Department for Transport

AIR PASSENGER GROWTH AND AIRPORT CAPACITY:

A TECHNICAL DISCUSSION PAPER

Department for Transport

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Department for Transport
Great Minster House
76 Marsham Street
London SW1P 4DR
Telephone 020 7944 8300
Web site www.dft.gov.uk

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AIR PASSENGER GROWTH AND AIRPORT CAPACITY: A TECHNICAL DISCUSSION PAPER

Section 1: The Demand for Air Travel

Key points

- ***The national forecasts are long–term in nature. The main drivers of air travel demand are UK and world GDP growth, world trade, and fares. The national forecasts do not purport to forecast on a year-by-year basis.***

- ***Since the national forecasts were published in May 2000, the effects of the world economic slowdown and of 11 September 2001 became apparent. There has been a significant underperformance of long haul traffic as a result, and other difficulties for the traditional carriers. No Frills Carriers (NFCs) have given a greater stimulus to UK aviation than seemed likely three years ago. There has been only limited growth in the charter market.***

- ***As well as an eventual recovery in the long haul market, additional demand beyond that in the national forecasts could continue in coming years on short haul routes, arising from the direct contribution of low–cost NFC services and the competitive spur that NFCs are putting on traditional airlines.***

- ***The stimulus to demand, mainly from increased airline competition reducing costs and so fares in the short haul markets, should be sufficient to offset the suppressing effect of any environmental charge that reduces air travel demand by 10 per cent.***

- ***Hence the overall forecast of 500 million passengers in 2030, assuming airport capacity is accommodating, should be robust.***

Introduction

1.1 Forecasts of continuing growth over a 30 year period, even at decreasing rates of growth, generate concerns that 'we will all have to fly too often to generate this number of trips' or 'there won't be the tourist facilities to cope with this number of trips'.

1.2 To put such arguments in context, the approximate breakdown of 2030 air passenger movements in a high airport capacity scenario is as follows:

- Unconstrained 2030 terminal passengers = 500 mppa;
- High airport capacity scenario 2030 terminal passengers = 475 mppa;
- Excluding connecting trips = 400 mppa;
- Of these 52 mppa are domestic passengers = 13 million return trips, 86 per cent by UK residents;
- Approximately 130 mppa are international trips by foreign residents = 65 million return trips;
- Approximately 218 mppa are international trips by UK residents = 109 million return trips.

1.3 So by 2030 64 million UK residents may be making 109 million international return trips and most of the 13 million return domestic trips, around 120 million in total, which gives an average of just under two return trips per UK resident (compared with 0.8 return trips in 2000). Similarly return trips by foreign residents rise to 65 million in 2030 (compared with 21 million in 2000), or about the same level as UK population projected then.

The National Air Traffic Forecasts

1.4 The main drivers of future air traffic in the national forecasts, ***Air Traffic Forecasts for the United Kingdom 2000,*** May 2000, are UK and world GDP growth, world trade, and fares. The long term GDP growth assumption for the UK underlying the forecasts was 2.25 per cent; world GDP was projected at higher growth rates in less developed economies and newly industrialising countries (including implicitly Eastern Europe and China) than in Western Europe and the rest of the OECD area.

1.5 The fare assumption underlying the midpoint forecast of 500mppa in 2030 was a 1 per cent per annum decrease in fares in real terms to 2020, compared with a long term reduction over recent decades of 2 per cent per annum. The higher and lower scenarios for the 2030 forecast reach 600mppa and 400mppa respectively. Key factors considered in choosing the air fare assumptions for the national forecasts were aviation fuel prices, aircraft technology, and competition and deregulation:

> Aviation fuel prices: The price of oil was assumed to stabilise around $25 a barrel. As fuel is approximately 10 per cent of airline costs, a 10 per cent change in the price of oil say has a modest effect on air fares.
>
> Aircraft technology: No major step changes in aircraft technology which reduce operating costs were assumed. No downward pressure on fares was assumed as a result of greater use of regional jets. The impact of very large aircraft (e.g. A380) on long haul routes was not considered.

Competition and deregulation: The market was assumed to become increasingly deregulated and competitive. In particular, alliances and 'open skies' were assumed to have a long term effect which work to suppress yields. Nevertheless, competition was assumed to reduce fares only slowly.

1.6 The national forecasts published three years ago say (Annex 2, paragraphs A2.15 – 6): *"…one possible consequence of scheduled low costs airlines is a potential convergence of fares and standards across the whole market for short haul scheduled flights. This would change the forecasts… through the fares assumption and the forecasts of scheduled low costs airlines"*. But the national forecasts did not attempt to quantify this factor.

