Airports Commission

Discussion Paper 03: Aviation and Climate Change

Response from Kent County Council

Q1: Do you consider that the DfT CO_2 forecasts present a credible picture of future UK aviation emissions? If not, why not?

The DfT CO_2 forecasts present a credible picture of future UK aviation emissions in so far as they are in part based on forecasts of future aviation demand growth, the limitations of which were set out in the response to the first discussion paper on aviation demand forecasting.

Q2: To what extent do you consider that the analysis presented in this paper supports or challenges the argument that additional airport capacity should be provided?

Within the Aviation and Climate Change discussion paper the idea is put forward that by not increasing UK airport capacity this may have an impact in capping and reducing UK aviation Greenhouse Gas (GHG) emissions. It is expected, however, that capacity constraints at UK airports will lead to increased hubbing at other European hub airports, with passengers connecting at European airports to travel to destinations further afield. This will result in emissions 'leakage', which will continue to lead to the production of GHG emissions from aviation. Whilst the use of hubbing at European airports could lead to positive results in terms of the UK reaching its emissions targets, it will not tackle the total European or Global GHG emissions. Since most GHG emissions have a globally negative impact, it may be considered more appropriate to take a global perspective as to the best way to tackle aviation emissions rather than focussing on UK emissions alone. Increased hubbing at European airports by passengers travelling to and from the UK is likely to have a negative impact in terms of the global carbon emissions, as flying indirectly often increases the overall air mileage of a passenger. Proposals to limit UK airport capacity should therefore not be seen as the solution to decreasing GHG emissions from aviation.

Limiting UK airport capacity would have significantly damaging effects for the UK and European economy through the loss of trade in goods and services, business investment and tourism.

Also, by not increasing the UK's airport capacity this will lead to increased GHG emissions due to aircraft being held in air waiting for slots to become available, i.e. stacking. This also has other negative environmental impacts such as increased air and noise pollution.

It is not felt that the ideas presented in this discussion paper substantially challenge the need for additional airport capacity in the UK. Kent County Council (KCC) fully supports the need to reduce GHG emissions in light of future climate change. The need to increase the UK's airport capacity is also seen as vital to improving the UK's connectivity and supporting economic growth.

However, the Climate Change Act 2008 committed the Government to a legally binging, long term framework to tackle carbon emissions. This means a reduction of at least 34% by in GHG emissions by 2020 and at least 80% by 2050. Therefore any growth arising from the provision of additional airport capacity must be compatible with the legally binding limits on CO_2 emissions.

Q3: How could the analysis be strengthened, for example to allow for the effects of non-CO_2 emissions?

No comment.

Q4: How can we best deal with uncertainty around demand and emissions, including in relation to future carbon prices?

No comment, other than what was already submitted in response to 'Discussion Paper 01: Aviation Demand Forecasting' regarding uncertainty in demand forecasting.

Q5: What conclusions should be drawn from the analysis of effectiveness, and relative cost, of airport capacity and other abatement measures in Chapter 5? Are there alternative analytical approaches that could be used to understand these issues?

See answer to question 2

Q6: Are there any examples of how other countries have considered carbon issues in relation to airport capacity planning that we should be looking at? (Please specify and briefly explain why.)

No comment.

Q7: What do you consider to be the main climate risks and adaptation challenges that the Commission will need to consider

(a) in making its assessment of the UK's overall aviation capacity and connectivity needs

The Airports Commission will need to consider the National Adaptation Programme (NAP), which as stated in the Aviation Policy Framework, the first five year statutory plan setting actions to address Climate Change challenges is due to be published this year. Climate Change adaptation reports produced by the aviation industry highlight the climate variables that pose the most risk and the Climate Change Risk Assessment (2012) shows how the industry is taking action to address those challenges. It is essential that the Airports Commission consider the NAP in making its assessment of aviation capacity and connectivity needs.

In order to tackle climate change and reduce GHG emissions associated with aviation it is important to maximise the opportunity for sustainable travel to airports. For this adaption and modal shift to take place, the Commission should be considering opportunities to expand airports with good connectivity by public transport, or looking for opportunities to invest in sustainable transport infrastructure to support the growth of airports. High Speed 2 (HS2) offers a real opportunity for the growth of UK regional airports such as Birmingham, to alleviate the pressure on London and South East and help solve the airport capacity problem. Kent County Council is looking to improve surface access to Manston Airport through the delivery of Thanet Parkway Railway Station. This project will have a significant effect in improving connectivity between Manston Airport and London and supporting the growth of the airport. Thanet Parkway Railway Station is a key scheme included within KCC's transport delivery plan 'Growth without Gridlock' (2010).

