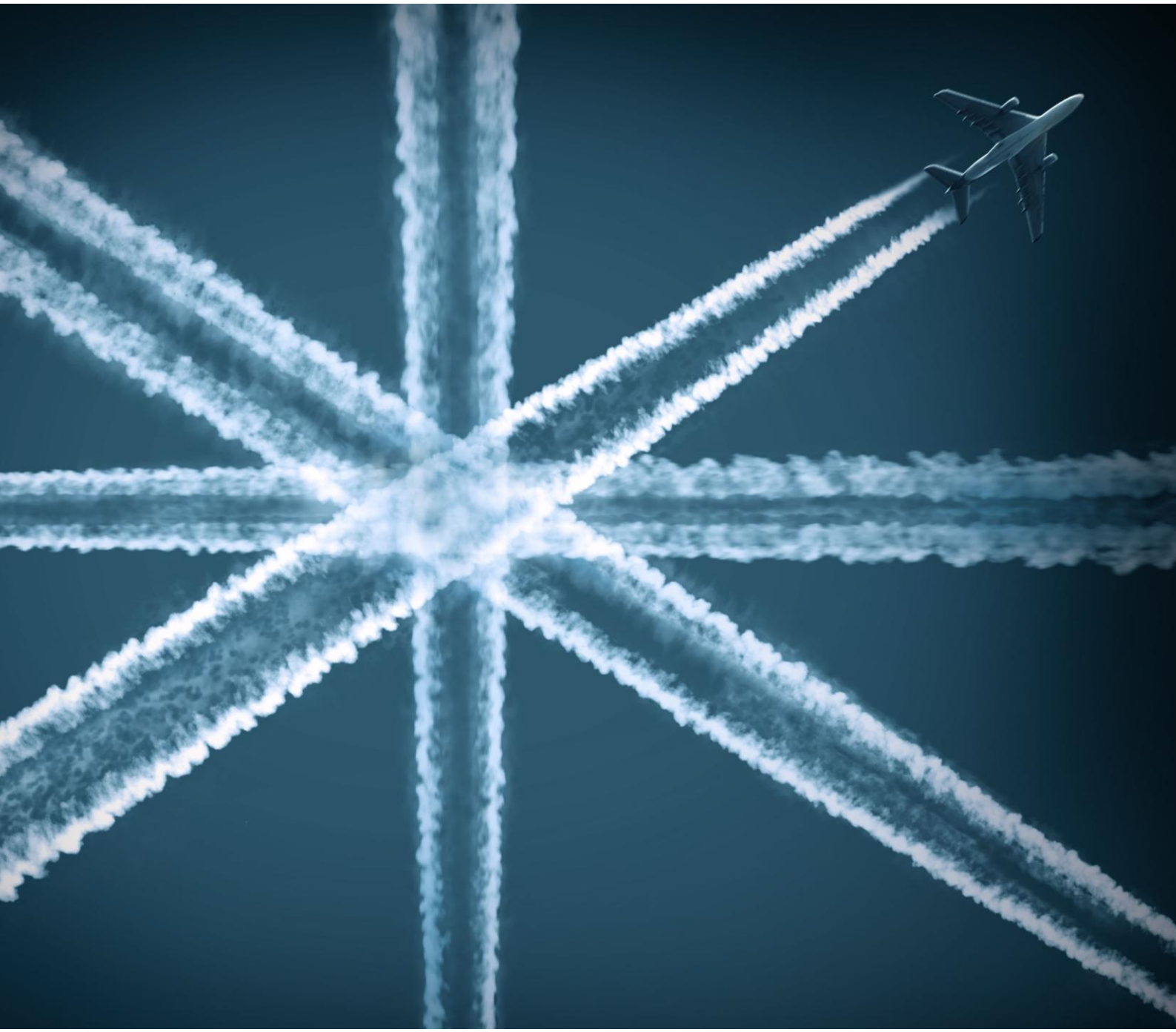
Discussion Paper 04: Airport Operational Models

Response from Manchester Airports Group (M.A.G)



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1 Introduction

1.1 The Airports Commission's Discussion Paper 04 on *Airport Operational Models* (the **discussion paper**) addresses the important issue of the nature of any additional airport capacity that might be required in the future. The discussion paper explores the question of whether an operating model dominated by a 'focal' airport should be preferred over a model that disperses the development of capacity more widely across a range of airports.

1.2 We support the Commission's focus on the issue of operating models at an early stage of its overall process, and agree that it is useful for the Commission to form a view on whether greater weight should be given to one model or another in the overall assessment of the options, and in particular to reach a view on whether one model is likely to offer greater economic benefits.

1.3 Our response to the discussion paper is intended to provide a broad perspective on these issues. As the operator of four airports across the UK, M.A.G's response brings together our views as an operator of large airports both in Manchester and London, and smaller regional airports at East Midlands and Bournemouth.

1.4 Although the discussion paper's main focus is on issues relating to London's airports, it is important to recognise that airport capacity has been developed successfully across the UK in a highly dispersed way over many decades, and that for most regions the dispersed model will continue to serve a high proportion of passengers' air travel needs. Airports like Manchester have a significant contribution to make in providing international connectivity from the regions in which they operate, and we would urge the Commission to ensure that its recommendations reflect the interests of the UK as a whole.

1.5 We believe that the assessment of operating models should not lead the Commission to make a binary choice between 'hub' and 'dispersed' options. Rather, it should be used to develop an understanding of the airport strategies that are likely to yield the greatest benefits, and for this to be taken into account as one part of the Commission's overall assessment of different options at a later stage along with other economic, social and environmental considerations.

1.6 For this reason, it is important that the Commission's shortlist of options reflects a range of different ways of providing airport capacity, rather than being limited to those options which align with a preferred operating model. Excluding options at an early stage on the basis that they do not align with the preferred operating model would create a risk that such options could ultimately turn out to be amongst the best performing when other factors are taken into account.

1.7 Our response is organised as follows:

- Summary – this section sets out our overall views on the issue of operating models
- Sections 3 to 8 – these sections address the issues raised by the discussion paper
- Appendix 1 – this provides cross references to our answers to the discussion paper's questions
- Appendices 2-4 – provide further evidence in support of our response.

2 Summary of M.A.G's response

Starting with a 'clean sheet of paper'

2.1 On a theoretical level, our analysis of the economic evidence and academic literature suggests that there would be many advantages to the UK in having an effective hub airport. Indeed, if the Commission were starting with a 'clean sheet of paper', then a new airport could be developed from first principles to ensure that it satisfied the minimum requirements for an effective hub. Assuming that such an airport could be delivered, it would have the potential to support high levels of connecting traffic and offer a network of services that would deliver excellent international connectivity to London, the South East and the rest of the UK.

2.2 We agree with the discussion paper's view of the minimum requirements of an effective hub. An effective hub needs to provide high levels of runway capacity to allow airlines to coordinate waves of inbound and outbound traffic. In addition, a high level of runway capacity will reduce the likelihood and impact of operational disruption by enabling service levels to be restored quickly. An effective hub also needs to be designed and operated in a way that delivers short minimum connect times between flights to enable airlines to maximise connecting opportunities for passengers.

2.3 Starting with a hypothetical 'greenfield' site would provide the opportunity to develop the new airport infrastructure in a planned and efficient way, which would help to minimise the construction costs as well as the on-going costs of operating the new facilities. The selection of the site for the new hub could also take into account the importance of reducing as far as possible the impacts on people and the environment.

2.4 In combination with London's large O&D market, the new airport would be capable of attracting and serving large volumes of connecting traffic. Taken together, the demand from O&D passengers and transfer passengers would support services to the widest possible range of destinations at relatively high levels of frequency. The choice and convenience offered by such an airport would be of significant benefit to passengers and the UK economy. The large scale of the airport would also give rise to substantial direct economic benefits.

2.5 However, this approach would not be without significant risk. The sunk costs of developing an effective hub would be substantial, and the concentration of facilities and infrastructure at one location (rather than many) would commit the UK to a particular aviation strategy for many decades. Furthermore, the theoretical benefits of an effective hub would only materialise and be sustained if airlines continued to use the airport in a way that made good use of the connecting facilities. In the event that airlines moved to a more point-to-point business model, there would little residual value in assets that had been developed for connecting passengers.

Flexibility has real benefit in an uncertain world

2.6 The discussion paper notes that "it is not clear when the sector will reach a state of equilibrium and there are many possible futures against which any future decisions on UK aviation strategy must be weighed[1]." We agree, and where there is uncertainty over the way airlines will operate in the future the dispersed model of airport development would have important advantages. For example, growth in O&D demand, technological advances in aircraft design or continued competition from low cost carriers may well push airlines increasingly towards a point-to-point model.

[1] Discussion Paper 04, p22

2.7 In an uncertain world, there would be real benefit in being in a position to respond to these changes, rather than being committed to the development of a single hub airport. Adopting a dispersed model would enable airport operators to develop new capacity in a more incremental and flexible way in response to changing demand. In particular, it would be possible to adapt the design of facilities and infrastructure so that they reflected the evolving needs of passengers and airlines, and matched as closely as possible their different needs across a range of market segments.

