

# Briefing Note



## For Climate Change CAG: 7 August 2023

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### Purpose

Thanet District Council keeps a watching brief on the carbon emission plan of Manston Airport as agreed and detailed in the [Net Zero Strategy](#) (p8). The purpose of this report is to update the Climate Change Cabinet Advisory Group (CAG) on the emissions report by Manston airport.

This report is to be noted and should be read in the context of the council's climate change pledge, specifically the Thanet District Council pledge to assist the reduction of Thanet-wide emissions, aiming for Net Zero by 2050.

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### Introduction

The Thanet District Council Net Zero Strategy 2023 states: "The UK Government is responsible for the reduction of emissions from airports, ports and military transport. For example, the Government's approach for achieving net zero aviation by 2050 is set out in their Jet Zero Strategy. TDC has no powers with regards to these emissions however we will keep a watching brief on Manston Airport's adherence to their low emission plan."

On 24 May 2023, specific parts of RiverOak Strategic Partners' [Environmental report](#) (Chapter 16, p342 - 385) were summarised in a further [report](#) entitled "Response to questions raised by Thanet Green Party October 2022". This report details the greenhouse gas emissions that would be produced by Manston Airport during its construction, from its on ground operations and also from the aircraft.

This Thanet District Council report comprises of the following sections:

Item	Description	Page
<b>Emissions</b>	Describes and explains the RiverOak Strategic Partners' emissions table.	2
<b>Impact of the airport's emissions on Thanet's Carbon footprint</b>	Describes the impact of the airport's emissions on Thanet's district wide carbon footprint.	3
<b>Aircraft emissions</b>	Details the emissions of the aircraft and compares these figures with Thanet's carbon footprint simply for	5

	ease of understanding. (The emissions from the aircraft do not directly affect Thanet's carbon footprint calculations).	
<b>Offsetting emissions</b>	Explains how much woodland would need to be planted if the increased road transport and aircraft emissions were to be fully offset using woodland creation, simply as a tool to understand the emissions.	6
<b>Cost of reducing emissions</b>	Discusses the cost of reducing emissions in general.	7
<b>RSP's Carbon Minimisation Action Plan</b>	Provides information on the future carbon reduction plan as quoted in the RiverOak Strategic Partners' report.	8
<b>UK commitment to climate change</b>	Explains the UK's commitment to reducing emissions to avoid the worst impacts of climate change.	8

## Emissions

The table below, taken from the RiverOak Strategic Partners (RSP) [report](#), shows the projected emissions from Manston airport in year 2 (opening year) and year 20 (peak forecast year) in tonnes of CO<sub>2</sub>.<sup>1</sup>

Embodied carbon (found near the bottom of the table) is the CO<sub>2</sub> emissions released when creating the materials and relevant structures needed in a project e.g. the new concrete or metal used in new parking facilities or a new hangar at the airport. In total, the embodied emissions is estimated to be 636,000 tonnes of CO<sub>2</sub>. The environmental report explains that for the purposes of reporting, these emissions were divided across the 20 year assessment period - hence 31,800 tCO<sub>2</sub> are shown in year 2 and year 20. (Details can be found on p373 of the full [environmental report](#)). The report points out that "a majority of the construction work on the airport infrastructure itself is complete by Year 2 in time for opening" (p366)

The emissions released from the day to day running of the airport on the ground (Airport operations energy use - middle of the table) will be 9,000 tonnes of CO<sub>2</sub>e per year. The environmental report explains that this is calculated from the buildings that will be in operation at the airport (p376). Ground support equipment will also release 400 tonnes of

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<sup>1</sup> All emissions are reported in CO<sub>2</sub>, apart from the airport operations which are reported in CO<sub>2</sub>e. CO<sub>2</sub>e include emissions from other greenhouse gases such as methane. The RSP report states: "Values for CO<sub>2</sub> rather than CO<sub>2</sub>e are reported for the GHG emissions sources by necessity given the information available. The difference between CO<sub>2</sub> and CO<sub>2</sub>e is always less than 1% and is not considered significant". Thanet emission data is also presented in CO<sub>2</sub> to ensure a like for like comparison.

