

**Submission by the Chartered Institute of Logistics and Transport in the UK
to the
Airports Commission
Discussion Paper on Aviation Demand Forecasting**

Introduction

- 1 The Chartered Institute of Logistics and Transport in the UK (“CILT(UK)”) is a professional institution embracing all transport modes whose members are engaged in the provision of transport services for both passengers and freight, the management of logistics and the supply chain, transport planning, government and administration. We have no political affiliations and do not support any particular vested interests. Our principal concerns are that transport policies and procedures should be effective and efficient and based, as far as possible, on objective analysis of the issues and practical experience and that good practice should be widely disseminated and adopted. The Institute has a specialist Aviation Forum, a nationwide structure of locally based groups and a Public Policies Committee which considers the broad canvass of transport policy. This submission draws on contributions from all these sources.
- 2 This note is structured under four headings: NAPDM and Unconstrained Forecasts, NAPAM and Constrained Forecasts, CO₂ Emissions Forecasts and Uncertainty, then ends with conclusions. Some of the questions set out in the Discussion Paper at paragraph 6.4 are answered in each section.
- 3 A number of references are made to the DfT document UK Aviation Forecasts of January 2013. CILT(UK) recognises that there are many caveats in the forecasts about the assumptions, the model, and the purposes of them. DfT accepts that the behaviour of airlines and passengers is complex and the model tries to reflect that. However, there is always a danger that some parties will take particular forecasts and present them as the Government's view of what should happen. This note suggests that great care must be taken when using the forecasts.

The NAPDM and Unconstrained Forecasts

- 4 Chapter 2 of the DfT document describes the National Air Passenger Demand Model (NAPDM) as the starting point and CILT(UK)'s view is that, in general terms, it is the most robust part of the forecasts, relating passenger demand to GDP and fares. Chapter 3 describes the input assumptions, primarily GDP and

fares (which take account of fuel costs, emissions trading and APD). However, the 2013 forecasts are significantly lower than the 2011 forecasts because of particular factors that have occurred in the last two years. It must be open to question as to whether this marks a temporary or permanent change in the factors determining aviation demand. In our view, this question cannot be answered at present, so we suggest that this is dealt with by our response on uncertainty.

- 5 CILT(UK) is also of the view that Chapter 4 reasonably describes the unconstrained passenger forecasts which represent underlying demand in the absence of airport capacity constraints. Demand of course depends on price, so the forecasts do allow for all the other constraining factors such as rising fuel prices (including ETS), APD and the various other constraints assumed in the NAPDM. CILT(UK) agrees with the output in Annex D.8 which shows unconstrained forecasts for individual airports (ie. with no ATM or passenger caps), which, for 2050, include Heathrow at 170mppa, Manchester at 46mppa and Birmingham at 21mppa.

6 **Airports Commission Question**

Do you consider that the DfT modelling approach presents an accurate picture of current and future demand for air travel? If not, how could it be improved?

CILT(UK) response

The DfT modelling approach presents a reasonable overall picture of current and future demand, with the unconstrained forecast showing the underlying growth predicted (but not provided). The range of forecasts is appropriate to be used to test the ability of various proposals to meet that underlying demand and the impact of so doing.

- 7 However, part of the model produces the number of destinations served. Annex D.9 shows these for the unconstrained forecasts at selected airports, including 138 international destinations from Heathrow in 2011. Although a footnote says that these will vary slightly from observed patterns, there were actually 190 destinations, of which 6 are domestic. This is significantly different from the modelled figure, and therefore suggests that the model is not working adequately in this area. This may be because the reaction of airlines to demand in choosing which routes to operate is not adequately replicated by the model.

8 **Airports Commission Question**

How well do you consider that the DfT's aviation model replicates current patterns of demand? How could it be improved?

CILT(UK) response

The model's output in terms of international destinations in 2011 is significantly less than the actual at some airports. The decisions of airlines in choosing which routes to operate need to be better understood.

The NAPAM and Constrained Forecasts

- 9 We wish to comment on Chapter 5 of the DfT document which describes how passengers at individual airports are forecast by the National Air Passenger Allocation Model (NAPAM) and how Air Transport Movements (ATMs) are derived and depend on further assumptions.
- 10 NAPAM works on surface access costs and the number of flights at each airport. We would question whether the choice of airport is also determined by the fare offered, with the same person choosing different airports depending on the purpose of the trip. Indeed, it is possible that passenger behaviour is not adequately modelled because the data on which it is based does not include the factors that determine that behaviour.
- 11 There are concerns that the model does not adequately deal with international transfer passengers in terms of whether they would continue to travel to or from the UK. These passengers may not be captured in UK surveys, in particular if they currently transfer at a non UK airport. Although this is primarily about Heathrow, it may also be relevant at other airports where a significant amount of self-connecting is taking place.