1.7 As recognised in Chapter 5 of ***The Future Development of the Air Transport in the United Kingdom: South East,*** there are now grounds for being much more positive about long term trends in fares and costs than three years ago. This arises from three principal sources:

No Frills Carriers (NFCs): The national forecasts published in May 2000 were prepared on the basis that forecasting the growth of passengers on NFCs was not possible using econometric techniques because of the short run of data on this market. Unfortunately, the NFC component of the national forecasts suffered from a number of limitations – including the failure to take account explicitly of the important domestic and 'charter substitution' markets - which has meant that both NFCs' track record to date and their likely future contribution has been underestimated.

Since 2001, a poor period for UK (and worldwide) aviation, the growth in demand has been from the NFCs. With their substantially lower costs and fares than traditional airlines, and aggressive marketing strategy, NFCs have contributed a larger stimulus to the UK aviation sector than we thought likely.

Greater Competitive Pressures: It is now clear that the cost base of the typical traditional scheduled airline will need to be cut to ensure commercial survival, in part because of the competitive threat of NFCs. With NFCs now competing on a majority of short haul and domestic routes, scheduled airlines are moving closer to the NFC model as regards pricing, marketing, overheads and aircraft utilisation.

Liberalisation: The downward pressures on costs arising both directly and indirectly from competition from no frills carriers will be felt primarily in the domestic and short haul scheduled markets. In long haul markets, liberalisation of markets represents an important cost driver. Liberalisation was taken into account in the air traffic forecasts. But the potential cost savings of such liberalisation, identified within the Brattle report – including those from mergers and relaxation of ownership and control restrictions – to airlines potentially arising from liberalisation in the key Europe to US market (in an Open Aviation Area) can only now be incorporated. The introduction of liberalisation in other long haul markets would have similar impacts. In addition, the increase in airline competition made possible by the provision of additional airport capacity would exert downward pressure on costs and fares across all markets.

1.8 It is Government policy that aviation should meet its external costs, including environmental costs – that is, the costs to society of aviation noise, and other adverse impacts on, for example, climate change, local air quality and landscape, biodiversity and heritage. Apart from the impact of aircraft emissions on climate change, the effects tend to be local and hence are best handled at the level of each airport individually. Climate change is the exception; these impacts are a cost at the national – and global – level.

1.9 The impact of aviation on climate change is the large environmental cost which can be quantified in monetary terms. The discussion paper, ***Aviation and the Environment: Using Economic Instruments,*** uses an illustrative value of reducing aircraft emissions to determine the reduction in national air demand which would result from an aviation fuel tax or equivalent measure. A fares decrease to 2020 of 0.5 percentage points per annum below the 1 per cent per annum decrease built into the midpoint national forecasts would balance a 10 per cent reduction in demand due to a global warming tax.

1.10 The impact of any pricing instrument (including a tradeable emissions permit regime) will not only have an effect on the demand side. There will also be a supply–side response from the gradual turnover of the fleet mix – with CO_2 reducing at the same rate as fuel burn - and as airlines and manufacturers design and build planes to reduce environmental impacts.

1.11 The long term price change of a tax designed to reflect external costs will be smaller than the initial effect based on demand impacts alone because the induced cost reductions will have some offsetting effect in stimulating demand. Under a permit trading regime it will mean that for a given emissions target the market clearing price of permits will be correspondingly lower, resulting in a dampened reduction in demand.

1.12 DfT and Treasury have recently published a discussion paper, ***Aviation and the Environment: Using Economic Instruments***. The effect of a global warming charge is likely to depend on the fuel characteristics of individual plane types and distances covered on a flight. Would any demand depressing effect be greater for NFCs than for short haul scheduled carriers (or vice versa), given yields and passenger incomes in the two sectors?

1.13 The consultation paper, ***The Future Development of Air Transport in the United Kingdom: South East,*** says (para 5.12) that "*...airlines will be more successful in reducing their costs than was assumed in our midpoint forecasts…*". The stimulus to demand, mainly from increased airline competition reducing costs and so fares, should be sufficient to offset the suppressing effect of an environmental charge that reduces air travel demand by 10 per cent. The principal area in which it is expected that there will be more demand is short haul routes subject to NFC competition, arising from the direct contribution of lower-cost NFC services and the competitive spur that NFCs are giving to traditional airlines.

