MAG London Stansted Airport

10 August 2018

Karen Denmark
Development Management Team Leader
Uttlesford District Council
Council Offices
London Road
Saffron Walden
CB11 4ER

Dear Karen

Re: UTT/18/0460/FUL: Airfield works comprising two new taxiway links to the existing runway (a Rapid Access Taxiway and a Rapid Exit Taxiway), six additional remote aircraft stands (adjacent Yankee taxiway); and three additional aircraft stands (extension of the Echo Apron) to enable combined airfield operations of 274,000 aircraft movements (of which not more than 16,000 movements would be Cargo Air Transport Movements (CATM)) and a throughput of 43 million terminal passengers, in a 12-month calendar period.

I write in respect of the above application submitted on 22nd February 2018, and to subsequent discussions with Natural England.

Natural England raised an issue regarding the development potentially impacting upon Epping Forest SAC and as you have been aware, investigation into this matter has been carried out and submitted to the Council already.

However, in addition Natural England also queried whether the Epping Forest SSSI should have been screened into the Environmental Impact Assessment. In neither the applicants Scoping Report or the Council Scoping Opinion was this raised as an issue. Nevertheless, to ensure that there is no question as to whether this should from part of the ES, I attach a short technical note that demonstrates conclusively that the impact on the SSSI is not significant and therefore should not be considered as part of the ES.

Should you have any further questions please do not hesitate to contact me directly.

Sincerely,

[redacted]

Alistair Andrew, MRTPI
Planning Manger
London Stansted Airport

cc Neil Fuller, Natural England

Technical Note

ARUP

13 Fitzroy Street
London
W1T 4BQ
United Kingdom
www.arup.com

t +44 20 7636 1531
d +44 20 7755 4674

Project title	Stansted Airport 35+ Planning Application (UTT/18/0460/FUL)	Job number	253360-00
cc	STAL / RPS	File reference	AQ/TN/007
Prepared by	Arup	Date	20 July 2018
Subject	Impact of 35+ Planning Application on Epping Forest Site of Special Scientific Interest (SSSI)		

Natural England has raised the impact of the 35+ Planning Application on ecological receptors in Epping Forest Site of Special Scientific Interest (SSSI) as a potential concern. We have undertaken an investigation into the potential impact on nutrient nitrogen deposition in the SSSI in 2028, using forecast traffic data from Steer Davies Gleave (SDG) and the ADMS-Roads dispersion model.

The data used as input to the modelling is given in Appendix A1. The results are presented in section 1 and conclusions are in section 2.

1 Nutrient Nitrogen Deposition Results

Table 1 presents the predicted (total) concentrations and nutrient nitrogen deposition in 2028 for two scenarios at the transect receptor "13", the edge of the SSSI closest to the M11 between junction 6 and 7. Receptor 13 is located on the border of the SSSI and is therefore the most sensitive receptor because it is the closest to the M11 and the concentration due to traffic on the M11 drop off with distance away from the road.

The two scenarios are:

- The Do Minimum (DM) scenario, which represents the future 2028 year without the 35+ Planning Application; and
- The Do Something (DS) scenario, which represents the future 2028 year with the 35+ Planning Application.

Table 2 presents the predicted increase in NOx concentrations and nutrient nitrogen deposition in 2028 at the receptors due to the 35+ Planning Application. The change is given in terms of deposition rate (kgN/ha/yr) and the change in deposition rate as a function of the minimum and maximum critical load. The maximum predicted change in deposition rate is **0.84% of the minimum critical load of 10kgN/ha/yr**.

Table 1: 2028 with (DS) and without (DM) 35+ Planning Application: NOx concentration (μg/m^3) and nutrient nitrogen deposition (kgN/ha/yr)

ID	Easting	Northing	NOx concentration (μg/m^3)		Nutrient nitrogen deposition rate (kgN/ha/yr)	
			DM	DS	DM	DS
13	548262	202755	14.5	15.1	5.43	5.52

Table 2: 2028 35+ Planning Application: change in NOx concentration (μg/m^3) nutrient nitrogen deposition (kgN/ha/yr)

ID	Change in NOx concentration due to 35+ (μg/m^3)	Change in deposition rate due to 35+ (kgN/ha/yr)	Change as a percentage of the minimum critical load of the most sensitive feature (%)
13	0.6	0.08	0.84
Note: The minimum critical load of the most sensitive feature is 10kgN/ha/yr.			

2 Conclusions

The impact of the 35+ Planning Application on traffic on the M11 between junctions 6 and 7 is predicted to be 5,149 AADT (2-way) in 2028. This figure is likely to be a conservative estimate as it is taken from data for junction 7 to 8 and ignores airport-related traffic joining/leaving the M11 at junction 7. The impact of this change in traffic on receptors in Epping Forest SSSI has been calculated. The maximum increase in nutrient nitrogen deposition at the SSSI is predicted to be 0.08kgN/ha/yr, which corresponds to below 1% of the minimum critical load. Levels of deposition drop off rapidly away from the road.

