SSE Briefing Note on Planning Application UTT/18/0460/FUL

Assessment of Air Quality Impacts – Main Shortcomings

1 Context

1.1 A 2016 report from the Royal College of Physicians estimated that around 40,000 deaths a year in the UK are attributable to exposure to outdoor air pollution, describing it as one of the major health challenges of our day. This planning application would give rise to significant increases in aircraft movements and airport-related road traffic, both of which would result in increased local air pollution.

1.2 Having regard to the potential health consequences – as well as the impact on the natural environment – every member of Uttlesford Planning Committee has an overarching duty to ensure that there has been a thorough and scrupulous assessment of all the air quality (AQ) impacts arising from this latest proposal for further significant expansion of Stansted Airport.

1.3 As with MAG's assessment of aircraft noise impacts, SSE's principal concern is that the air quality (AQ) modelling assumptions used by MAG result in a significant understatement of the AQ impacts of the proposed development.

2 Fleet replacement assumptions

2.1 The implausibility of the assumed scale and pace of fleet replacement is explained in our briefing note on *Noise Pollution* impacts and need not be repeated here. This issue is however also applicable to air quality ('AQ') because MAG assumes that 57% of current aircraft types with be replaced by "cleaner" as well as "quieter" aircraft within the next nine years (by the end of 2027).

2.2 Each aircraft in the Ryanair fleet of B737-800s is powered by two CFM56-7B engines which have an assumed emissions factor (i.e. take-off and climb) of 20.5.[1] The comparable emissions factor for the CFM LEAP-1B engines which will power the new B787-Max8, which will gradually replace the B737-800s, is 12.2 – i.e. 40% lower.

2.3 A similar comparison applies in the case of easyJet where CFM LEAP-1A engines will power its A320/A321 neo[2] aircraft in place of (predominantly) CFM56-7B engines in its current fleet. The new engines are assumed to have emissions 46% lower than those they will replace.

2.4 The emissions reductions at lower levels of thrust – i.e. for taxiing, hold, and landing – are less significant but these activities generate low emissions compared to take-off and climb.

2.5 A range of other assumptions have been made by MAG's consultants which we are unable to validate. However, assuming that emissions of nitrogen oxides (NOx) reduce in line with the overall reduction in aircraft emissions, the new aircraft engines will, on average, deliver a **23%** reduction in NOx emissions based on MAG's fleet replacement assumption of 57% new aircraft types accounting for all flights in 2028. If the actual level of fleet replacement is only

[1] ES Volume 2, Appendix 10.2, Table 10.2.3 - based on the use of 85% thrust at take-off.
[2] neo = 'new engine option'.

33% (in line with the available evidence) the reduction in NOx emissions will be about **13%,** for the same number of aircraft movements.

2.6 The planning application seeks approval for 10% more aircraft movements compared to the 35mppa case and 44% more movements compared to 2017. It is therefore clear that even with a 13% efficiency gain aircraft NOx emissions would be substantially higher than today's levels. Moreover, they would be 10% higher than in the 35mppa case because the improved emissions performance of aircraft by 2028 will happen whether Stansted is then handling 35mppa (with 248,800 aircraft movements) or 43mppa (with 274,000 aircraft movements).

3 Disregard for ICAO guidance

3.1 MAG's modelling further understates AQ impacts by considering emissions only up to 1,500 feet, whereas the threshold recommended by the International Civil Aviation Organization (ICAO) is 3,000 feet. MAG claims that the difference would be negligible. We are not in a position to validate that but it would seem odd for ICAO's official guidance to recommend taking account of emissions up to 3,000 feet if emissions above 1,500 feet were negligible.

4 Road traffic emissions

4.1 MAG's consultants assume that nitrogen deposition rates reduce by 2% per year as a result of predicted improvements in vehicle technologies (cleaner fuels and electrification) and abatement equipment. This is not itself an unreasonable assumption but again, the devil is in the detail, and in this case it is the volume of road traffic which MAG has under-estimated.

4.2 SSE's assessment of the road traffic impacts of the proposed development identified numerous elements where the modelling of additional airport-related road traffic was highly suspect. These include:

- Assumed 30% reduction in 'Kiss & Fly';
- Optimistic profile of daily passenger movements, especially in morning peak;
- Failure to consider Friday peak or extended summer period peaks;
- Staff car movements include understated attendance, understated peak movements and optimistic changes to mode share and car occupancy;

4.3 The cumulative effect of all sources of under-estimation of road traffic impacts is very significant, probably of the order of 20%-25%.

4.4 In addition, the Applicant is required to take account of other relevant developments taking place in the period to 2033 which would also give rise to increased road traffic and thereby increased NOx emissions. These developments include:

- West of Braintree: between 10,500 and 13,500 new homes of which, by 2033, 970 are planned for Uttlesford and some 2,500 planned for Braintree District;
- Easton Park: some 10,000 new homes of which some 1,925 are forecast to be delivered by 2033

4.5 MAG has not taken specific account of the road traffic which will be generated by these planned developments even though they will clearly result in more traffic and more emissions, affecting not only Junction 8 of the M11 (as is well known) but also many other local roads, where increased NOx emissions could be particularly problematic, for example:

- The A120 east of M11 Junction 8 – bordering Hatfield Forest SSSI; and
- Parsonage Lane, Takeley leading into Hall Road between Molehill Green and Elsenham – bordering East End Wood, part of Elsenham Woods SSSI.

