

## Stansted Airport - Estimation of Carbon Dioxide Emissions 2019

Carbon Dioxide ('CO<sub>2</sub>') is the main contributor to anthropogenic climate change and aviation CO<sub>2</sub> 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.

Although improved technology is gradually improving the efficiency of aircraft engines (by about 1.0% per annum according to the Department for Transport) the growth in the number of flights far outweighs any annual efficiency gain. Stansted is one of the fastest growing UK airports and is particularly focussed on increasing its long haul services with the result that its carbon emissions are expected to increase very significantly in 2019.

This year we have revised our basis for estimating Stansted Airport's CO<sub>2</sub> emissions using more recent data provided on behalf of Stansted Airport Ltd ('STAL') in connection with its February 2018 Planning Application for expansion to 43 million passengers per annum ('mppa').

The 2016 baseline data in the table below, is exactly the same as that provided by STAL in the Environmental Statement (Vol. 1 Ch. 12, Table 12.10) for its 43mppa Planning Application.

Summary data	Unit	2016 Baseline	SSE estimates for 2019	2019 with RF*
Passengers	mppa	24.3	30.0	
Air Transport Movements	number	180,619	215,000	
<b>Carbon</b>				
Flights	Mt CO <sub>2</sub>	1.560	1.850	3.515
Landside activities	Mt CO <sub>2</sub>	0.003	0.003	0.003
Airside activities	Mt CO <sub>2</sub>	0.007	0.008	0.008
Surface Access	Mt CO <sub>2</sub>	0.170	0.200	0.202
<b>Total</b>	Mt CO <sub>2</sub>	<b>1.740</b>	<b>2.061</b>	<b>3.726</b>

### 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<sub>2</sub> 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<sub>2</sub> emissions at high altitude as well as the impact of non-CO<sub>2</sub> 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 – which is on the most conservative basis possible – is that for the year 2019 Stansted Airport will be responsible for the equivalent of more than 10,000 tonnes of CO<sub>2</sub> emissions per day. On an annual basis this is roughly the same amount of CO<sub>2</sub> produced by about 1.5 million average family cars.