2.8 Incremental development would create the ability for airports to respond to changing circumstances and phase the delivery of new infrastructure so that it closely matches the growth in demand. It will also enable airports to deliver new airport capacity in the most cost-effective way, tailored to airline needs at particular locations. This would help to ensure that airlines and passengers only pay for infrastructure they use; under a hub model point-to-point passengers would pay for the cost of providing connecting facilities which they did not use.

2.9 Another key advantage of a dispersed model is its potential to create and sustain competition, both between airports and between airlines. Passengers would stand to benefit from having multiple airports of a similar size because they would offer more choice, both in terms of quality and cost. In turn, competition would drive airports to innovate and become more efficient. There is also the potential for competition to enhance the delivery of new capacity by speeding up its delivery and ensuring new infrastructure meets users' needs. From an airline perspective, the lower level of airport charges at point-to-point airports could stimulate innovation and additional market entry, providing passengers with greater choice and value.

Moving from a theoretical world in to the real world

2.10 Decisions on the future development of UK airport capacity cannot be taken on the basis of a theoretical analysis. It will be important for the Commission to consider carefully how any conclusions from a hypothetical 'clean sheet of paper' approach change when translated into the real world.

2.11 The current distribution of traffic in the London system has built up over many decades and reflects a long history of Government decisions concerning the development of airport capacity, as well as airline and passenger preferences. Heathrow has long been London's leading airport and its market position has strengthened progressively as a result of its dominance in serving long-haul routes and its role as the base of the UK's full-service airlines. The level of demand for access to Heathrow far exceeds the available capacity, a position which provides the airport with considerable market power in London.

2.12 Heathrow's facilities have been developed incrementally in response to growing levels of demand and evolving requirements of airlines. Each phase of development has taken its own view on future requirements and provided facilities to meet those needs. Repeated changes in the outlook for the aviation industry over the period have made it difficult to plan Heathrow's development in a consistent or coherent way. As a consequence, Heathrow does not operate as an effective hub.

2.13 In addition, Heathrow is also a relatively high cost airport in terms of the level of charges to airlines. This is partly driven by the value of investment that has been undertaken at Heathrow and the high costs of construction in a constrained environment. For example, the value of Heathrow's regulated asset base (**RAB**) is around £13 billion and the airport currently handles around 70 million passengers a year. By contrast, Gatwick and Stansted have a combined RAB value of around £3.5 billion, and together handle around 50 million passengers a year.

2.14 Given this starting point, Heathrow is not a good option for creating an effective hub airport. The addition of further runways and aircraft movements would have significant impacts on many people living in built-up areas in west London. In practical terms, much of the airport's existing infrastructure

would need to be replaced to reduce the connection times between flights to a competitive level. It is also doubtful whether enough capacity could be provided to create resilience and enable airlines to operate waves of inbound and outbound flights.

2.15 The financial costs of redeveloping Heathrow in this way would be substantial, partly reflecting the premium associated with having to carry out construction in a live operational environment. Furthermore, there is a significant risk that having undertaken the redevelopment, Heathrow would still not provide an effective hub, an outcome that would mean the theoretical benefits associated with a hub would not be achieved in practice.

The option of developing a new hub to replace Heathrow

2.16 The development of a new hub would offer the opportunity for a fresh start. The airport could be designed and operated in a way that met the minimum requirements of an effective hub, to create the platform for generating the economic benefits discussed earlier.

2.17 Developing the hub at a new site would enable the airport infrastructure to be delivered much more cheaply than at Heathrow. This would have important benefits for passengers and airlines because it would ultimately mean lower airport charges over the life of the assets (up to 50 years). It would also be possible to identify sites that would deliver material reductions in the numbers of people affected by aircraft noise.

2.18 Taking forward the development of a new hub would depend on a number of critical factors. As a prerequisite, it would be necessary for the Government to commit to closing Heathrow so that there would be a critical mass of traffic at the new hub when it opened. This would be critical from a financing perspective because without it the incremental traffic growth at the new hub would be insufficient to justify the investment in the new infrastructure.

2.19 We recognise that the closure of Heathrow would have significant social, economic and environmental impacts. On the basis that the Commission wishes to take forward an option for a new hub airport on its shortlist, it will need to conduct a careful study in 2014 of these issues to be in a position to take account of the impacts of closing Heathrow in its overall assessment.

2.20 It would also be necessary for the Government to consider how such a development would be financed, and in particular how the surface access schemes needed to support the new hub would be delivered.

Conclusion

2.21 As outlined above, there are important issues for the Commission to consider in assessing the merits of a new hub, including the commercial viability of such a scheme, the fact that a 'hub' would commit the UK to an inflexible aviation strategy that might be at odds with current and future aviation trends, and the need to close Heathrow to enable a new hub to be developed elsewhere.

2.22 The alternative approach – developing new capacity in a dispersed way at a number of different airports – is likely to have many advantages over the development of a new hub. These would include the ability of airports to deliver capacity incrementally, which would not only ensure facilities were tailored in a cost effective way to meet users' needs, it would also be likely to be more deliverable and financeable and require less contribution from the taxpayer.

2.23 One of the main benefits of this approach would be the potential for it to strengthen airport competition, as well as competition between airlines. This issue of competition is particularly relevant in the context of the Competition Commission's (CC) recent market investigation of BAA which resulted in

the forced sale of Gatwick and Stansted, and the strong competitive intentions being demonstrated by new owners.

2.24 Under separate ownership, the CC predicted that the opportunity for airports to deliver dispersed capacity would stimulate and strengthen competition. For this reason, the CC recommended to Government that it should ensure that any future national policy statement for airports should not constrain the airport market from a competition perspective[2]. In light of the CC's recommendation, it would be appropriate for the Commission to attach significant weight to the promotion of competition in its assessment of different operating models, and to look to identify options that would deliver a competitive outcome for passengers.

2.25 At this stage of the Commission's process, we believe there would be significant merit in taking forward a range of options that represent different ways of providing airport capacity. As the discussion paper proposes, the assessment of operating models can then be used to develop an understanding of the airport strategies that are likely to yield the greatest benefits, and for this to be taken into account as one part of the Commission's overall assessment of different options.

[2] Competition Commission, BAA airports market investigation, Final Report (2009) para 10.375

3 Focal airports

3.1 The aviation sector in the UK has grown disjointedly over many decades, without a clear underlying strategic plan, and is now facing considerable strains. Demand for air travel is particularly strong in London and the South East, but the market failures set out in M.A.G's response to the Commission on 'best use' mean that existing capacity is not efficiently used. Demand at Heathrow airport exceeds supply, while spare capacity is available at other London airports. However that situation will change as demand grows, and more efficient allocation of existing capacity will not be enough. New capacity will be needed in the South East, and the key question is what type of capacity and where.

3.2 The ways in which airport capacity is used reflect decisions made by operators and airlines. But hubbing activity, whereby an airport receives incoming flights from local 'spoke' airports which enable passengers to transfer to other flights to (often long haul) destinations, has many advantages for both airlines and passengers. The advantages of hubbing in principle are well known and established in the academic literature:

(a) Incoming transfer passengers improve the economics of the onward flights, permitting airlines to offer either greater frequency to profitable destinations or services to some destinations which would not otherwise be economically viable;

(b) Passengers and other users in the catchment areas of both the spoke airports and the hub airport therefore enjoy greater connectivity, especially to long haul destinations, and the economic advantages which that brings;

(c) These connectivity benefits tend to increase with the size of the hub, as a greater volume of connecting passengers generate economies of density, with increased scope at the airport for enhancing the services to onward destinations; and

(d) Passengers and freight operators will obtain extra network benefits, because the effect of the network they have access to will be larger at a hub than a non-hub. Additional individuals that connect to the network generate extra benefits for other users, not only for themselves.

3.3 A large local origin and destination (O&D) market provides a strong passenger base for hubbing activity, increasing the options for service enhancement, and the local market served by the London area airports is the largest in the world. Geographic location is also important in order to optimise the cost and flight times from feeder airports as well as to onward destinations. The advantages of a hub airport can be particularly strong if it has the capacity to operate a 'wave' system, whereby incoming waves of flights can connect with flights in outgoing waves in a way which minimises connection times. The presence of at least one carrier or alliance which facilitates transfers at the airport is also a major advantage, because requiring connections to be made between different or unallied airlines creates hassle and time costs for users.

3.4 As well as providing sufficient capacity in relation to demand, the configuration and amenities offered by a hub airport need to facilitate transfers if the potential advantages of hubbing are to be realised. As the discussion paper points out the planning, pricing and marketing of a connection between two flights is carried out not by airports but by airlines, or alliances of airlines with permission to share costs and revenues. Large unconstrained airports can enable airlines to plan services around connecting passengers, but the layout and operational regimes for security, baggage transfer etc. need to be compatible with low connecting times. Airports designed with this in mind (e.g. Atlanta) have a clear advantage over those where hubbing has grown in a less well designed environment.