4.6 Furthermore, the application fails to include the inevitable construction work that will be required to meet increased passenger parking demand and therefore fails to consider emissions from the many vehicle movements that will arise from this construction activity.

5 Risk of AQ limit value exceedances

5.1 Even on the basis of MAG's own modelling, which in SSE's judgement significantly understates NOx emissions, high annual mean NOx concentrations are projected for numerous local residential areas, including a significant exceedance of the NOx annual mean concentration limit value of 40µg/m^3 at Hockerill Junction, Bishop's Stortford, already an Air Quality Management Area ('AQMA').

5.2 Elsewhere, the projected levels of NOx concentrations µg/m^3 are often close to the 40µg/m^3 upper limit for annual mean NOx concentration, as can be seen in the table below. The optimistic assumptions which feed into MAG's modelling means that the projected levels shown in the table below are significant underestimates.

Location	43mppa case 2028 NOx level µg/m^3
Hockerill Junction, Bishop's Stortford	57.0
Lower Street, Stansted	39.1
Anvil Cross, Great Hallingbury	34.2
Burton End	33.3
Chapel Hill, Stansted	32.6

5.3 The fact that the high NOx concentration levels at these locations may be largely influenced by road traffic emissions rather than aircraft emissions is of very little consequence, noting that the proposed development would lead to an additional 11,000 passengers/day arriving/departing by car (6,900 extra daily trips) compared to the 35mppa case and an additional 23,000 passengers/day arriving/departing by car (14,400 extra daily trips) compared to the 2017 baseline.

6 Sensitive Receptors

6.1 Particular concerns arise in relation to nitrogen deposition on Hatfield Forest SSSI at one end of the runway and Elsenham Woods SSSI at the other end. Hatfield Forest is also a National Nature Reserve (NNR) and a rare surviving examples of an ancient hunting forest.

6.2 Adopted Uttlesford Local Plan Policy ENV7 seeks to protect designated sites, such as SSSIs and NNRs. It states that development will only be permitted where the need for development outweighs the particular importance of the nature conservation value of the site or reserve. The policy also seeks to protect other areas of nature conservation significance, such as local wildlife sites, ancient woodlands and other wildlife habitats.

6.3 The NPPF shifts the emphasis from "the need for development" to the requirement for "benefits to clearly outweigh the harm". This is a higher environmental hurdle to be crossed. Paragraph 181 of the National Planning Policy Framework ('NPPF') states:

"Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of AQMAs and Clean Air Zones, and the cumulative impacts from individual sites in local areas."

6.4 MAG's modelling indicates that AQ limits for NOx would not be exceeded at Hatfield Forest but as previously explained, there is considerable doubt as to the reliability of MAG's modelling. At Elsenham Woods SSSI, however, the officer's report (para 9.287) acknowledges as follows:

"Elsenham Woods SSSI is already subject to nitrogen deposition that significantly ***exceeds the Critical load for its SSSI woodland habitat feature****. In recognition that the proposed 35mppa+ development is predicted to increase road traffic and nitrogen deposition onto Elsenham Wood SSSI, Natural England advises it would be appropriate for Stansted Airport to undertake any necessary measures to reduce NOx outputs and nitrogen depositions. This would be consistent with the aims and targets of the Airport Sustainable Development Plan to 'reduce air pollution' deposition within the woodland habitats of the Airport owned Elsenham Woods SSSI."*

6.5 The question needs to be asked: 'What measures would Stansted Airport be required to take to reduce NOx outputs and nitrogen depositions in Elsenham Woods SSSI, how would this be achieved and what would happen if the measures were not successful? In such circumstances would Stansted Airport agree to curtail the number of flights?

6.6 The officers' report also acknowledges (para 10.96) as follows:

"Policy ENV7 does not permit development which would adversely affect nationally or locally designated sites unless the need for development outweighs the particular importance of the nature conservation value of site or reserve. Any potential impacts on such sites would be indirect as a result of pollution, in particular in respect of Hatfield Forest SSSI and East End Wood SSSI. In this instance there would need to be a balance between the potential harm, although no significant levels of harm have been identified in the ES, and the need for the development. Both sites are currently experiencing harm due to pollutants and mitigation measures in the form of long-term monitoring are proposed to be continued, with appropriate mitigation being identified and implemented if required. Given the limited weight that can be applied to this policy due to the shift in national policy towards assessing the benefits of the proposal against the harm, the proposals can be considered to comply with Policy ENV7. In terms of the NPPF, this states that unless the benefits of development outweigh the harm to designated sites then planning permission should be refused."

6.7 It will be for the Planning Committee to decide whether in this particular case the benefits of the development do actually outweigh the harms. That will be a matter of judgement based on the evidence of benefits and harms.

Stop Stansted Expansion
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