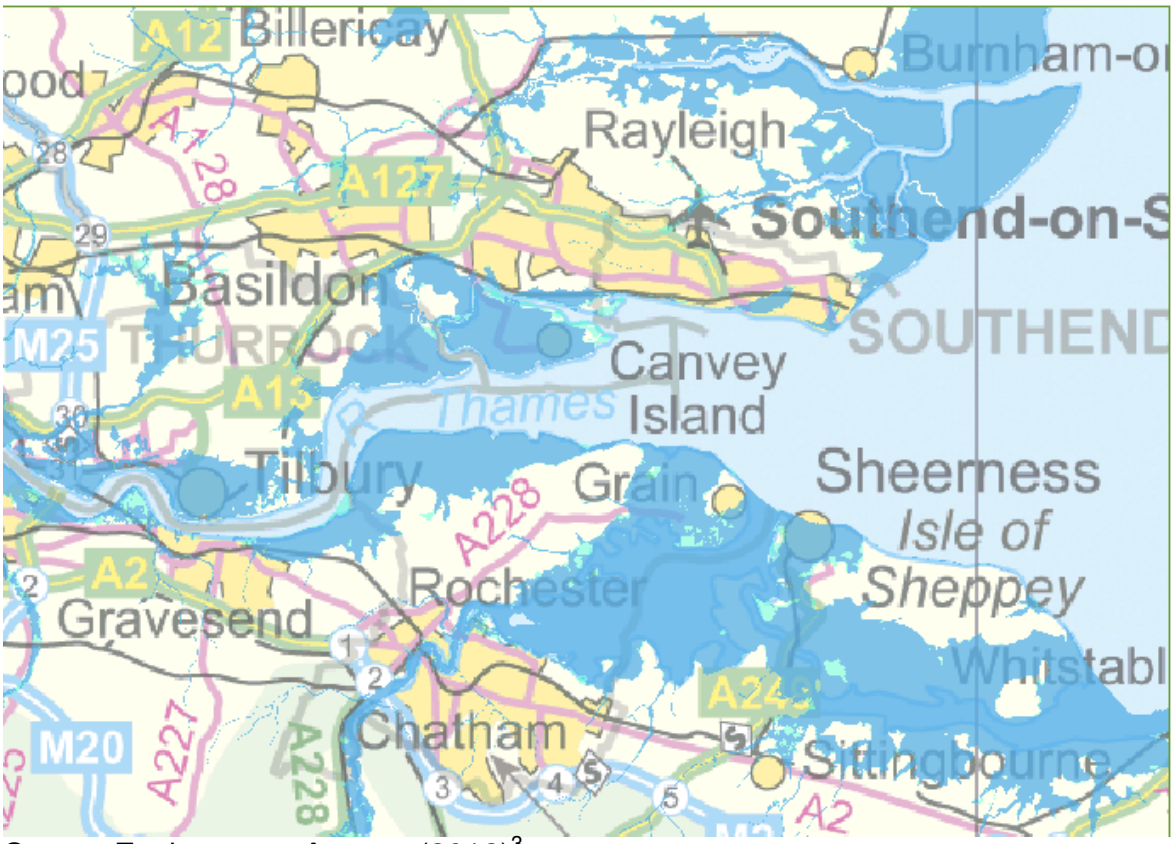
(b) in considering site-specific options to meet those needs? *For example, proposals for new airports at coastal or estuarial sites will need to take account of risks from sea-level rise and coastal erosion.*

The proposals for a new hub airport on the Thames Estuary are strongly opposed by KCC and Medway Councils due to the damaging environmental impact the delivery of a new airport in the Thames Estuary would have, the astronomical cost for the delivery of the airport and the associated infrastructure and its impracticality in terms of risk from sea level rise. Sea level in the Thames Estuary is currently rising at a rate of 3mm/year[1]. Even under current conditions much of the coastal area within the Thames Estuary is currently threatened by the risk of flooding, as shown in Figure 1. This rate of sea level rise is expected to rapidly accelerate, with Sea Level Rise of between 20cm and 90cm forecast to occur during the next century[1].The amount of sea level rise could however be as great as two metres during the next century if rapid melting of Polar Ice Mass were to occur[1].