3.5 The academic literature suggests that the advantages of hub airports in attracting transfer passengers increase in a non-linear way with size, so that one large hub generates more connectivity than the sum of two hubs half the size. Additional hubs also tend to increase the complexity of a network and reduce the density economies they offer. Multi-hub airline networks do have some practical advantages, as

they operate in a number of contexts (for example Lufthansa in Germany, multiple airports in New York), and many of the world's O&D markets can only be served by connecting services between hubs. Nevertheless single hub systems, often within a configuration in which different long distance hubs are connected, offer clear advantages in principle.

3.6 The advantages of size for a single hub airport are dependent on it being able to offer an efficient operation without raising costs. A well designed airport can achieve this, and there is evidence that passengers are willing to pay a "hub premium" to use such airports, although some evidence also suggests that much of the hub premiums observed are due to differences in passenger mix. There is also some evidence that unit airport costs do not decrease significantly beyond a certain size (5–10mppa), and inefficient airports not designed specifically for hubbing may incur higher unit costs, as observed at Heathrow.

3.7 A hub airport would generate direct benefits for the area in which the airport is located, such as agglomeration and other benefits for the local economy. In addition to these the presence and operation of a hub airport would maximise the international connectivity available both to the wider region itself and to its supporting airport catchment areas. This in turn would deliver wider economic benefits for the country as a whole – encouraging trade, investment, innovation, competition and greater efficiency, and greater access to fast growing markets. Various studies have attempted to estimate the potential scale of such wider benefits. The key points to note in this context are twofold: while the types of benefit involved are fairly clear and likely to be large, the precise estimates remain contentious; and the wider benefits themselves would reflect the additional connectivity provided, irrespective of the location of the hub airport itself.

3.8 Overall, this analysis suggests that a large region like London and the South East would benefit in theory from having a single, large, well-designed hub, with one or more airline alliances operating networks which are supported by connecting flights from other local or regional airports. The next consideration would be to take account of the numerous practical issues that arise at the various potential sites for a hub around London.

4 The option of expanding Heathrow

4.1 Under the current regulatory and charging regime, demand for slots at Heathrow exceeds supply, allowing airlines that have inherited or acquired slots there to extract scarcity rents[3]. This reflects the market failures noted in our 'best use' submission[4], and suggests that the development of Heathrow may not be the optimal approach for reasons that we set out below.

Heathrow was not designed for so many flights and passengers

4.2 An airport of Heathrow's size and complexity would ideally have been designed from the outset to handle current volumes of aircraft, passengers and freight. It would, in principle, have been possible for the BAA to have set out, as long ago as the 1970s[5], a plan for an airport, to be built in phases, to handle the current 480,000 ATMs and nearly 70 million passengers a year, with room for further expansion if required. In practice, and partly as a result of the planning system, much of the expansion at Heathrow has been permitted on the basis that it would be the last, and even discussion of, or

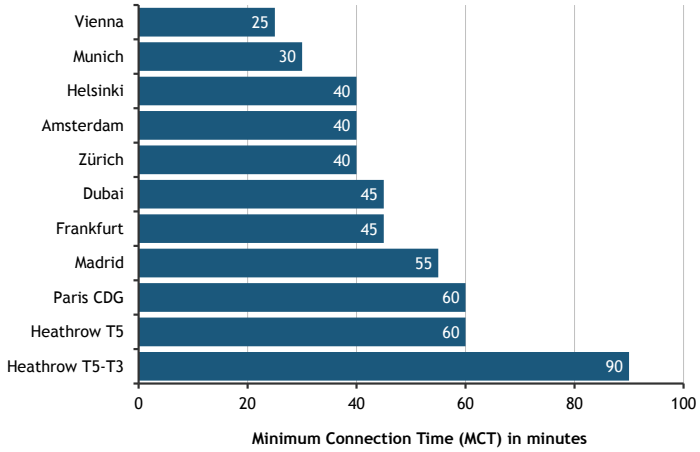
[3] Ibid, 4.8
[4] Ibid, 4.6-4.16
[5] The Boeing 747, which created the step change in capacity that makes it possible for Heathrow to handle so many passengers from two runways, was conceived in the 1960s and first operated from Heathrow in 1970.

provision for, further expansion has been explicitly avoided[6]. Its configuration and capacity, both of which act as constraints, reflect its repeated expansion within a supposedly binding constraint.

Heathrow was not designed for connecting passengers

4.3 As the discussion paper points out[7], for a multi-centred airport to handle large volumes of connecting traffic, it would ideally have both the runway capacity to permit a 'wave' system and the internal circulation capacity to handle highly-peaked flows of passengers and baggage between separate terminals. To be attractive to connecting passengers, it would also need to offer and ideally guarantee MCTs comparable with other airports. As Figure 1 shows, MCTs for transfer at Heathrow are already longer than those at many continental hubs[8]. MCTs within Terminal 5, Heathrow's newest, exceed those between all parts of many other airports.

Figure 1: Minimum Connecting Times (MCTs) at various airports



4.4 If the UK wished to compete with foreign airports to attract airlines handling large numbers of connecting passengers, if may find that they require a much higher level of service than can be offered by Heathrow.

Heathrow could not be 'focused' towards connecting passengers

4.5 Some commentators have suggested that Heathrow should 'focus' on, or be dedicated to, connecting passengers, diverting terminating passengers to other airports. However while airports provide capacity, and can configure it in ways which facilitate rapid connections and ideally low MCTs, it is the airlines, individually or as alliances, who decide how to use or 'focus' it. Traffic distribution rules have been discarded in favour of market solutions, but as slots have become scarcer Heathrow has been steadily losing destinations, presumably the ones with lowest net profit or which airlines can serve from elsewhere.

4.6 We set out in Appendix 2 an analysis of the proportions of transfer passengers on each route at Heathrow. This suggests that, without any need for explicit intervention, airlines at Heathrow are already carrying at least 20% transfer passengers on most routes. Other commentators have already pointed out a number of difficulties with an explicit policy of removing routes with a high proportion of

[6] The current 480,000 ATM limit was imposed as part of the planning permission for Terminal 5 which opened in 2008
[7] Discussion Paper 04, 3.9
[8] From airport websites and other sources

point-to-point passengers, including the costs of relocating, low margins and loss of profitability, lack of established mechanisms, consistency with European and international obligations and retaliatory action against UK airlines elsewhere[9].

4.7 For the same reasons, it would be difficult to reserve new runway capacity for connecting passengers. Airlines might instead transfer existing flights from other airports, which would increase usage not only of runways and terminals but also of other facilities such as surface access which could not be recovered through airport charges. Airlines and alliances might also use additional runway capacity at a constrained airport to retime flights to the preferred 'sweet spots', to reintroduce domestic connections, or to add new overseas routes, rather than rearrange their schedules completely around transfer passengers.

Alliances at Heathrow

4.8 Discussion Paper 04 presents analysis suggesting that one of the alliances operating at Heathrow might lose only a small proportion of passengers if it transferred to another airport[10].

4.9 We estimate that most slots at Heathrow are held by Oneworld (57%, up from 49% in 2011 as a result of the acquisition of BMI), Star Alliance (20%) and SkyTeam (6%)[11]. Relocation of even one of these alliances to another airport could involve large scale detailed operational planning and potentially capital investment in airport and surface access infrastructure. A phased move might mitigate some of these effects.

4.10 While relocation of one or more airlines or alliances might be better for the UK, for example through less airport congestion, or more effective competition, any airline or alliance relocating would incur all these costs while its competitors would benefit from decreased congestion and access to additional slots. Without the 'stick' of closure, it might prove difficult to achieve in practice.

4.11 Some of the practical issues raised by a voluntary relocation by an airline or alliance could be mitigated or removed if there was no option of returning to Heathrow because it would be closed.

The 'tragedy of the commons'

4.12 M.A.G concludes from this analysis that the current situation at Heathrow may be an example of a market failure known as 'the tragedy of the commons'. Each additional airline using an airport benefits from doing so, but adds more costs, in delays and congestion at the airport, on surface access networks and to neighbours, than it, and the passengers it carries, gain in benefits.

4.13 Where a market failure such as the tragedy of the commons exists, the correct solution may not to expand capacity, if this merely increases the scale of the problem. Instead, either new facilities should be provided elsewhere, or prices should be increased. Both approaches have been used on London's roads, where the approach to rising congestion was not merely to widen the most congested streets. In the 1980s, road traffic with neither origin nor destination in London (analogous to connecting airline passengers) was attracted to a wholly new road, the M25. In 2003, road traffic in the most congested part of London was managed through pricing, through the introduction of the London Congestion Charge.

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[9] 'One hub or none', 5.4 ('Could point-to-point airlines be moved out of Heathrow'), http://mediacentre.heathrowairport.com/imagelibrary/downloadmedia.ashx?MediaDetailsID=1105&SizeId=-1

[10] Discussion Paper 04, 4.49-4.61, Figures 4.13 and 4.14

[11] OAG data for 2013

4.14 It would be wrong to assume that the optimal response to a capacity constraint should be to increase in capacity at the location where the immediate constraint occurs.