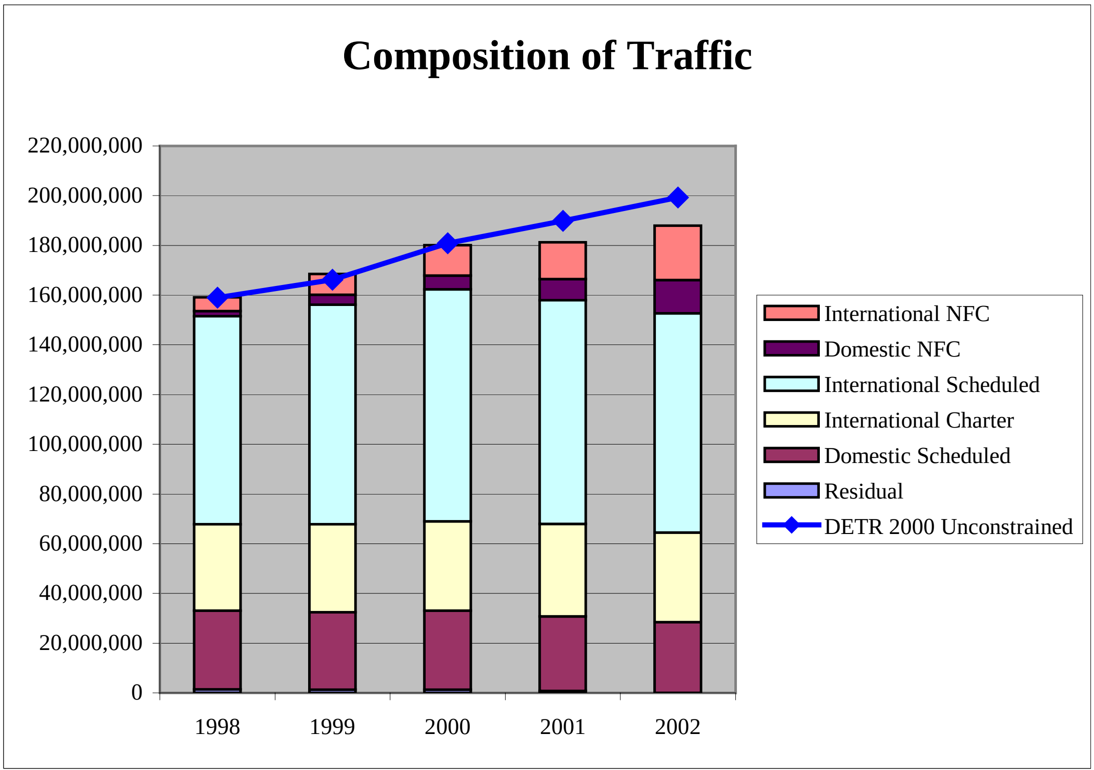
Recent Developments

1.14 UK air passengers in 2002 were 189 mppa, up from 181 mppa in 2001. As a result of recent economic difficulties the 2002 total represents approximately one year's growth of traffic lost from the trend line in our 1998-2030 national unconstrained forecasts. NFCs continued to power ahead (to 35 mppa) while long haul traffic was weak and charter dull.

1.15 As shown in Table 1 below, key points for UK traffic in 2002 were:

- domestic NFCs increased 59 per cent 2002 on 2001;
- domestic traffic overall grew much faster than international traffic, with total domestic traffic ahead of the national forecasts three years ago;
- international NFCs increased 41 per cent 2002 on 2001;
- international scheduled down from 89 mppa to 86 mppa (NFC competition) but long haul stabilised at 2001 levels; and
- charter growing very slowly overall while long haul charter fell.