CO2e in year 2 and 1,800 tonnes of CO2e in year 20. RSP has committed to become net zero in their on the ground operations within 5 years of opening (by 2030), which will address these operational emissions.

Emissions from extra road traffic and transport, for example, from extra car and bus journeys and from the lorries delivering and collecting freight from the airport totals 13,900 tonnes per year. The table shows that these could possibly increase to 36,000 tonnes of CO2 in year 20 due to increased business.

The aircraft (aviation sources) will produce the majority of the emissions as explained in the report: “The overwhelming majority of airport greenhouse gas (GHG) emissions arise from the combustion of fuel in the cruise and landing and takeoff cycle of aircraft” (p361).

The emissions from aviation sources are 221,800 tonnes of CO2 per year from year 2 and possibly rising to 730,000 tonnes of CO2 per year in the 20th year of operation (without the use of sustainable aviation fuel etc).

**Table 1. Emissions from Manston Airport** Emissions scenarios: Year 20, representing the peak forecast year in terms of aircraft movements, and also non-aviation operations, is used to represent the peak operation. Year 2 is used to represent the opening of the Airport. Emissions are assumed to be constant beyond Year 20, thus Year 20 also serves as the worst-case scenario. For all emissions sources, a worst-case is taken where there is uncertainty. LTO: landing and take off. 1kt CO2 = 1000 tonnes of CO2.

**Table 16.14 Total Emissions – [ES Chapter 16 \(APP-034\)](#)**

Source	Year 2 emissions associated with the Proposed Development (kt CO2)	Year 20 emissions associated with the Proposed Development (kt CO2) – Worst-case
Flights / Aircraft engines	213.5	671.6
LTO cycle	13.9	58.5
Road traffic and transport	13.9	36.0
Airport operations energy use	9	9
Ground support equipment	0.4	1.8
Land use change	0	0
Offsetting	0	0
Embodied carbon	31.8	31.8
Sub-total aviation sources	221.8	730.1
Sub-total non-aviation sources	55.1	78.6
Total all sources	276.9	808.7

## Impact of the airport’s emissions on Thanet’s carbon footprint

Thanet District as a whole produces 499,100 tonnes of CO2 as set out in Table 2 below. This includes emissions from various sectors, including those from the energy use in all homes in Thanet (Thanet domestic) and emissions from all road transport within the district of Thanet.

**Table 2. Thanet District Emissions by sector.** Department for Energy Security and Net Zero. This uses the subset data for local authorities from the most up to date data released in July 2023. See the original source [here](#): Table 2.1: Local Authority territorial carbon dioxide (CO2) emissions estimates within the scope of influence of Local Authorities 2005-2021. Data from 2019 has been used to avoid impacts of Covid and the CO2 data has been used (instead of CO2e) in order to compare it like for like with the data set in RSP report which also uses CO2.

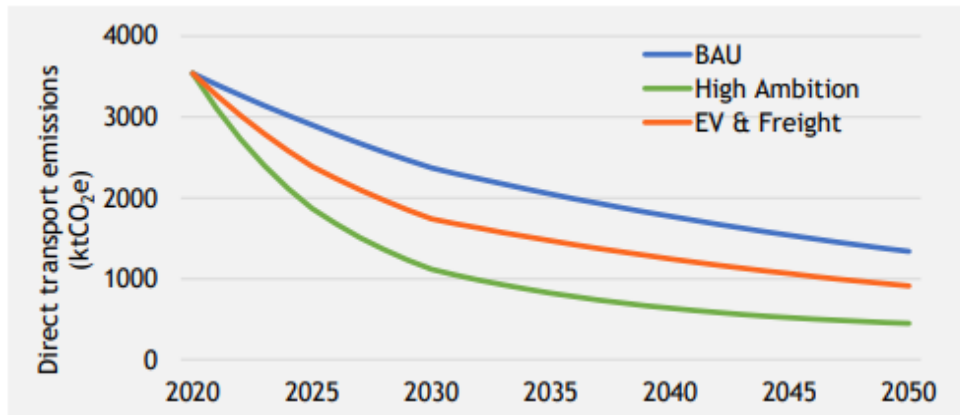
Category	Emissions (tonnes of CO2) 2019 data
Thanet public sector	20,800
Thanet commercial sector (shops)	24,200
Thanet industry	39,100
Thanet agriculture	96,800
Thanet transport	134,600
Thanet domestic (houses)	183,600
Total emissions	499,100