Changes of less than 1% of a critical level or critical load can be assumed to be insignificant, an approach used consistently by Highways England, Natural England, the Environment Agency and the Institute of Air Quality Management[1]. The effect of the 35+ Planning Application on nutrient nitrogen deposition in this area is therefore **not significant**.

[1]Highways England Interim Advice Note 174/13, Updated advice for evaluating significant local air quality effects for users of DMRB 11, Section 3, Part 1. Annex A, A.2.

A1 Model Input Data

A1.1 Traffic Data

SDG supplied forecasts of the traffic in 2028 with (Do Something (DS) scenario) and without the 35+ Planning application (43mppa) (Do Minimum (DM) scenario). The data are for the M11 junction 7 to 8 rather than junction 6 to 7 and therefore the predicted increase in AADT due to the 35+ Planning application is likely to be an over-estimate, as airport-related traffic would be expected to be highest near to the airport and the number of vehicles that leave/join the M11 at junction 7 has been ignored.

The AADT flows are given in Table 3. The links are shown in Figure 1. A width of 15m was assumed for each road link and a speed of 96kph (60mph). Emissions were calculated using the latest Emission Factor Toolkit (EFT) from Defra, version 8.0.1[2].

The total predicted change in traffic on the M11 (between junction 6 and 7) due to the 35+ Planning application is 5,149, which exceeds one of the criteria set by Highways England in the Design Manual for Roads and Bridges (DMRB)[3] for defining *"whether there are likely to be significant impacts associated with particular broadly defined routes or corridors"*. The criterion is that there is a change of 1,000 AADT in daily traffic flow.

Table 3: 2028 AADT data for modelled road links, supplied by SDG

Name	DM AADT	DS AADT
M11 northbound	65,635	68,210
M11 southbound	65,635	68,210
Note: 2-way AADT was provided for the M11. The carriageways were modelled as individual links and 50% of the total AADT was applied to each. At DfT Count ID 56027 the HGVs are 11.2% of total vehicles in 2017 (the latest data). This percentage of HGVs was assumed to be the same for 2028.		

A1.2 Receptors

Figure 1 shows the receptors at a 2m resolution along a 200m transect starting at the middle of the M11. These are the receptors at which nutrient nitrogen deposition was calculated (receptors 1 to 100. Figure 2 shows the location of the receptors with respect to the ends of each road link.

[2] https://laqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html [Accessed July 2018]
[3] HA207/07 Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 1, May 2007, paragraph 3.12

Figure 1: Road links (blue), discrete receptors (green) and Epping Forest SSSI (grey)