- 12 **Airports Commission Question**
What factors, if any, are missing from the DfT's modelling approach? How can these be more effectively analysed?

CILT(UK) response

The NAPAM should also consider the fares offered at airports, and also review the factors which determine passenger airport choice behaviour. The model does not adequately deal with international transfer passengers who have a choice of transfer airports, or of self connecting passengers.

- 13 Airport capacities in terms of ATMs (runway) and passengers (terminals) are set out in Table 3.10 of the DfT document. A number of comments should be made about these assumptions:
 - The ATM capacities for the busiest airports assume no allowance for resilience. Heathrow is currently operating at 98% and other airports will approach 100% at various dates.
 - Text in a box on page 56 notes that Birmingham's runway extension adds 9% to capacity but the table shows passenger capacity at 18mppa in 2008 and 37mppa in 2030, neither of which are in line with the Airport's master plan.
 - Manchester's ATM capacity is shown as 500,000 in 2050 which is rather ambitious, given its close parallel runway configuration. Passenger capacity grows from 38mppa in 2030 to 55mppa in 2050, despite an assumption noted in the text on page 57 that no changes are assumed after 2030.

- Many of the smaller airports would be able to claim higher capacities based on the physical space, provided planning restrictions can be overcome

14 **Airports Commission Question**

Do you agree with the source of the input data and assumptions underpinning the DfT model?

CILT(UK) response

Some of the assumptions about ATM and passenger capacity assumptions are at variance with master plans, make no allowance for resilience, are impractical or assume planning restrictions remain in place.

15 Annex E.2 of the DfT document shows central constrained forecasts for each airport. Annex E.11 shows destinations served. The following comments look at particular airports:

- Heathrow is clearly constrained throughout, with the 2050 difference between unconstrained and constrained at 77mppa. The way the model treats these passengers is complex, but Annex E.11 shows that the number of destinations drops from 174 in 2011 to 155 in 2050, continuing the trend that has been apparent for some years. However, as noted above the number of destinations in the unconstrained forecast by the model is 138.
- Gatwick is similarly constrained from 2020, and sees a reduction in destinations from 341 in 2011 to 210 in 2050 (these figures are not comparable with Heathrow, probably because there is double counting of destinations by different types of airlines).
- Manchester's runway does not constrain its growth until 2050, but the unconstrained forecast for 2050 is 46mppa, less than the constrained forecast of 55mppa. As noted above, this forecast assumes that the runways have more capacity than Heathrow's. Destinations grow from 245 in 2011 to 338 in 2050.
- Somewhat surprisingly, given that Stansted is clearly the third London airport choice in the terms of the NAPAM, its constrained forecasts (35mppa in 2050) look reasonable, being below its unconstrained forecasts and in line with its assumed capacity, with a modest growth in destinations from 144 in 2011 to 175 in 2050.
- Luton's constrained 2050 forecast of 38mppa is well in excess of its assumed capacity of 18mppa, and much greater than its unconstrained forecast of 23mppa. Annex E.11 shows only 31 destinations in 2011, none of which are Low Cost Carriers!
- Bizarrely, Edinburgh drops from 9mppa in 2011 to 7mppa in 2020, and then slowly grows to 12mppa in 2050. Annex E.11 is also very odd, with only 26 destinations in 2011, none by LCCs.

- Birmingham's constrained forecast of 17.7mppa in 2050 seems a bit light given that the unconstrained forecast is 21mppa and the capacity is assumed to be 37mppa (although note the comment above that this is not in line with the master plan). Destinations fall from 120 in 2011 to 49 in 2050.
- Unlike Edinburgh, Glasgow grows throughout the period, close to its unconstrained forecast and within its capacity, although with a decline in destinations from 178 in 2011 to 125 in 2050.
- There are other strange figures at other airports, but they are generally smaller and therefore less significant in UK terms. Some of the stranger ones are Liverpool (declining between 2011 and 2020), Belfast International (declining between 2011 and 2020, while Belfast City is growing), London City (declining between 2011 and 2020), Leeds Bradford (declining between 2011 and 2020 and then never reaching its 2011 level), Cardiff (declining between 2011 and 2020, then growing slowly until 2040, then a sudden quadrupling to 2050), Doncaster Sheffield (declining significantly between 2011 and 2020 and never recovering) and Norwich (declining to zero after 2011 but serving 33 destinations).