Summary

4.15 The combination of an incremental approach to airport expansion, and airline and passenger responses to that provision, has resulted in market failure. Heathrow has become a relatively high cost airport, with poor MCTs compared with many of its peers, and is suited only to high cost airlines, typically providing long haul services on 'thick' routes rather than exploiting a low cost base and spare capacity to open new and marginal routes.

4.16 While in principle Heathrow could be rebuilt, within or close to its current footprint, it would be prohibitively expensive to do so and would still carry the risk of the end-product failing to meet the minimum requirements of an effective hub.

5 The option of developing another hub airport

Delivering purpose-built capacity

5.1 As outlined above, hub capacity offers a number of benefits, particularly in terms of long haul connectivity. If effective hub capacity cannot be provided at Heathrow, the alternative would be to deliver purpose-built additional capacity at a different location.

5.2 An effective hub could be planned from the outset to offer a better combination of costs, quality, MCTs and surface accessibility, with options for rapid or phased development and with flexibility to adapt to emerging airline and passenger requirements.

5.3 New facilities could be built to offer short MCTs which would enable the airlines and alliances to attract and handle large numbers of transfer passengers, and located to minimise environmental impacts on neighbours.

5.4 We do not believe a new hub could coexist with Heathrow, and developing another airport would need to be accompanied by a commitment to close Heathrow. We recognise that this step would raise many economic, social and environmental issues that would need to be taken into account in the Commission's assessment.

Achieving economies of scale

5.5 The discussion paper refers to economies of scale in airlines[12] and asks how size and scale affect the operation of airports and the limits to airport size[13]. It has been suggested that economies of scale at airports are limited above 5–10mppa and that there may be diseconomies above a certain size, and it would not be good value to the UK to become reliant on an airport which was inherently inefficient.

5.6 However, such analysis inherently reflects existing airports, many of which have developed 'tactically' like Heathrow, rather than according to a long term masterplan. Atlanta handled 95.5 million passengers and 930,000 aircraft movements in 2012, but is arguably unique in its compact layout of

[12] Ibid, 3.27, 4.43
[13] Ibid, Questions 5 and 6

a 'toast rack' terminal between two pairs of runways on each side, and might be expensive or inefficient to expand further[14].

5.7 However, any potential diseconomies of scale in airport operations can be avoided with a clear masterplan for the development of an airport in response to airline requirements, which may include any or all of a range of features including high capacity, low costs and low MCTs.

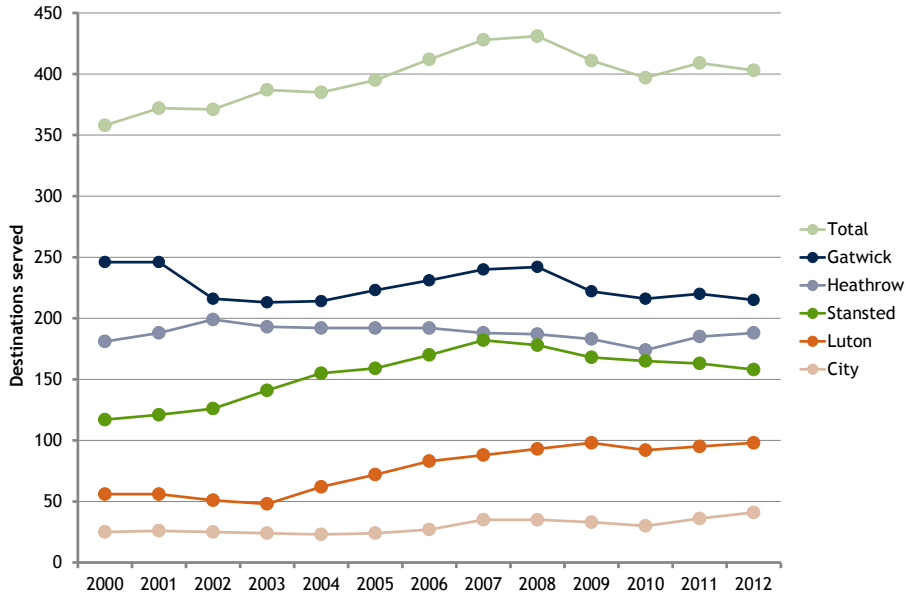
6 The disadvantages of a dominant airport

6.1 Notwithstanding the scope for a large airport to act as a hub, there are a number of potential disadvantages, which we discuss briefly below.

London may not need a 'wave' system

6.2 The local market served by the London area airports[15] is the largest in the world. Relative to other regions of the UK and Europe, London and the South East is large enough to support not only a wide range of routes but also competition between airports offering different services in different parts of the region. London has three airports each offering 150-250 routes, as shown in Figure 2 below[16], with airlines at Heathrow serving mainly full-service long-haul routes and those at Stansted serving mainly low cost European routes.

Figure 2: Destinations served from London area airports



6.3 Compared to other cities, London has a relatively low need for transfer passengers to support flights for terminating passengers. Its main airports surround the city, which forms a barrier to movement, and some industries requiring international connectivity have clustered near airports in the M4 corridor including Heathrow or the M11 corridor including Stansted and Cambridge. Conurbations such as the Rhine-Ruhr (principal airport Düsseldorf) and the north of England (principal airport Manchester) have a near-central airport, the attractiveness of which can be enhanced with better surface access. Italy shows that the largest business centre (Milan) may be a more important market than the capital

[14] Atlanta International Airport, http://www.atlanta-airport.com/docs/Traffic/201212.pdf, see also Appendix 4
[15] IATA city code LON
[16] Based on London First analysis of CAA data 2000-2007, extended for M.A.G to 2012

(Rome). Germany shows that a hub may emerge at a central city which is neither the largest business centre (the Rhine-Ruhr) nor the capital (Bonn, then Berlin).

6.4 M.A.G commissioned analysis of the slots held by major airlines at the world's 50 busiest airports by passenger numbers[17]. This estimated that British Airways held around 250,000 slots at Heathrow, more than any other single airline at any other airport except Delta at Atlanta (510,000), American Airlines at Dallas Fort Worth (360,000) or Turkish Airlines at Istanbul (280,000).

6.5 With such a large portfolio of slots, representing over half of Heathrow's capacity, there would be scope for British Airways to use them alternately for landings and take-offs to create a wave structure, if that was the most profitable way to use them. However, waves are only relevant if a large airline or alliance finds that timetables should and can be optimised to attract (typically) short haul to short haul connecting passengers (such as at Atlanta or Dallas Fort Worth) or (atypically) long haul to long haul connecting passengers (such as at Dubai). Waves are less relevant or irrelevant to airlines or alliances wishing to serve or compete for terminating passengers or to provide connections with long haul routes which are attractive or possible only at specific times of day.

6.6 Analysis of airline timetables also suggests that there are preferred 'sweet spot' timings for some routes, such as overnight to or from Johannesburg, or overnight from Sydney, Singapore or Hong Kong, and airlines only provide flights at different times because of a lack of available slots. On these routes, British Airways has enough slots to fly in these 'sweet spots' but its competitors may not[18].

6.7 The conclusion from this analysis is that Heathrow serves too many terminating passengers for waves to be relevant even to British Airways, which designs its schedules primarily to compete for terminating passengers rather than to provide connections. Without a major increase in the ratio of transfer passengers to terminating passengers, there might be little value in building capacity specifically to permit a wave system. However, given the highly constrained nature of Heathrow it is difficult to predict how the market might respond if these constraints were removed.

Extra capacity cannot be reserved for connecting passengers

6.8 The discussion paper shows that the net effect of the EU-US Open Skies Agreement, which released a regulatory constraint at Heathrow, was a shift of flights from Gatwick to Heathrow[19]. New capacity at any constrained airport might also be used by airlines and alliances to transfer flights there from other airports. As noted above (4.7) airlines and alliances might also use additional runway capacity at a constrained airport to retime flights to the preferred 'sweet spots', to reintroduce domestic connections, or to add new overseas routes, rather than rearrange their schedules completely around transfer passengers.

6.9 Where terminating passengers dominate, airlines may find it best to design schedules to attract them, rather than connecting passengers, even in the absence of any constraints.

Local airports minimise surface access times and costs

6.10 We referred above to the possibility of diseconomies of scale in airport operations, and how these can be avoided with a clear and long term masterplan. However, focus on a single large airport could also

[17] Airline Business data for 2011

[18] Singapore Airlines and Cathay Pacific flights from their hubs to continental Europe depart between 22:30 and 01:40, suggesting that these are the 'sweet spot' timings preferred by the market. All British Airways flights from Singapore and Hong Kong to London depart between 22:55 and 23:45, in the centre of this window. However, Singapore Airlines and Cathay Pacific both operate two 'day' flights to Heathrow, departing between 09:05 and 14:40, which may reflect an inability to obtain Heathrow slots at the preferred times.

[19] Discussion Paper 04, 2.8, Figure 2.2

mean diseconomies in forcing passengers to travel further, particularly with a growing proportion of terminating passengers using direct flights from the nearest, most convenient or cheapest airport[20]. Some short haul business travel relies on day trips, favouring a nearby or 'local' airport. In the South East consolidation might reduce airline fares but increase surface access times and costs. Elsewhere in the UK, focussing on a single airport means long surface access trips for passengers further afield.