[1] Environment Agency (2012). TE2100 Plan. *Managing flood risk through London and the Thames Estuary*
http://a0768b4a8a31e106d8b0-50dc802554eb38a24458b98ff72d550b.r19.cf3.rackcdn.com/LIT7540_43858f.pdf

The Thames Estuary is particularly vulnerable to the effects of sea level rise, due to the influence of storm surges in the Thames Estuary. It is expected that climate change and sea level rise will result in a change to the frequency and severity of storm surge events[2].

Figure 1 - Areas identified as currently at risk from river and sea flooding



Source Environment Agency (2012)[3]

Proposed Thames Estuary airport on the Isle of Grain

To manage the risk sea level rise presents to the UK's coastline, Shoreline Management Plans (SMP) have been developed as a way of managing sections of the coast. The Shoreline Management Plan Review document (2010)[4] covering the Isle of Grain states that a policy of 'Hold the Line' will be adopted in the short term, but in the medium to long term a policy for 'Managed Realignment' is expected to be implemented. A 'Hold the Line' policy means that the coastline will be protected against the effects of sea

[2] Defra (2010). *UK Climate Projections. Thames Estuary 2100 case study* http://ukclimateprojections.defra.gov.uk/media.jsp?mediaid=87898&filetype=pdf

[3] Environment Agency (2012) *Risk of flooding by river or sea* http://maps.environment-agency.gov.uk/wiyby/wiybyController?value=Goudhurst&submit=Search%09&lang=_e&ep=map&topic=floodmap&layerGroups=default&scale=3&textonly=off#x=579247&y=179212&lg=1,&scale=5

[4] South East Coastal Group (2010).*Isle of Grain to South Foreland SMP review* http://www.se-coastalgroup.org.uk/wp-content/uploads/2012/02/IGSF-SMP-Report.pdf

level rise. The implementation of this policy on the Isle of Grain involves the maintenance of existing sea defence structures and management practices. The adoption of a 'Managed Realignment' Policy in the medium and long term will involve the realignment of sea defences to a location set back from exiting shoreline. The implementation of a Managed Realignment policy on the Isle of Grain will allow natural processes to occur for the inland migration of the inter-tidal habitat.

As well as inter-tidal areas being important in terms of providing habitats for animals and bird species, they are also a valuable natural sea defence[5]. Inter-tidal mudflats and marsh areas help to dissipate waves energy, so that if an Isle of Grain airport were to go ahead this would go against the sustainable coastal management practice which is outlined within the SMP review document for managed realignment of the coastline on the Isle of Grain. Whilst the runway and terminal buildings may be designed and built in a way that enables them to float on the water above sea level, it is expected that the additional buildings that will be required to support the airport will need to be protected against the effects of sea level rise. A substantial investment in new sea defences would therefore be required to protect the airport against the rapid rates of sea level rise which are expected in the Thames Estuary[1].

The airport would also need to be protected against tidal surges. The introduction of hard engineering sea defence methods, are likely to have damaging effects on the current marshland and the inter-tidal zone. Hard engineering techniques have often led to many examples of 'coastal squeeze' where marsh has become trapped between hard engineering structures and rising sea levels[6]. The marsh land is unable to move inland to compensate for the rising sea levels, as would normally be the case under natural conditions. Examples of coastal squeeze have already been identified along the Kent coastline as a result of hard coastal defences and rising sea levels[7]. The introduction of hard engineering sea defences along the Isle of Grain could therefore have negative impacts for the marsh which is protected as a Site of Specific Scientific Interest (SSSI) and Special Protected Area (SPA).

In light of the negative environmental impacts, KCC strongly advises the Commission not to pursue an option for an airport on the Isle of Grain.