16 The conclusion from this is that the output from the NAPAM must be treated with great caution, and not considered as a likely outcome of a Government policy of maximum use of existing runway capacity. For the smaller airports over the longer term, it is possible that the model is being used beyond its capabilities.

17 **Airports Commission Question**

Do you consider that the DfT modelling approach presents an accurate picture of current and future demand for air travel? If not, how could it be improved?

CILT(UK) response

For some airports, the model output is reasonable but for others, in particular Manchester, Luton, Edinburgh and a number of smaller airports, the constrained forecasts are counter intuitive, either because the capacity assumptions are wrong, or because the model is not properly reflecting passenger and airline behaviour in the face of those constraints .

18 **Airports Commission Question**

What impact do you consider capacity constraints will have on the frequency and number of destinations served by the UK?

CILT(UK) response

The model produces some very strange outputs in terms of the number of destinations served which are clearly different from what would happen in reality. With the constrained forecasts, the number of destinations will decline at constrained airports and increase at unconstrained airports.

CO₂ emissions forecasts

19 CO₂ forecasts are described in Chapter 6 of the DfT document and are based on the ATMs flown in the constrained forecasts. Given the foregoing concerns expressed about the constrained passenger forecasts, the CO₂ forecasts must also be considered very carefully.

20 The CO₂ forecasts do not take account of the Climate Change Committee's recommendations that growth of 60% in passenger numbers and 55% in ATMs (from 2005 to 2050) would be within the Government's carbon targets. However, it should be noted that 60% passenger growth from 2005 would equate to 365mppa in 2050, well below the constrained forecast of 445mppa.

21 **Airports Commission Question**

The Airports Commission report briefly describes the DfT CO₂ model but does not ask any specific questions about it. However, CILT(UK)'s view is set out below.

CILT(UK) response

As the constrained forecast is open to doubt, the CO₂ forecasts based on it must also be open to doubt. In any event, the forecasts should also take account of the Climate Change Committee's advice on the level of growth that is compatible with the carbon targets.

Uncertainty

22 Chapter 5 of the Airports Commission report deals with uncertainty and the DfT document produces high and low forecasts based on variations from the central assumptions.

23 Major increases in aviation capacity, such as runways and airspace changes, as well as some of the support facilities such as surface access, require a long period for planning and construction. During these planning and construction stages, actual demand may be higher or lower than the forecast. If the plan is based on the central forecast, there is an equal probability that the actual will be lower or higher. However, while it is possible to slow a project down during these stages, it is not usually possible to speed it up. There is therefore a logic to using a higher than central forecast for planning purposes. Given that the delivery of projects is primarily in the private sector, even if the go ahead is given earlier than is required, it is unlikely that substantial additional capacity will be built and brought into operation until it is needed.

24 **Airports Commission Question**

Does the DfT approach to demand uncertainty capture a reasonable range of uncertainty? Could the approach be improved?

CILT(UK) response

Because projects to provide additional capacity can be slowed down but not speeded up, it is recommended that plans should be based on a higher than central forecast.

Conclusion

25 CILT(UK)'s view is that there are a number of concerns about the output of the model. Although the DfT accepts the model's limitations, others may use the outputs without reference to the caveats and assumptions. To ensure that the outputs are not used inappropriately, CILT(UK) concludes and recommends that::

- The model outputs are not taken to be forecasts of the effect of particular Government policies
- Constrained forecasts are particularly suspect, as they depend on airlines' and passengers' reactions to particular circumstances at individual airports. The model's outputs for a number of airports are clearly unrealistic, so there must be doubt about the way it is modelling these reactions.
- Forecasts for individual airports should be treated with great caution, as many of the assumptions about capacity appear to be suspect.
- If Government policy enables the provision of additional runway capacity where required, the forecasts will be very different.
- The forecasts do not take account of the Climate Change Committee's recommendations on meeting carbon targets.
- Because projects to provide additional capacity can be slowed down but not speeded up, it is recommended that plans should be based on a higher than central forecast.

26 Given the concerns about the model, it may be appropriate for the question of aviation demand forecasting to be referred to the Technology Strategy Board's Transport Systems Catapult, whose recently appointed Chairman will understand the issues.

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