Dominance requires regulation

6.11 A single, dominant airport would need to be effectively regulated to ensure that it did not abuse its monopoly power. There would be many challenges associated with establishing an effective regulatory framework to incentivise the significant investment required to deliver a new hub. The current discussions around the regulatory framework for the Thames Tideway tunnels provide an illustration of the difficulties in developing regulation to support the delivery of 'lumpy' capital projects.

A single airport is a commitment to a single strategy

6.12 Committing to a single airport may not be a 'future proof' option. The Commission has recognised that there are a number of possible scenarios for aviation development, including a weakening of focal airports, which would run counter to such a strategy.

6.13 Other risks in pursuing such a strategy include: potential lack of competition and innovation, lack of responsiveness to passengers and airlines, a concentration of environmental disbenefits and a greater number of landing and take-off cycles vs. point to point traffic. The Commission should consider all of these when evaluating the relative merits of the different operating models.

7 The benefits of a dispersed model

Passenger diversity supports a variety of airline and airport models

7.1 Airline passengers are highly diverse. Passengers not only have different origins and destinations but also different preferences for time/quality/cost characteristics of airlines, airports, class of travel, flight timing and connections, and surface access modes. Airlines adopt a range of different business models to attract passengers with particular preferences. While M.A.G agrees that direct, frequent and local flights are attractive[21], these are not the only considerations, and many passengers find that the best combination of convenience and price is provided by an indirect flight or from a more distant airport.

7.2 Partly as a result of this diverse passenger market, airports offer their airline customers a range of business models, with some focusing on quality, such as business lounges, while others emphasise the lower prices which can be sustained with more basic facilities. Ryanair, for example, operates its largest low cost hub in Europe at Stansted and concentrates on offering low fares and delivering excellent on time performance.

7.3 The current size, layout and costs of airports is determined largely by past decisions on the type and quality of provision. Large airports that have been developed with no clear long term plan may be inefficient and costly to operate, poorly designed to provide rapid connections[22], and impossible to

[20] See also 'Flying into the future – Key issues for assessing Britain's Aviation infrastructure needs', Independent Transport Commission, box on page 17, http://www.theitc.org.uk/docs/98.pdf
[21] Discussion Paper 04, 2.30
[22] Ibid, 3.10

expand without wholesale reconstruction. If airlines and passengers require an airport that is uncongested, low-cost with short MCTs, the best way to meet their requirement is not to start with an airport that is congested, high-cost with long MCTs.

Uncertainty requires flexibility

7.4 Flexibility should be a key characteristic of future airports policy to deal with the changing requirements of passengers and of airline business models. Markets, airports, airlines, alliances and aircraft may all change in ways which have not yet been foreseen, which requires a flexible approach to airport provision.

7.5 Past changes with particular relevance to the UK include: increases in aircraft capacity and range (reducing the role of Prestwick in transatlantic services, and later allowing direct flights to south east Asia, and most recently the development of the Airbus A380, Boeing 787 and Airbus A350)[23]; the creation of the European Common Aviation Area (ECAA); the rise of the low cost carriers at the expense of the legacy airlines; the emergence and changing membership of airline alliances; the creation of the Schengen area; the end of duty free for travel within Europe; the rise of hub airline networks in the Middle East; and the economic growth of the BRICS [24].

7.6 The UK has also seen the loss or absorption of carriers including Laker Airways, British Caledonian, Dan-Air and British Midland and the emergence of Virgin Atlantic, easyJet and Ryanair, all with distinct business models that have transformed the way airlines operate.

7.7 M.A.G considers that the commercial attractiveness of existing and unconstrained airports is likely to improve with:

(a) Natural growth, where capacity permits, to provide new routes and hence 'self-connection' opportunities, such as between low cost carrier services;

(b) New arrangements between existing or new airlines to provide connections, for example between a new long haul service and existing short haul or domestic services;

(c) A rebalancing of airport charges and aviation taxes such as Air Passenger Duty;

(d) Deregulation of airports which do not have excessive market power; and

(e) Improved surface access.

7.8 The discussion paper identifies a number of potential trends, but other potentially relevant trends include: the increase in the number of thin routes served direct by low cost carriers with high load factors[25]; passenger 'self-connection' between such routes across a network[26] which may be attractive to an increasingly diverse intra-European VFR market[27]; the possibility of low cost long haul operators; and higher fuel prices or stricter environmental controls[28].

7.9 The Commission's 'Future 2' scenario[29] implies that Europe may become more polarised between 'hubless' low cost intra-European services and alliances at legacy hubs 'sectorised' and focusing on

[23] Discussion Paper 04, 2.13
[24] Brazil, Russia, India, China, South Africa
[25] Discussion Paper 04 points out (2.34) that the proportion of terminal passengers at UK airports carried by the largest low cost carriers rose from 10% in 2000 to 35% in 2012
[26] See Appendix 2
[27] Discussion Paper 04, 2.21
[28] Emissions from international aviation have been included in the EU Emissions Trading System (EU ETS) since 2012, and the International Civil Aviation Organisation (ICAO) is expected to debate a global agreement at its General Assembly in September 2013
[29] Discussion Paper 02 (2.46) 'Decline in the relative importance of the European aviation sector as Middle Eastern and possibly Far Eastern carriers and airports develop a dominant role through aggressive expansion and bilateral partnerships'

outward connections from 'their corner' of the continent. We set out in Appendix 2 an analysis of the origins and destinations of passengers connecting at major UK airports. This shows that airports in the UK are well-placed to offer connections between Europe and North America, for which an airport in north west Europe is attractive, but less well placed to offer connections to the BRICS to the south and east (although for historical reasons the UK retains strong links to India and South Africa).

7.10 However, the number of passengers terminating in London means that many routes could be viable without explicitly planning for connecting traffic, and that facilitating connections may not be the main driver of airline routes and schedules, especially at Heathrow. As the centre of economic gravity shifts[30], airlines at Heathrow and Manchester may focus on facilitating connections between Europe and North America, and airlines at Stansted may offer connections within Europe including the UK.

7.11 In addition, the wide range of routes at all three major London area airports (see Figure 2) may mean increasing 'sectorisation' of terminating passengers with a growing proportion using direct flights from the nearest, most convenient or cheapest airport[31]. This is particularly the case for day business passengers, for whom airport location and direct flights with convenient timings may be the key considerations.

7.12 A range of potential futures are possible, and a policy of flexibility would have some important advantages over one that concentrates further development at a single location.

Solutions must be specific, value for money and deliverable

7.13 We note that the Commission's terms of reference are: 'The commission will examine the scale and timing of any requirement for additional capacity to maintain the UK's position as Europe's most important aviation hub; and it will identify and evaluate how any need for additional capacity should be met in the short, medium and long term'[32].

7.14 Given the choice of airports available at any one time, it is for the airlines to decide what pattern of routes, frequencies, connections, service levels and pricing is likely to be most attractive to passengers and profitable for the airline and its partners. However, airlines that avoid expensive or congested airports are typically more cost (and environmentally) efficient[33]. Diverting passengers on routes 'thick' enough to support direct flights via a hub is in principle more environmentally damaging than point-to-point travel, because of longer distances travelled and more take-offs and landings.

7.15 As the discussion paper points out[34], the planning, pricing and marketing of a connection between two flights is carried out not by airports but by airlines, or alliances of airlines with permission to share costs and revenues. Large unconstrained airports can enable airlines to plan services around connecting passengers, often with a hub-and-spoke network and waves of inbound and outbound flights[35]. Planning, pricing and marketing connections between flights can allow an airline to serve more destinations, and with greater frequency, than would be commercially viable with local demand alone.

7.16 The response of the airlines to expanded capacity, and hence the level of connectivity provided, will be highly specific to the specific airport and airlines concerned, as the discussion paper shows[36], and as we illustrate in Appendix 2. However, connections are always a means to an end: all other things being equal, direct flights are usually faster and more efficient.

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[30] Discussion Paper 04, 2.43 and 3.20
[31] See also 'Flying into the future – Key issues for assessing Britain's Aviation infrastructure needs', Independent Transport Commission, box on page 17, http://www.theitc.org.uk/docs/98.pdf
[32] https://www.gov.uk/government/speeches/membership-and-terms-of-reference-of-the-airports-commission
[33] See, for example, http://www.ryanair.com/en/about/ryanair-and-the-environment, or https://www.flybe.com/pdf/eco_labels_make_own.pdf
[34] Discussion Paper 04, 1.2
[35] Ibid, 3.5-3.10
[36] Discussion Paper 02, Discussion Paper 04 Tables 4.1 and 4.2

7.17 While it is valuable for the Commission to consult on generic airport operational models, the exercise cannot be wholly abstract. It must take as its starting point the existing patterns of, and credible developments in, passenger demand, airport location and airline supply, and propose specific increments of capacity to be provided in specific locations in a specific sequence. It must examine the capacity and service levels of specific expansion proposals and their costs, the proposed level and structure of airport and surface access charges, and then forecast how airlines and passengers would respond over time to the new environment.