Proposed Thames Estuary airport on artificial islands

Similarly, the issue of sea level rise as a result of climate change is a serious reason as to why the proposal for a Thames Estuary airport on artificial islands should also no longer be pursued. Whilst the airport itself may be designed to adapt to changes in sea level, it is unclear as to the impact that

[5] Natural England (2001) The success of the creation and restoration schemes in producing intertidal habitat suitable for waterbirds.
http://www.uea.ac.uk/~e130/docs/ENRR425_1.pdf
[6] Natural England (2009) State of the natural environment in the South East
http://publications.naturalengland.org.uk/publication/31044?category=118044
[7] Kent Biodiversity Partnership (2005). Kent's Biodiversity Action Plan
http://www.kentbap.org.uk/images/uploads/Mudflats_HAP110405.pdf

such a large structure will have on processes in the Thames Estuary. It has become increasing recognised that the coast is an integrated system of processes, hence the increasing use of integrated shoreline management policies. Changes to the hydrological and sedimentary estuary processes as a result of an artificial island airport could lead to negative consequences for inter-tidal zones along the Kent coastline.

Some of the proposals advocated by the Mayor of London for a Thames Estuary airport suggest that whilst the runways themselves would be located on an island structure in the Thames Estuary, the terminals and other infrastructure associated with the airport could potentially be located in Kent or Medway. This would lead to similar issues as with the proposal for an airport on the Isle of Grain, whereby the high value assets associated with an airport would need to be protected by hard engineering sea defences. This introduction or updating of existing hard engineering defences along the Kent or Medway coastline will have potential negative impacts for the management of the integrated system of coastal processes. A disruption to processes may accelerate the damaging effects of sea level rise leading to the loss of inter-tidal habitats along the Kent and Medway coastline.

Housing Demand and Water Resources

Based on the latest climate change predictions it is expected that summer temperatures in the South East will increase, leading to greater rates of evaporation[8]. This will increase the pressure on water resources in the South East, where there are already challenges of meeting the water demands of the already large and growing population. It is expected that the influence of climate change will result in increased pressure of water availability and heightened frequency of drought conditions in Kent.

The delivery of a new Thames Estuary airport would result in rapid population growth within Kent, to fill jobs created by new airport. This will result in increased pressures for scarce water supplies in the South East. It is unclear as to how these challengers will be dealt.

It will also need to be determined where new houses will be built, in light of reduced land availability as a result of sea level rise.

London Array Wind Farm project

The area is also home to the recently completed London Array wind farm, the world's largest offshore wind farm. Once fully operational the wind farm will

[8] Environmental Agency. (2012). *Water Resource Strategy, Regional Strategy Actions for South East Region*
http://www.environment-agency.gov.uk/static/documents/Research/120327_WRStrategy_Regional_strategy_actions_FINAL.pdf

provide a sustainable source of power to 470,000 homes[9]. The project is key to adapting the UK energy supply in order to reduce GHG emissions and tackling climate change. The wind farm could however be a physical barrier to the delivery of a new airport in the Thames Estuary. An article which featured in New Scientist has highlighted concerns over the effect of wind turbines causing interference to aircraft radar signals[10]. This could also be a serious constraint on the delivery of a new airport in the Thames Estuary.

Q8: Are there any opportunities arising from anticipated changes in the global climate that should be taken into account when planning future airport capacity? *For example, are there potential changes in passenger flows and travel destinations that we should be taking into account?*

There is a considerable amount of uncertainty relating to Climate Change predictions. It could be expected that if the UK climate becomes warmer as a result of climate changes then this may decrease the demand for air travel for leisure purposes. Alternatively if the UK climate becomes cooler and/or wetter as a result of changes in the Jet Stream or changes to ocean currents, this may increase the demand for air travel for leisure purposes to countries with a warmer climate. Changes in global sea level are also likely to affect the coastal destinations in the world that there will be a demand to fly to.

Due to the vast number of unknown factors with regards to climate change, including uncertainty as to the exact amount by which the global climate is expected to warm, it is not possible to predict the likely impacts of climate change on number of passengers or travel destinations with any certainty at this time.

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[9] London Array (2013) *London Array. All the latest news and developments* http://www.londonarray.com/wp-content/uploads/LONDON-ARRAY-NEWS-JAN-2013.pdf
[10] New Scientist(2009). *Stealthy wind turbines aim to disappear from radar screens* http://www.newscientist.com/article/dn18032-stealthy-wind-turbines-aim-to-disappear-from-radar-screens.html