### Extra transport

As shown by Table 1 (Emissions from Manston Airport), extra emissions from increased road traffic to and from the airport is predicted to be 13,900 tonnes of CO2 in year 2 of opening, and up to 36,000 tonnes of CO2 in year 20. Those emissions released within the boundary of the district will add to Thanet's transport emissions in Table 2 (134,600 tCO2). The actual increase in emissions within Thanet's boundary cannot be calculated at present as the route of the extra vehicles, e.g. cars, buses and HGVs is not clear. If the vehicles travel through other areas, for example on route to London, they will have an impact on the transport emissions of the respective districts e.g. Canterbury, Medway. As the vehicles travel through different districts, these emissions are added to the respective local authority carbon footprints and will need to be addressed within these local authorities' net zero pledges.

TDC's pledge includes the following: To do what is within our powers and resources to support KCC, the Government, business, industry and the community to make Thanet as a whole net zero by 2050.

The transport emissions for the district of Thanet is 134,600 tonnes of CO2 (Table 2) and these emissions will need to be reduced significantly by 2030 if we are to avoid the worst outcomes of climate change. According to the [KCC emission reduction plan](#), current transport emissions need to be reduced by over 65% by 2030 and by 93% by 2050 in Kent. The green line in Figure 1 below shows the emission reduction needed from transport in Kent to 2050; note the sharp decrease necessary in the next 7 years.



**Figure 1. Kent transport emission forecast.** BAU: Business as usual. The High Ambition Pathway (green line) is the chosen emission reduction pathway by KCC.

## Aircraft emissions

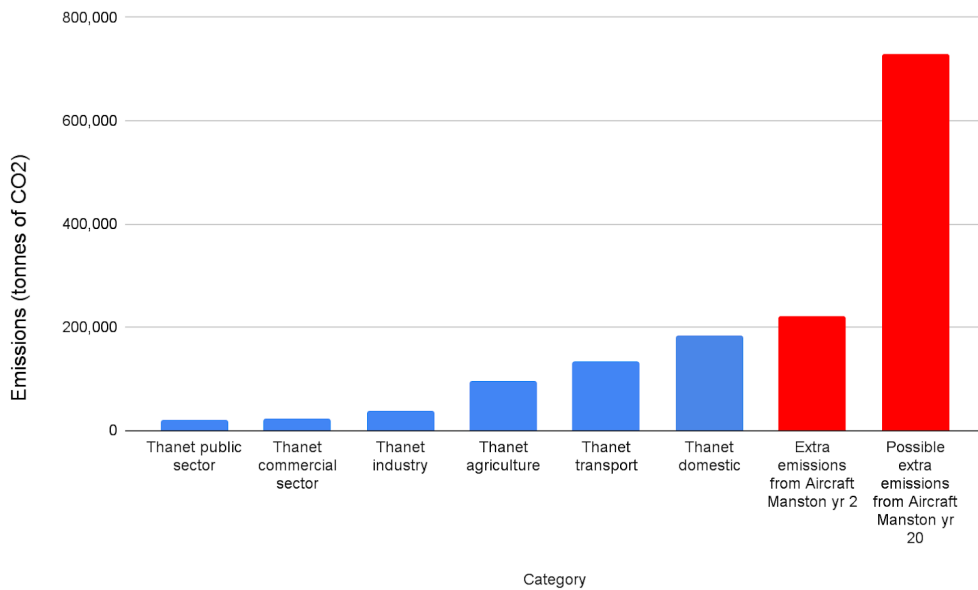
As previously mentioned, emissions from the aircraft make up the majority of the extra emissions. These emissions are the responsibility of the UK government, not Thanet District Council or Kent County Council and these emissions will not be added to the Local Authority carbon dataset.