7.18 The resulting benefits and costs will depend not only on construction or redevelopment costs but also on factors including surface access costs and impacts, environmental impacts on neighbours, airport operating costs, airline schedules and operating costs and aircraft size, efficiency and load factors. For example, Heathrow has many neighbours and handles a mix of aircraft with variable load factors, while Stansted has fewer neighbours and serves mainly point-to-point passengers flying on efficient aircraft at high load factors. Point-to-point services to a local airport are also likely to offer the lowest end-to-end time and cost for passengers.

Handling foreign transfer passengers may not benefit the UK

7.19 Attracting or handling transfer passengers may be difficult or expensive at poorly-designed airports, and might be easier and cheaper where capacity was available at low cost. However, transfer passengers are not an end in themselves, and any incremental costs of handling them must be covered by surpluses captured by the airline carrying them.

7.20 Care must therefore be taken in assuming that the UK benefits by handling foreign transfer passengers at UK airports. Transfer passengers who are not UK citizens may benefit the UK through producer surpluses, but this raises the question of whether the additional investment, operating costs, noise and pollution required to attract them are justified by these benefits.

7.21 Passengers who are UK citizens may in principle benefit from the additional connections made viable by transfer passengers at some airports. At present, however, Heathrow is constrained not by a lack of viable routes but by a lack of slots, which displaces many viable routes to other airports.

7.22 Release of a constraint may mean that non-UK airlines moved these flights to Heathrow. This might attract more transfer passengers but would also reduce the range of airports from which these routes were served, and could result in stranded assets and loss of employment at other airports. We urge the Commission to consider fully the potential impacts of capacity growth in the South East on other UK airports.

7.23 Detailed analysis would be required to determine whether the UK would benefit from transferring capacity to a dominant airport and reducing frequencies, or removing routes, at others. In contrast, more direct competition between airports in the UK might bring down point-to-point fares to London by providing stronger competition to flights to Heathrow.

7.24 Care must also be taken in supposing that additional transfer passengers mean lower fares for terminating passengers. This argument confuses average cost per passenger on an aircraft with the profit-maximising fare charged to each of these passengers, which need not be the same for transfer and point-to-point passengers. Airlines employ sophisticated yield management to maximise revenue in each market, and one attracting more transfer passengers would have no reason to reduce fares to point-to-point passengers (with whom they would compete for the same seats) unless the transfer passengers also attracted a new competitor onto the route. Airlines have incentive and means to capture the net revenue from transfer passengers as producer surplus, rather than return it to existing passengers as consumer surplus.

7.25 The distinction between the average and the margin applies not only to costs but also to economic productivity. While aviation on average may be a high productivity business, this may not be the case of the incremental business of additional connecting passengers. Evidence is needed on the marginal employment and productivity associated with terminating and transfer passengers, which may be quite different.

Using foreign focal airports may not disbenefit the UK

7.26 Care must be taken in assuming the UK is disadvantaged if some UK passengers prefer to make connections at foreign airports. For some passengers, the overall price/quality offer via overseas focal airports may be better than via UK airports. The price/quality offer may also be worse than what would be provided via UK airports on a commercial basis if capacity was expanded. However this improved price/quality offer could only be delivered at a cost to UK airports and airlines, and would only benefit the UK if the increase in surplus to existing and new passengers would exceed the costs to the UK of the improvements.

7.27 In practice, airlines offering connections via foreign and UK airports are dynamically competing for passengers through quality of service and fares, and fares on each 'spoke' of a network may vary widely depending on the balance of demand on all the origin-destination pairs it serves. KLM attracts passengers from a number of UK regional airports to travel via Amsterdam, and airlines offering connections in the UK would need to improve services and/or to reduce fares to attract them back. KLM might respond with service cuts, which could benefit UK airlines, and/or fare reductions, which could benefit UK passengers. It is not clear whether the scale of any net benefit to the UK at the new equilibrium would justify the cost: it would be difficult to predict the effects of alternative patterns of airport provision and pricing, either on airline services and fares, or on UK airlines and passengers.

7.28 In addition, Middle East carriers serving Manchester have brought both competition and connectivity to the North of England. Passengers in the North have the option of connecting over Middle East as well as Heathrow and continental hubs. As well as providing competition, the services have created much needed jobs and paved the way for inward investment (Etihad's European Call Centre is in Manchester, sponsorship of Manchester City Football Club). We should not assume that overseas connections are necessarily a bad thing – indeed Manchester and the North West have benefited significantly from global connectivity via the Middle East.

Analysis must be rigorous and comprehensive

7.29 We note the Commission's remit to evaluate how any need for additional capacity should be met, and agree that it must be confident that the benefits to the UK will exceed the costs. We consider that a rigorous economic framework may need to consider consumer surplus to passengers and their employers and producer surplus to airlines, airports and their supply chain, disaggregated by nationality/ownership, and taking into account opportunity costs. All benefits and costs to UK passengers, businesses, airlines and airports are relevant and need to be taken into consideration.

7.30 The correct analytical framework for this analysis is one of welfare economics, and in particular:

(a) Estimating all the likely changes in consumer surplus to UK passengers or employers, and producer surplus to UK airlines, airports and support activities.

(b) Identifying the opportunity costs of the capital, operational and human resources required. Building and operating capacity to handle transfer passengers may not be the best use of the UK's economic resources.

(c) Identifying the distributional effects of proposals for change, such as between airline passengers and airport neighbours, or between west London and other parts of the country, and in particular the need to avoid either all the costs, or all the benefits, accruing to a small part of the UK. Outcomes of equal net cost and benefit may have different incidences of winners and losers and different degrees of inherent risk.

(d) Taking into account uncertainty and risk, and the associated costs (contingency planning, stranded assets, disruption) and mitigation measures[37]. The future is uncertain.

[37] See also discussion of Question 8

Appendix 1: responses to Questions in Discussion Paper 04

The Commission's Discussion Paper sets out a range of questions, which we address below, cross-referencing where appropriate, with the objective of minimising repetition.

Question 1: Do you consider that the analysis supports the case for increasing either hub capacity or non-hub capacity in the UK? Is there any additional evidence that you consider should be taken into account?

M.A.G's own research and analysis confirms that hubbing can, in theory, offer benefits to airlines and passengers. However, the case for any increase in capacity must depend on the expected costs, benefits, risks and other consequences of a specific proposal (see 7.14-7.18). It cannot be assumed either that airlines offered additional airport capacity will choose to use it to serve connecting passengers, if MCTs are poor (see 4.3), or if other uses are more attractive (see 4.7), or that doing so will provide benefits to the UK which exceeds the costs of its provision. M.A.G considers that making existing but unused capacity more attractive may offer better value and/or lower risk and/or a more equitable distribution of costs and benefits in the short to medium term than adding capacity at an increasingly constrained and suboptimal airport.

Question 2: To what extent do the three potential futures outlined in Chapter 2 present a credible picture of the ways in which the aviation sector may develop? Are there other futures that should be considered?

M.A.G's response is covered by paragraphs 7.8-7.12.

Question 3: How are the trends discussed in Chapter 2 (e.g. liberalisation, growth of low-cost carriers, consolidation of alliances, and technological changes) likely to shape the future of the aviation sector? Do they strengthen or weaken the case for developing hub versus non-hub capacity?

M.A.G's response is covered by paragraphs 7.8-7.12.

Question 4: What are the impacts on airlines and passengers of the fact that the wave system at Heathrow operates under capacity constraints?

M.A.G's response is covered by paragraphs 6.2-6.7.

Question 5: How does increasing size and scale affect the operation of a focal airport? Is there a limit to the viable scale of an airport of this kind?

M.A.G's response is covered by paragraphs 5.5-5.7.

Question 6: Would expanding UK hub capacity (wherever located) bring materially different advantages and disadvantages of expanding non-hub capacity? You may wish to consider economic, social and environmental impacts of different airport operational models.

M.A.G's response is covered by paragraphs 7.17-7.18.

Question 7: Do focal airports and non-focal airports bring different kinds of connectivity and, if so, which users benefit the most in each case?

M.A.G's response is covered by paragraphs 7.4-7.16.

Question 8: What would be the competitive effects (both international and domestic) of a major expansion of hub capacity, and what are the associated benefits and risks?

M.A.G's response is covered by paragraphs 6.11-6.13.

Question 9: To what extent do transfer passengers benefit UK airports and the UK economy?

M.A.G's response is covered by paragraphs 7.19-7.25

Question 10: Is there any evidence that the UK (or individual countries and regions within the UK) are disadvantaged by using overseas focal airports?

M.A.G's response is covered by paragraphs 7.26-7.28.

Question 11: What specific characteristics of the UK and its cities and regions should be considered? For example, does the size of the London origin and destination market and the density of route networks support or undermine the case for a dominant hub?

M.A.G's response is covered by paragraph 6.3.

Question 12: Could the UK support more than one focal airport? For example, could an airline or alliance establish a secondary hub outside London and the south east, for instance in Manchester or Birmingham?

M.A.G's response is covered by paragraph 7.7.

