/279]
- 2.2.2 In the light of the above new information, the original air quality evidence set down in CD/201 and CD/203 is being replaced by proof of evidence SSE/7/a, of which this is a summary.

¹ CD/203, paras 2.1 and 2.9 to 2.13.

2.3 BAA modelling

- 2.3.1 BAA has modelled air quality impacts for its 25mppa '2014 baseline' scenario and its 35mppa scenario. Both scenarios entail more and larger aircraft and a significant increase in new models with reduced fuel use. BAA predicted that the only breaches of statutory limit values would be for PM₁₀ in 2010.
- 2.3.2 Modelling airports for future air quality has many uncertainties. The Government invited three panels of experts to examine how the air quality situation at Heathrow could best be modelled, with a view to obtaining a better estimate of the air quality situation should an extra runway be built. This major study is known as the Project for the Sustainable Development of Heathrow ('the PSDH') and its first technical report, published in July 2006², gives best practice advice for air quality modelling.
- 2.3.3 Most of the advice set down in the PSDH is equally applicable to Stansted even though Stansted is situated in rural surroundings. We have now been able to obtain copies of the reference documents³ describing the methodology used by BAA for its 25mppa and 35mppa projections and a study of these documents has confirmed our original conclusions that future NO_x values for Stansted have been underestimated in the Air Quality Environmental Statement (ES Vol 3) [CD/6] that has been provided by BAA in support of this planning application.
- 2.3.4 The main pollutants of concern at Stansted – nitrogen oxides (NO_x), nitrogen dioxide (NO₂) and PM₁₀ particles – are subject to statutory limit values for the protection of human health and, in the case of NO_x, for vegetation. The latter is of particular importance in relation to Hatfield Forest, the ancient woodland and SSSI south of the airport. The model used by BAA predicts that the limit value for NO_x is very close to being breached at the north west perimeter of the Forest at 35mppa and BAA's sensitivity tests for 40mppa predict a breach.

2.4 Recommendations of the PSDH

- 2.4.1 The PSDH lays down a number of recommendations, especially with regard to the emissions inventory, many of which have not been followed in the BAA modelling.
- 2.4.2 The first is the need to validate the model against a set of real time monitoring points using automatic analysers for at least a year in order to obtain a reliable annual mean. BAA has provided only **seven months** from just **one analyser** supplemented by only four nitrogen diffusion tubes within the airport. BAA has never carried out a comprehensive reliable monitoring programme in and around the airport despite the plans that have been put forward for such a major expansion.
- 2.4.3 The PSDH also advises on the need for an accurate emissions inventory for aircraft operations, airside vehicles and landside traffic. These should include allowances for engine deterioration, speed of aircraft, APU use, accurate times-in-mode and engine testing. Stansted Airport apparently does not have full records in these areas and many assumptions have been made. Some, as described, seem reasonable but others do not meet the PSDH recommendations. In addition, the PSDH warns that new models of aircraft with better fuel use are liable to emit more NO_x and it recommends a review to consider the likely situation in the future.

² 'The Report of the Airport Air Quality Technical Panels', PSDH, DfT, July 2006 [CD/280].

³ As listed in 2.2.1 above.

- 2.4.4 The dispersion model chosen by the PSDH was a new model 'ADMS-Airport' which would appear to allow for more ground level lateral dispersion than that used in the BAA Stansted model.
- 2.4.5 Landside estimations of traffic are very uncertain because the new A120 was opened during the period used to validate the model used by BAA. Traffic patterns would have been uncertain for the initial period. The effects on predicted emission values cannot be properly evaluated.
- 2.4.6 All these factors introduce uncertainties in BAA's predictions, mostly suggesting that emissions have been underestimated, notably in the areas of allowances for speed in the LTO cycle, times-in-mode, changes in ambient temperature, engine deterioration and APU use.

2.5 Hatfield Forest

- 2.5.1 BAA predictions for NO_x at the north west corner of Hatfield Forest show that the limit value for vegetation is almost exceeded, and is exceeded for the 40mppa sensitivity test. The number of uncertainties in the modelling process increases the probability that levels will be exceeded over a significant section of this ancient woodland SSSI. In addition, the proposed new EU Air Quality Directive introduces a 'critical level' level for NO_x, still at 30mgms/cm³, but qualified by the introduction of a requirement to monitor at an upper assessment level set at 80% of the critical level (i.e. 24mgms/cm³), which level is certainly breached.
- 2.5.2 Furthermore, the Government has made clear that its policy is for NO_x objectives to be achieved at 99% of all SSSIs by 2010.
- 2.5.3 The levels of harmful nitrogen deposition in Hatfield Forest are stated to be high at the present time⁴ but the possibility that this is airport related is dismissed as Hales Wood near Saffron Walden showed similar levels. Hales Wood SSSI is not, however, comparable being small (25 acres) and surrounded on three sides by agricultural land and so exposed to agricultural chemicals creating an 'edge effect' that would inevitably extend across the whole area.
- 2.5.4 If the proposed new EU Air Quality Directive is adopted, the predicted level of PM₁₀ for 2014 will not exceed the proposed limit value for 2010, which will remain at its present level after 2010. However, a new limit value for PM_{2.5} is proposed of an annual mean of 25mgms/cm³. BAA's predictions for 2014 show that figures approaching this level are expected at some sites. The uncertainties in measuring and modelling particles are such that there is a probability that this limit value will also be exceeded in 2014.

⁴ CD/13, para 10.4.6.

3 CONCLUSIONS

- 3.1 The new evidence presented supports our original conclusion that the limit values laid down by EU Directive 1999/30/EC and the UK Air Quality Limit Value Regulations, 2001, for NO_x effects on vegetation will be exceeded in the SSSI and ancient woodland of Hatfield Forest if expansion to 35mppa is permitted.⁵ Also, it is the stated intention of the Government that 99% of SSSIs should be protected even if situated in an exclusion zone.
- 3.2 There is the possibility that either PM₁₀ or PM_{2.5} limit values will be exceeded depending on the adoption of the proposed new EU Directive on Air Quality.
- 3.3 The Secretary of State for Communities has accepted the policy in the emerging East of England Regional Plan proposed by the Panel for the protection of Hatfield Forest (Policies ENV1 & ENV5) [CD/76].

⁵ Table 3 in ES Vol 3 [CD/6] sets out the Air Quality Objectives and the European Union Limit Values and the dates for their achievement.