Even though the aircraft emissions do not come under Thanet's carbon footprint, in order to understand what these figures mean, it is useful to compare them to emissions for the whole of the district of Thanet.

In year 2, the aircraft from Manston will create more emissions (221,800 tonnes of CO<sub>2</sub>) annually than any sector in the district of Thanet. The aircraft will create over 60% more emissions than all the transport in Thanet (134,600 tonnes of CO<sub>2</sub>) when the airport first opens.

According to the RSP report, in year 20 of operations, due to the predicted increase in flights, the aircraft will create significantly more emissions than the whole of Thanet from all sectors put together (730,100 tonnes of CO<sub>2</sub> from the aircraft compared to 499,100 tonnes of CO<sub>2</sub> from the whole of Thanet).

Figure 2 below compares the current emissions of Thanet from various sectors (Data from Table 2) and the possible new emissions from Manston airport flights in year 2 and year 20 (worst case scenario).



**Figure 2. Comparing emissions from Thanet (2019 [data](#), Table 2 above) and possible emissions from the aircraft at Manston Airport in year 2 and year 20 (Table 1 above).**

Thanet, as a district, will need to reduce the total emissions it produces by at least 50% by 2030 to align with the agreed KCC emissions reduction pathway. This means that Thanet needs to reduce emissions by 249,550 tonnes of CO<sub>2</sub> by 2030. In comparison, the emissions from the aircraft at Manston in year 2 will produce an additional 221,800 tonnes of CO<sub>2</sub> each year.

## Offsetting emissions

Simply as an illustration, we can work out the number of hectares of woodland that would need to be planted to offset the emissions created by the extra transport and the aircraft.

According to the report by the Forestry Commission ([FC woodland carbon code leaflet](#)) one hectare can absorb 300-400 tonnes over 50 years. Over 25 years, a hectare would therefore absorb between 150 - 200 tonnes of CO<sub>2</sub>. We have assumed that one hectare will absorb 200 tonnes of CO<sub>2</sub> (taking the highest figure) in the following analysis:

### Offsetting the extra road transport

The extra road transport in year 2, created as a result of Manston Airport operations, would need 69.5 hectares of woodland created to offset the new emissions each year (13,900 tonnes of CO<sub>2</sub> divided by 200). This is equivalent to 92 international football pitches of woodland a year (using 0.75 hectare as the size of an international football pitch). The woodland would need to be planted each year to fully offset the emissions because 13,900 tonnes of CO<sub>2</sub> is emitted annually.

As explained above, these extra transport emissions impact the carbon footprints of the local authorities through which these vehicles travel and the net zero pledges these local authorities have made.

### **Offsetting the aircraft emissions**

To offset the new emissions from the aircraft in the second year, 1,109 hectares of woodland would need to be planted that year and every year thereafter. This is equivalent to 1,478 international football pitches.

If the aircraft created 221,800 tonnes of emissions each year for 18 years, 19,962 hectares of woodland would need to be planted to fully offset these emissions (1,109 hectares x 18 years).

Thanet is 10,000 hectares in size, so a woodland area equivalent to twice the size of Thanet would be needed to offset these new aircraft emissions.