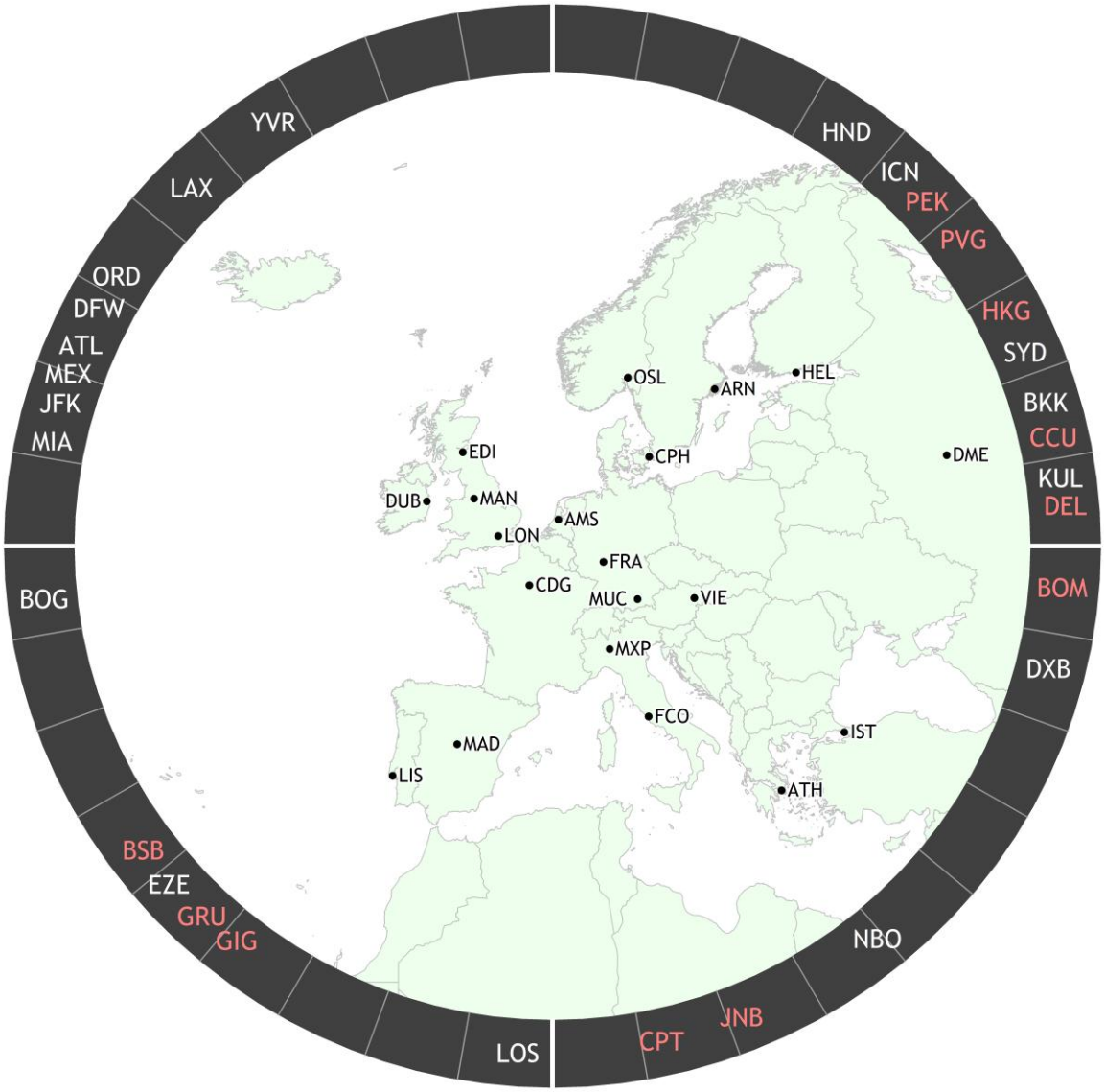
Question 13: To what extent is it possible to operate a successful 'constrained' focal airport by focusing on routes where feeder traffic is critical and redirecting routes which are viable as point-to-point connections to other UK airports?

M.A.G's response to this question is covered by paragraph 4.5-4.7.

Appendix 2: transfer passengers at major UK airports

The map in Figure 3 is centred on Brussels, the seat of the European Union and located between the major airline hubs at Heathrow (LHR), Amsterdam (AMS), Frankfurt (FRA) and Paris (CDG). Around the edge of the map are shown the bearings from Brussels to other major airports around the world via the shortest, or great circle, routes.

Figure 3: Great circle bearings from Brussels



The map illustrates a number of points.

First, UK airports, led by Edinburgh, then Manchester, then London, are best placed to connect cities in Europe to North America (Miami to Vancouver).

Second, UK airports are broadly equally well placed with the main continental hubs to connect cities in North America and the Middle East, represented by Dubai, although airlines based in the Middle East offer direct flights to North America.

Third, UK airports are less well placed than the continental hubs to connect Europe to the BRICS countries, labelled in red, all of which lie in east or south. These range from Moscow (DME) in Russia, Beijing (PEK) in

China, Delhi (DEL) in India, and Johannesburg (JNB) in South Africa to Brasilia. Madrid is well-placed to connect Europe to Brazil and South America, and Helsinki is best placed to connect Europe to China and Hong Kong (Helsinki also offers the shortest connections between North America and Asia (Tokyo (HND) to Mumbai (BOM)).

The figures on the following pages show an analysis of 2011 CAA data on connecting passengers by geographical sector at Heathrow, Gatwick, Stansted and Manchester airports.

While the absolute size of the transfer passenger markets at each airport varies widely, the analysis illustrates the relative importance of different types of connecting passenger within each airport. In each case:

(e) The thickness of the line corresponds to the share of the transfer market

(f) For clarity, flows accounting for less than 1% of total transfer passengers are not shown

(g) The BRICS countries (Brazil, Russia, India, China, South Africa) are shown in green

(h) The lighter bar on the diagram highlights parts of the transfer market for which the airport is 'en route' between origin and destination, rather than requiring a diversion which, by implication, can only be made attractive by offering lower fares than more direct routes

We draw a number of conclusions from this analysis.

First, the majority of connecting passengers are transferring at airports 'en route' as shown in Figure 3. This is particularly the case for passengers from between Europe and North America transferring at Heathrow, and is consistent with the view that Heathrow is naturally well-placed to connect North America to Europe.

Second, Manchester is well-placed to provide connections between the UK and Europe and North America, which already represents a material proportion of its connecting traffic.

Third, Future 2 suggests[38] that Heathrow and European hubs may be bypassed by airlines using other hubs to serve growing markets. For example:

(i) The BRICS are, as shown in Figure 3, all east or south of Heathrow which is poorly placed to connect them to much of Europe.

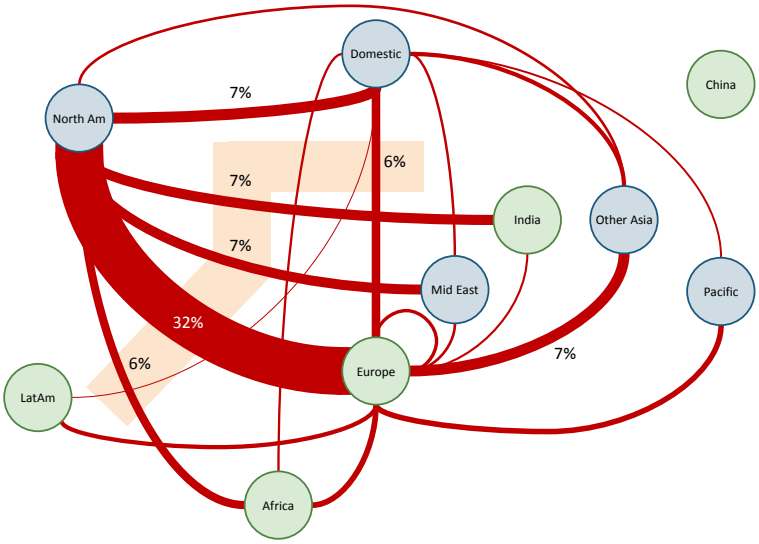
(j) Australasia can be connected to the UK and Europe with one change at an airport in the Middle East, but not with one change at any airport in the UK or Europe.

Fourth, while airlines at Stansted do not actively market connections, it has direct connections to over 150 destinations (see Figure 2). Passengers self-connecting between these routes do so mainly within Europe.

Heathrow (Figure 4) was broadly 'en route' for 59% of transfer passengers including those travelling between north/east (North America and UK domestic) and south/west (including Africa, Europe and Asia). By far the largest market was the 32% connecting between Europe and North America, for which Heathrow is better located than continental European hubs. For connections between the UK and Europe, or to markets further east, such as the Middle East and Asia, Heathrow actively competes with a number of other airports close to the great circle route between origin and destination. In addition, 7% of transfer passengers were travelling between North America and parts of the UK. The proportion of passengers connecting between China and other regions is currently very small although, for travel to and from China, Heathrow is only close to the great circle route for the UK and Ireland.