Figure 1



1.16 Numbers of passengers corresponding to Figure 1 above are given in Table 1 below;

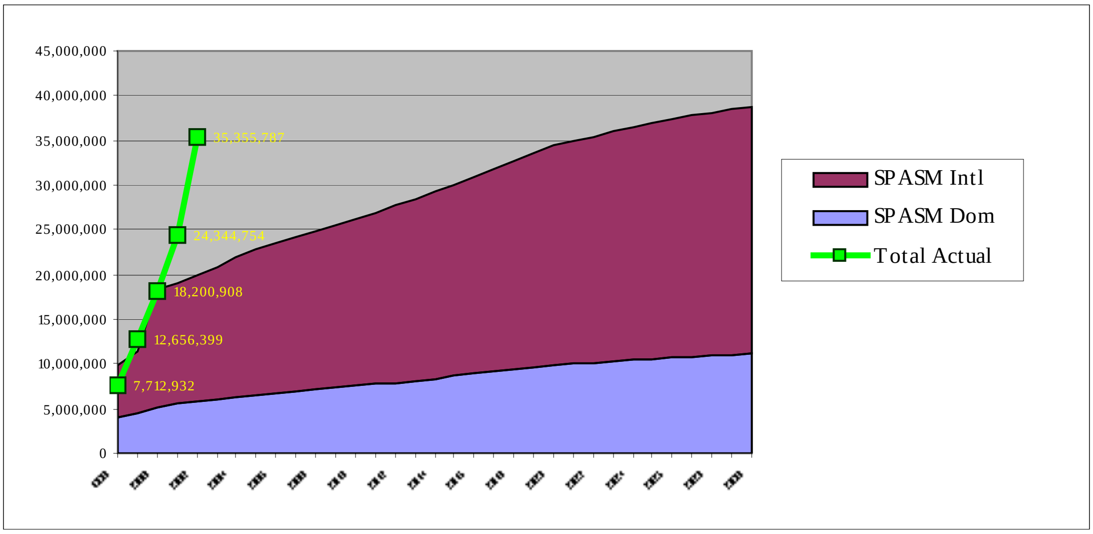
Table 1

	Passengers per Annum				
	1998	1999	2000	2001	2002
TOTAL NO FRILLS CARRIERS	7,712,932	12,656,400	18,200,908	24,344,754	35,425,618
Domestic Scheduled	31,643,904	31,118,926	30,370,709	28,661,917	28,089,195
Domestic NFC	2,047,122	3,994,173	5,754,982	8,574,806	13,003,274
TOTAL DOMESTIC	**33,691,026**	**35,691,026**	**36,125,691**	**37,236,723**	**41,092,469**
International Charter	34,700,851	35,437,757	36,456,429	37,250,986	38,181,299
Of which : long haul charter	3,849,354	3,740,412	3,360,196	3,117,627	2,870,891
International Scheduled	83,528,344	88,007,901	93,397,858	89,343,461	85,980,986
Of which : long haul scheduled	32,264,993	34,595,030	37,454,439	35,076,159	35,218,278
International NFC	5,665,810	8,662,227	12,445,926	15,769,948	22,422,344
TOTAL INTERNATIONAL	**123,895,005**	**132,107,885**	**142,300,213**	**142,364,395**	**146,584,629**
TOTAL INT + DOMESTIC	157,586,031	167,798,911	178,425,904	179,601,118	187,677,098
Other	1,475,333	1,333,039	1,636,823	1,688,135	1,452,986
TOTAL PASSENGERS	**159,061,364**	**169,131,950**	**180,062,727**	**181,289,253**	**189,130,084**
DETR 2000 Unconstrained Forecast	159,042,318	166,179,235	180,872,075	189,911,573	199,281,616

1.17 The national forecasts implied a NFCs' growth rate of 15 per cent per annum between 1998-2005, reaching 19m international and domestic NFC passengers by 2005. Figure 2 below confirms the accurate modelling of NFC growth 1998-2000 in the DfT Air Passenger Forecasting Model ('SPASM'), but that the great bulk of NFC growth in 2001 and 2002 was beyond the input assumptions in the model which were taken from the national forecasts.

Figure 2

No Frills Carriers



1.18 Over the five year period to 2002, there were significant variations by type of traffic, notably:

- A significant under-forecast of international NFCs contributing to an overall under-forecast of UK Leisure (based on CAA data for 1999-2001, Foreign residents accounted for 30 per cent of passengers on these routes). Charter has grown by only 2.4 per cent per annum over the 1998-2002 period compared with a forecast UK leisure growth of 5.2 per cent per annum and an observed growth rate of 6 per cent per annum for all UK leisure traffic.

- Foreign resident passengers grew only 2.5 per cent per annum in 1998-2000, compared with a forecast of 5.3 per cent. In 2001, growth of overseas visitors became negative.

- Total business traffic was growing as forecast until 2000 but slowed significantly in 2001.

- Total domestic traffic from 1998 to 2002 grew at 5 per cent per annum, which is materially higher than the 3.5 per cent national forecast for domestic scheduled traffic. This has resulted from the rapid growth of NFC traffic on domestic routes, against a backdrop where passengers carried by other airlines have fallen.