By year 20, according to the RSP report, the possible emissions from the aircraft at Manston Airport could increase to 730,100 tonnes of CO<sub>2</sub> due to increased flights (if mitigations are not put in place). More woodland therefore would be needed if the emissions did increase year on year and were to be offset. For example, if emissions were to increase incrementally from 221,800 tonnes of CO<sub>2</sub> in year 2 to 730,100 tonnes of CO<sub>2</sub> in year 20 (increasing approximately 28,238.9 tonnes per year), over that 18 year period approximately 9 million tonnes of CO<sub>2</sub> would be produced from the aircraft. Approximately 45,000 hectares of woodland would be needed to absorb these emissions - equivalent to 4.5 times the size of Thanet.

In all cases, the woodland would not absorb the full emissions until they have been growing for at least 20 years and therefore all of the new woodland would in fact need to be planted in the next 5 years to offset the emissions for the year 2050.

The figures here are simply as a tool to understand what the extra transport and aircraft emissions translate to in terms of woodland offsetting. This level of offsetting would not be stipulated and it is not clear to Thanet District Council what level of offsetting or mitigation will be stipulated as yet.

### **Cost of reducing emissions**

It is expensive to reduce emissions. Thanet District Council called a climate emergency in 2019, pledging to reach net zero in its core carbon footprint by 2030. This carbon footprint contains just 4,000 tonnes of CO<sub>2</sub>e emission in its baseline year. The first TDC [carbon reduction plan](#) estimated the cost of reducing these emissions to net zero to be £8.3 million by 2050.

The extra emissions from the aircraft in year 2 is 55 times the council's core carbon footprint, rising to 182 times the council's core carbon footprint in year 20. It is unclear how much it will cost the relevant parties to reduce these emissions in the future.

An announcement by the government can help to understand the investment needed to offset the emissions using sustainable aviation fuels. See the announcement [here](#). Five new projects which have already been selected will receive a share of £165 million from the government to produce sustainable aviation fuels. The new production facilities aim to cut carbon emissions by an average of 200,000 tonnes each year once fully up and running. Therefore an investment of £165 million creates a saving of 200,000 tonnes of CO2 emissions annually. This is similar to the emissions that aircraft at Manston will create in year two (221,800 tCO2e).

## **RSP's Carbon Minimisation Action Plan**

The RSP report explains the following: (Italics added by TDC for clarification):

“As part of Chapter 16 of the Environmental Statement (APP-034), further mitigations to reduce the carbon footprint of the Airport were discussed. It was proposed that a Carbon Minimisation Action Plan (CMAP), would be developed to reduce the greenhouse gas emissions associated with the Airport from the worst-case scenario provided in Table 16.14 (*Table 1 in this TDC report*). The impact of this further mitigation on the total emissions from the Airport will be quantified as the CMAP is developed....The CMAP will be developed in accordance with the latest guidance and policies relating to emissions from the aviation industry. It is anticipated that the CMAP will be developed in early 2023”.

## **UK commitment to climate change**

Internationally, the UK has committed to climate targets under the Paris Agreement. The Paris Agreement provides for the international community to keep the increase in global average temperature to well below 2°C above pre-industrial levels, and to pursue efforts to limit the temperature increase to 1.5°C.

Domestically, the UK government has legal targets committing us to reaching net zero emissions by 2050, along with a series of interim carbon budgets (each covering a 5-year period) paving the trajectory towards the net zero target. Recently, the UK announced the [Sixth Carbon Budget level \(2033-37\)](#), equivalent to reducing emissions around 78% by 2035 compared with 1990 levels. This is consistent with a pathway through our 2030 Nationally Determined Contribution (NDC) under the Paris agreement.

The effect of the extra emissions from the aircraft on the government's sixth carbon budget, with or without a Manston Airport Carbon Minimisation Plan, is not currently clear to TDC.



The KCC emissions reduction report explains that the next few years will be pivotal for climate change mitigation as we enter the decisive decade for action. Evidence from the UN reports makes it clear that immediate and drastic action is required to avoid global warming to dangerous levels. These actions are necessary to prevent the worst effects of climate change, including heatwaves, drought, flooding and food insecurity. See the Kent Climate Risk and Impact Assessment [here](#)

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