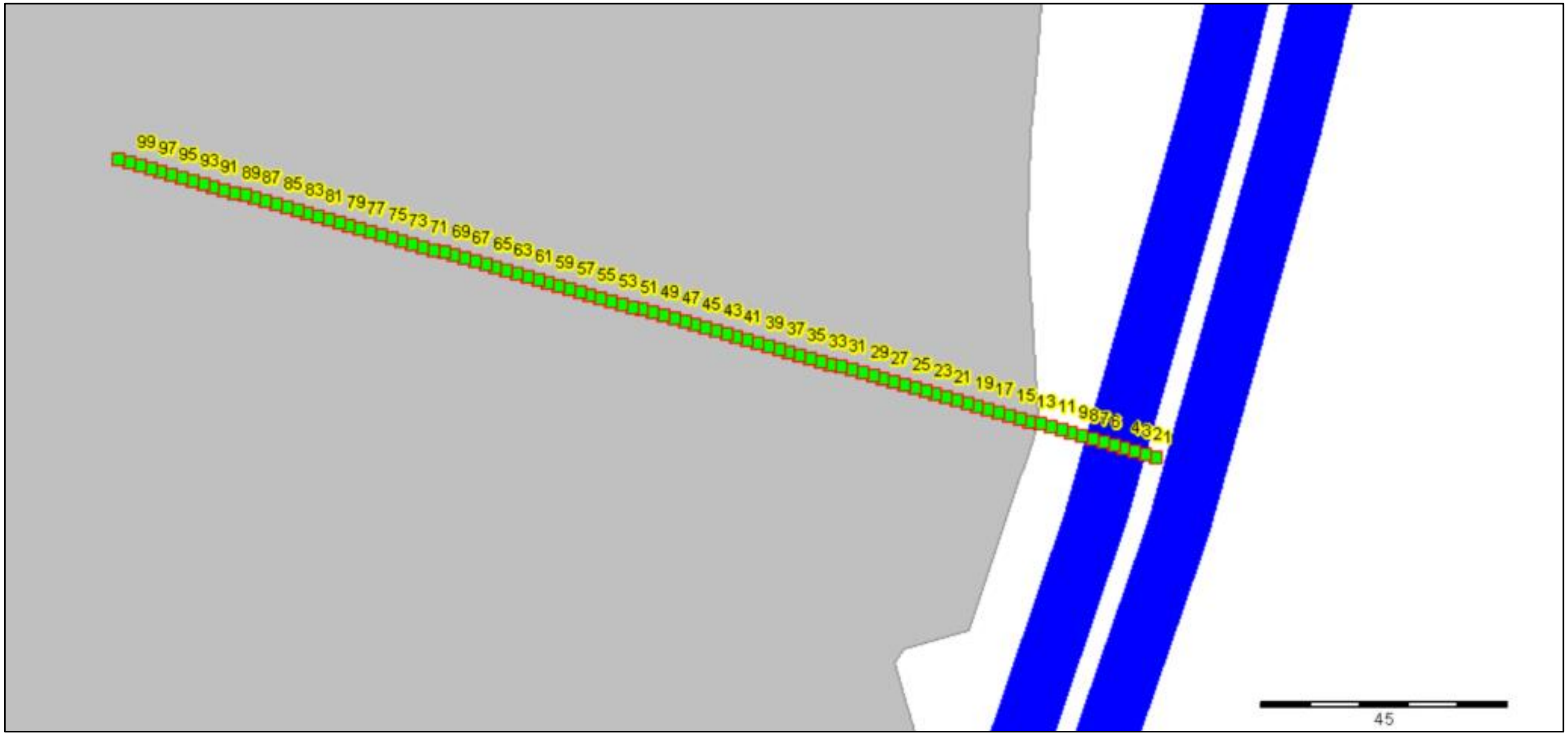

Figure 2: Road links and transect

A1.3 Surface Roughness

A value of 1.0m was used to represent surface roughness of the forest[4].

A1.4 Critical Load, Background Deposition Rate and Background Concentration

The nutrient nitrogen critical load for the most sensitive feature of the woodland SSSI[5] (*Quercus* spp., *Betula* spp., *Deschampsia flexuosa* woodland) is **10-15kgN/ha/yr**. There are other interest features listed that are sensitive to nitrogen including *Fagus sylvatica* woodland which have critical loads of **10-20kgN/ha/yr** or more.

The background concentration of NOx at the assessed receptors[5] is 15.12µg/m^3 at all the receptors. This background concentration is below the critical level and air quality objective for ecological receptors of 30µg/m^3. However, the critical level does not apply to locations more than 20km from towns with more than 250,000 inhabitants, or more than 5km from other built-up areas, industrial installations or motorways[6]. This air quality objective does not therefore apply at the assessed receptors.

The background nutrient nitrogen deposition rate at the receptors[5] assessed is **26.02kg/ha/yr**, which is above both the minimum and maximum critical loads for the site.

A1.5 Calculation of NO_2 Concentration

The dispersion model predicts NOx concentrations which comprise nitric oxide (NO) and nitrogen dioxide (NO_2). The deposition rate of NO is negligible and therefore the amount of NO_2 at each receptor was calculated.

The Local Air Quality Management Technical Guidance (LAQM.TG16)[7] details an approach for calculating the roadside conversion of NOx to NO_2. This approach takes into account the NOx generated by the road traffic, ambient NOx and/or NO_2, the concentration of ozone and the different proportions of primary NO_2 emissions in different years. This approach is available as a spreadsheet calculator, and the most up-to-date version, version 6.1[8], has been used.

The background NO_2 concentration for 2028 has been obtained from Defra's 1km^2 resolution background maps[9]. The value is 11.32µg/m^3 at all receptors.

[4] ADMS-Roads version 4.0 User Guide, Table 3.9
[5] Air Pollution Information System (APIS) http://www.apis.ac.uk/srcl/select-a-feature?site=1001814&SiteType=SSSI&submit=Next accessed July 2018
[6] 2010 No.100, Environmental Protection, The Air Quality Standards Regulations 2010, 11 June 2010
[7] Defra (2016) Local Air Quality Management Technical Guidance.TG16
[8] Defra NOx to NO2 calculator (version 6.1), https://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html#NOxNO2calc [Accessed: July 2018].
[9] https://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html [Accessed July 2018]

A1.6 Calculation of Nutrient Nitrogen Deposition

The predicted NO_2 concentrations were multiplied by a deposition velocity of 0.003m/s, the value recommended by the Environment Agency for deposition of NO_2 to forest[10], to give the deposition rate of NO_2 in μg/m^2/s. The deposition rate values in μg/m^2/s were then multiplied by 96 to convert to units of kgN/ha/yr, which are the units of the nutrient nitrogen deposition critical load.

[10] AQTAG 06 "Technical Guidance on Detailed Modelling Approach for an Appropriate Assessment for Emissions to Air, 20/04/10