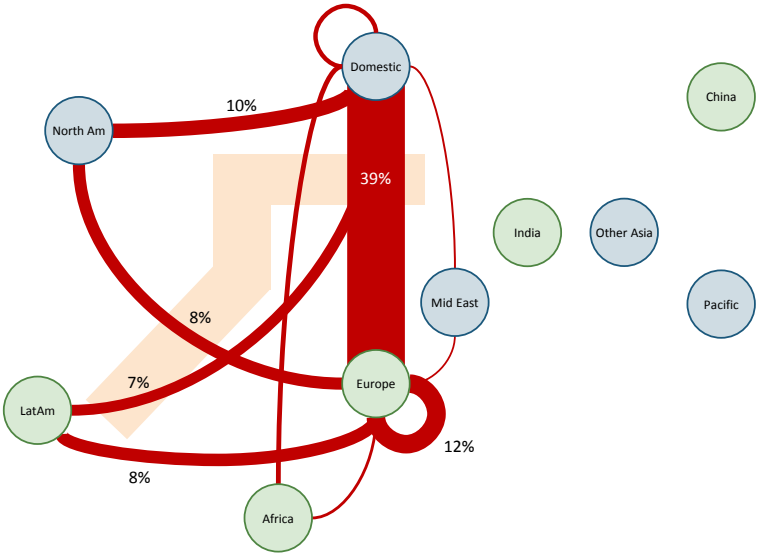
[38] Discussion Paper 04, 2.46

Figure 4: Connecting passengers at Heathrow in 2011



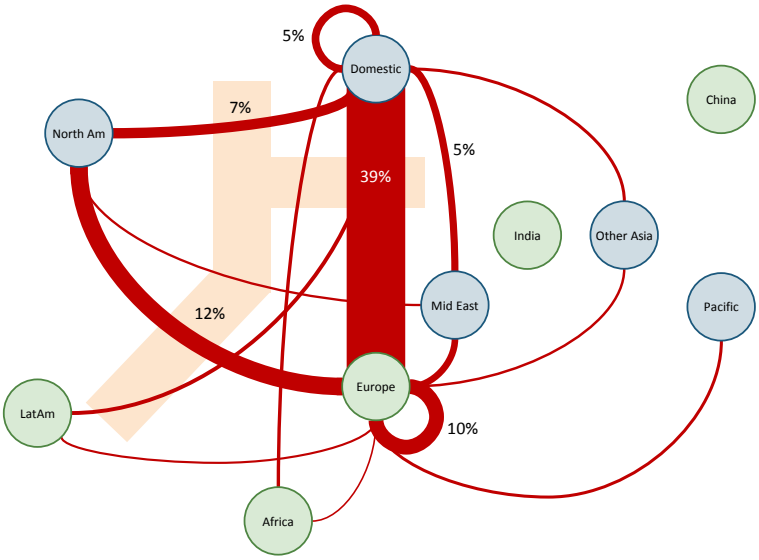
Gatwick (Figure 5) was broadly 'en route' for around 54% of transfer passengers, of whom 39% were travelling between Europe and the UK, followed by 8% between Europe and North America and 7% between South America and the UK. 12% were making intra-European journeys and 10% were travelling between North America and parts of the UK.

Figure 5: Connecting passengers at Gatwick in 2011



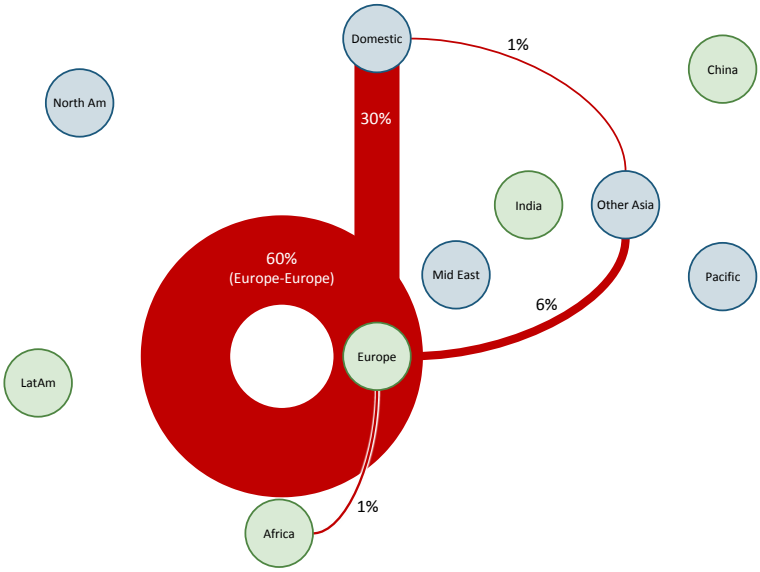
At Manchester (Figure 6) the mix of transfer passengers was broadly similar to that at Gatwick, with the largest segment travelling between Europe and the UK but 12% travelling between Europe and North America. Manchester is, potentially better placed that London area airports for connections between North America and UK regional airports.

Figure 6: Connecting passengers at Manchester in 2011



At Stansted (Figure 7) there was only a small proportion of transfer passengers, most of whom probably 'self-connected' between inbound and outbound flights. Of these transfer passengers, 30% were travelling between Europe and the UK, but transfer was dominated by the 60% travelling between destinations in Europe outside the UK. This reflects Stansted's role as the largest low cost airline hub in Europe, and the willingness of many passengers to accept an indirect routing in exchange for a low fare.

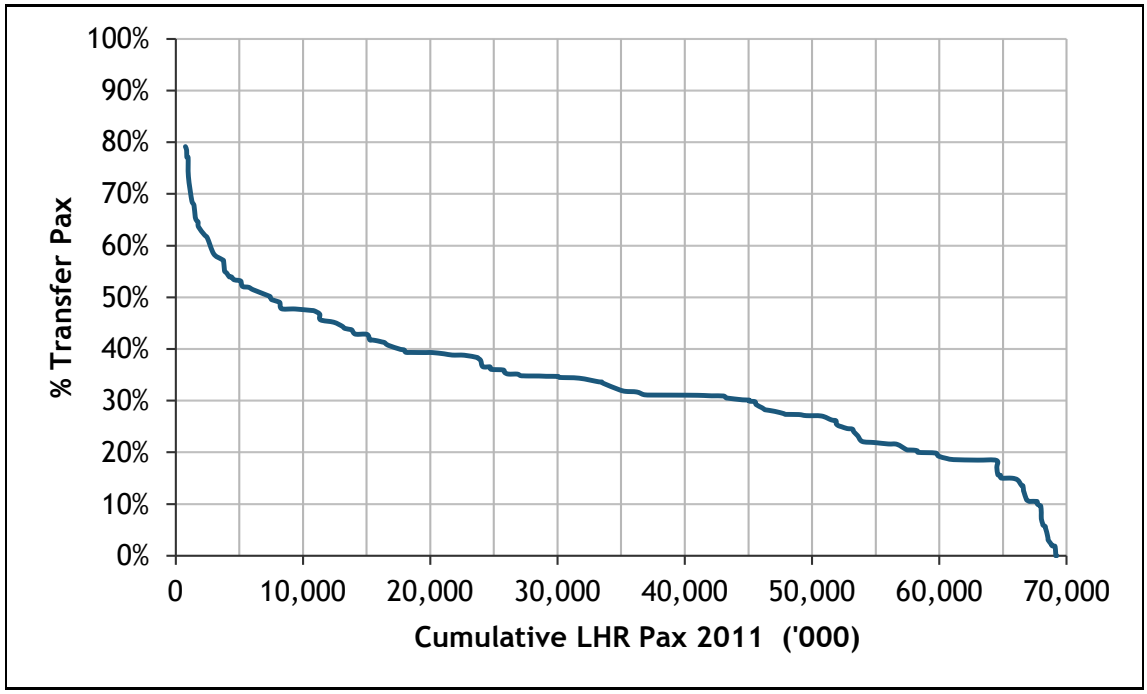
Figure 7: Connecting passengers at Stansted in 2011



Appendix 3: transfer passengers at Heathrow by route

Figure 8 below shows an analysis of the proportion of transfer passengers on routes at Heathrow in 2011[39]. The horizontal axis shows the cumulative number of passengers on each route, sorted in descending order of the proportion transferring, and the vertical axis shows the proportion of passengers transferring.

Figure 8: Transfer passengers by route at Heathrow in 2011



Only a small proportion of passengers are on routes on which transfer passengers dominate, led by Heathrow-Manchester with 80% transfer.

However, and equally important, relatively few routes have only a small proportion of transfer passengers. We estimate that all but 5 million passengers, or 7% of the total, are on routes with 20% transfer passengers or more. This suggests that, even if desirable and achievable, there is only limited scope to remove routes serving terminating passengers with the aim of releasing slots for routes serving connecting traffic.

[39] CAA survey

Appendix 4: layout of Atlanta airport

Figure 9 below Atlanta, Heathrow and Stansted airports on the same scale. Atlanta has a compact layout of a 'toast rack' of terminals between two pairs of runways (a fifth runway, located further south, is less accessible) and Heathrow is adopting a toast rack between two runways, but both are constrained. Stansted has, potentially, space for planned expansion to a capacity at least equivalent to that of Atlanta.

Figure 9: Atlanta, Heathrow and Stansted airports (Google Earth)