- Between 1997 and 2000, arguably the last ‘normal’ year in the aviation cycle, CAA passenger surveys at the hub airports showed worthwhile growth of international-to-international connecting and transfer traffic. Since then, this segment of the market has been depressed in line with long haul traffic although the strategies of individual airlines have also played a part.

The ANNEX discusses the development of the NFC market in greater detail.

Into the Future

1.19 Additional demand beyond that in the national forecasts could continue in the next few years on short haul routes, arising from the direct contribution of low-cost NFC services and increased competition from the traditional airlines. Section 2 below suggests there is likely to be continuing development of the business models of NFCs and of the airlines they compete with in short haul – and increasingly in the European market where NFCs are now beginning to penetrate. But it is not Government's role to judge the commercial success of one airline versus another.

1.20 The driver in the national forecasts is not the ownership of airlines, but trends in the distribution of demand by 'purpose' (i.e. between 'business' and 'leisure' by UK residents and Foreign residents) as well as the balance between long haul, short haul, and domestic traffic.

1.21 The weakness in long haul should be reversed at some stage, perhaps sharply, and will be a key factor in inward tourism as well as in the business market. Liberalisation of the long haul market would help reduce costs and fares in that sector. The national forecasts of foreign resident passengers would also be supported by NFCs increasing their contribution to inward tourism. The forecast for passengers on domestic flights requires a period of below trend growth later on, given high growth rates in recent years.

1.22 Measures to charge for the global warming costs that aviation imposes are likely to be levied on the basis of a plane's fuel burn, and be passed on fully or partly in fares. Since leisure passengers are more sensitive to higher fares than business passengers, demand by passengers on leisure trips – including those on NFCs – is likely to be more affected than demand by passengers on business trips.

1.23 The net effect of measures to charge for global warming costs should be offset by greater competitive pressure, particularly in short haul markets, increasing demand. The 2030 national forecast of 500mppa, assuming airport capacity is accommodating, should be robust.

Recapitulation

1.24 Current evidence appears to suggest that the broad thrust of the national air traffic forecasts for the future will remain valid despite the developments of the past few years. But additional demand beyond that in the national forecasts could continue on short haul routes in the short term, fuelled by head to head NFC and full-service competition. Foreign resident traffic, however, has been weaker than expected and a slowing of long haul demand has undoubtedly played a part in this. But this recent decline in long haul demand should recover – spurred on by prospects for liberalisation in this sector and the cut in costs and fares that might be expected to result. But much of the pattern of future demand will undoubtedly depend on the strategy developments of the NFCs – and their competitors – over the coming years and it is to these developments and their implications that we now turn.

Section 2: **Implications of Recent Developments**

Key points

- ***In addition to NFC services to "sun holiday" destinations also served by charter, NFCs in 2002 had c.25 per cent of scheduled short haul traffic including domestic markets. Traditional carriers have been affected by the rise of the NFC sector in the short haul and domestic markets, but they are responding to the challenge by changing their fare structures and reducing costs. NFC passengers in 2002 were 30 per cent of domestic and short haul scheduled international passengers combined.***

- ***A potential 20 per cent average reduction in airline costs other than long haul and charter, arising both from the direct effect of the lower NFC cost base and from the competitive response of other carriers. Since passengers other than those on long haul and charter are a little over 60 per cent of the national total, this translates to more than a 10 per cent cut in costs at the aggregate national level.***

- ***In coming years the business models of NFCs and traditional carriers may move closer still, with NFCs perhaps making connections easier through any airport and by moving services more into hub airports where slots are available.***

- ***The long-term share of NFCs in the markets they contest depends in part on the extent that traditional airlines can cut their costs. It will also depend on their own commercial judgement. To date, not all NFC routes have survived, and there are others where load factor at the moment looks low.***

- ***There seems to be less scope for NFC entry in long haul and there could well be more profitable services for NFCs in the Europe and Mediterranean regions than in long haul. There is already scope for NFCs to operate long haul services from UK airports other than Heathrow and Gatwick.***

NFCs and Traditional Carriers

2.1 NFCs have successfully designed a focused, simple operating model around non-stop air travel. Traditional carriers, on the other hand, support a more complex system of operations. Their business model has involved offering passengers a broad range of destinations, flexibility (in, for example, changing tickets) and 'frills'.

