Revised estimate of Stansted CO_2 emissions for 2020

30 June 2020

In the light of the major impact of the Covid-19 pandemic upon air travel, it has been necessary to substantially revise our estimates for Stansted's emissions of carbon dioxide ('CO_2') in 2020.

The revision, effective from 1st July 2020, is in two parts:

1) For the first half of 2020, i.e. January 1st to June 30th inclusive, we estimate that Stansted will have handled approximately 4.7 million passengers and 37,000 ATMs, including 5,500 cargo ATMs. This will have resulted in emissions of 354,000 tonnes of CO_2 which, after adjusting for radiative forcing ('RF') [*see below], increases to **638,000 tonnes of CO_2e**.

2) For the second half of 2020, i.e. 1st July to 31st December inclusive, we project that Stansted will handle approximately 10.4 million passengers and 64,000 ATMs, including 5,500 cargo ATMs. This will result in emissions of 611,000 tonnes of CO_2 which, after adjusting for radiative forcing, increases to **1,104,000 tonnes of CO_2e.**

For the full year therefore, our revised estimate is that Stansted will be responsible for emissions amounting to the equivalent of **1,742,000 tonnes of CO_2.**

Our baseline for estimating Stansted CO_2 emissions in 2020 is the 2016 data provided by Stansted Airport Ltd in connection with its February 2018 Planning Application for expansion to 43 million passengers per annum. The following tables provide more detail on the basis for our estimates.

Table 1

Summary data	Unit	2016 Baseline (without RF)	SSE estimates for 2020			
			Without RF		With RF	
			Original	Revised	Original	Revised
Passengers	million	24.3	30.0	15.1	30.0	15.1
ATMs	number	180,619	208,000	101,000	208,000	101,000
CO_2 emissions						
Flights	Mt CO_2	1.560	1.776	0.863	3.374	1.639
Landside activities	Mt CO_2	0.003	0.003	0.002	0.003	0.002
Airside activities	Mt CO_2	0.007	0.008	0.004	0.008	0.004
Surface Access	Mt CO_2	0.170	0.200	0.097	0.200	0.097
Total	Mt CO_2	**1.740**	**1.987**	**0.966**	**3.585**	**1.742**

Table 2

Revised estimate: Half-year breakdown	Unit	Without RF			With RF		
		Jan-Jun	Jul-Dec	Total	Jan-Jun	Jul-Dec	Total
Passengers	million	4.7	10.4	15.1	4.7	10.4	15.1
ATMs	number	37,000	64,000	101,000	37,000	64,000	101,000
CO_2 emissions							
Flights	Mt CO_2	0.316	0.547	0.863	0.600	1.039	1.639
Landside activities	Mt CO_2	0.001	0.001	0.002	0.001	0.001	0.002
Airside activities	Mt CO_2	0.001	0.003	0.004	0.001	0.003	0.004
Surface Access	Mt CO_2	0.036	0.061	0.097	0.036	0.061	0.097
Total	Mt CO_2	**0.354**	**0.612**	**0.966**	**0.638**	**1.104**	**1.742**

Aviation CO_2 emissions

CO_2 is the main contributor to anthropogenic climate change and aviation CO_2 emissions are one of the fastest growing causes of climate change. As other sectors of the economy decarbonise – in the UK and globally – the aviation sector continues to increase its carbon emissions and thereby its impact upon the climate. Aviation CO_2 emissions attributable to the UK reached a new record in 2019 and are forecast to be the single largest source of emissions in 2050, accounting for about 35% of the UK's residual emissions.

Improved technology is gradually improving the efficiency of aircraft engines (by about 1.0% per annum according to the Department for Transport) but the growth in the number of flights over the past 30 years has far outstripped the annual efficiency gain and is expected to continue to do so.

Radiative Forcing ('RF')

The UN Intergovernmental Panel on Climate Change ('IPCC'), in its special report "Aviation and the Global Atmosphere" (1999), recommended that aircraft CO_2 emissions should be multiplied by a factor of between 2.0 and 4.0 – with a recommended mid-point of 2.7 – to reflect the greater climate impact of CO_2 emissions at high altitude as well as the impact of non-CO_2 emissions from aircraft engines.

More recent research indicates that the appropriate adjustment for RF is more likely to be in the range 1.9 to 2.0. Accordingly we have based our calculations above on an RFI of 1.9 – i.e. the lower end of the range. Note also that the RF multiplier is only applied to aircraft emissions and not to emissions from surface access travel or airport buildings.

Summary

Our estimate – on the most conservative basis possible – is that for the second half of 2020 Stansted Airport will be responsible for the equivalent of 6,000 tonnes of CO_2 emissions per day. Whilst this will be a substantial reduction on 2019, it is equivalent to the amount of CO_2 produced by about 900,000 typical family cars.

Stop Stansted Expansion
Updated 30 June 2020