No Frills Carriers

2.2 NFCs offer point-to-point routes; there is no 'formal connecting arrangement' since that would involve, inter alia, baggage transfer between planes. To keep costs low, perhaps as much as 40 per cent below those of traditional carriers on similar short haul routes, NFCs increase aircraft daily utilisation (by achieving short turnaround times), use aircraft no smaller than the 737-type at a high seating density, and operate aircraft at high load (seat) factors. They remove all frills (in-flight service; executive/business class lounges) from the service, and make large savings on commission costs since they sell tickets almost entirely over the internet. There are no frequent flier programmes, no allocated seats, and there can be significant penalties for changing flights. Productivity indicators e.g. passengers per staff member, are favourable.

2.3 There is no single NFC "strategy". Ryanair's business model has been:

- to develop thin markets in which no airline has a dominant position, making extensive use of low-cost secondary airports such as Treviso, Bergamo, Ancona, Rome Ciampino, and Frankfurt Hahn. Ryanair has been unwilling to pay the high landing charges required to fly to the most convenient airports. Many services at its main operating base, Stansted, are only on a single daily rotation basis or less, far short of the frequency required by the business traveller.

- to emphasise fares that are low in absolute terms in order to "compete with alternative uses of passengers' time and money".

2.4 Like easyJet, Ryanair - with the acquisition of Buzz - has moved away from a strategy of relying purely on organic growth. Ryanair has a clear cost advantage over easyJet in terms of operating cost per available seat kilometre (ASK). Its revenues per passengers are less than easyJet's but, with its lower costs, its profit margins have been higher.

2.5 EasyJet's emphasis is on prices that are lower than the traditional carriers and tends to fly to major airports on routes where it competes with traditional carriers. With orders for A319s, easyJet is moving away from reliance on the B737 family of planes.

2.6 Leisure travellers, with their lower value of time, are likely to be more attracted to NFCs than business passengers, who commonly look to a high level of frequency, attractive flight timings, and nearness to major cities. Only 20 per cent of international NFC passengers, according to 1999-2001 CAA data, are on business. This reflects the bias of departures per day to leisure destinations or to relatively small towns. However, domestic air traffic is dominated by the business traveller. CAA data for 1999-2001 shows that 44 per cent of passengers in the Domestic NFC sector were business people, compared with 56 per cent of the passengers of traditional carriers.

Competitive Response of Traditional Carriers

2.7 A number of traditional full service carriers have found it difficult to operate their own NFC brand, although some airlines are still doing so while others are currently thinking about the establishment of one. Rather, the response of traditional carriers to NFCs has been to change their fare structures to make them more like NFCs', reduce payments to travel agents and encourage use of internet bookings, and aim to increase aircraft utilisation and simplify their short haul fleet. Traditional carriers are likely to cut back on unprofitable routes, but retain routes and frequencies which are profitable and which do not involve subsidising connecting passengers. In this respect, airlines might consider if they are operating cost reflective fares to connecting passengers.

2.8 BA, for example, introduced new fare structures on domestic and European routes in 2002. The new structure, with lower average fares, clearly has been influenced by NFCs. There are several "tiers" of one-way fares with no minimum/maximum stay.

However, BA's pricing strategy differs from easyJet's in several respects: BA still has a fully flexible fare at the top of its fare structure; the cheaper fares are not changeable even for a fee; and only the very highest fare is available for a one-way journey. Traditional carriers moving to a single class cabin with genuinely 'low frills' seems less likely on international routes than domestic routes (BA has been one–class on domestic services for a long time but British Midland still has two classes, at least from Heathrow). The commercial decision is whether it is more profitable to operate a higher revenue, second cabin, and offer products which allow a reasonable degree of 'last minute' seat availability.

2.9 Traditional carriers may continue to enjoy a fare premium reflecting the services and terms they offer, but they still need to bring down their cost base significantly to compete effectively in the point-to-point market. To remain competitive, network airlines may need to look for material cost savings, say of the order of 20 per cent. Different airlines will meet this challenge in different ways, but such a target cost saving does not seem unattainable given the scope for savings in selling costs and load factor, as well as converting fixed costs to variable costs through tackling overheads, labour utilisation and pay scales, procurement costs, and outsourcing.

2.10 Selling costs offer a potentially large scope for reducing costs. ICAO has suggested that there could be a saving of total costs of c.8 per cent due to improvements in the 'sales and commission' area. This figure could well be achieved by traditional airlines, which are now using direct sales more.

2.11 Further evidence to suggest that traditional network carriers are rethinking their strategies can be seen from recent attempts at "de-hubbing" in the US. Such efforts have undoubtedly stemmed from a desire to re-evaluate the cost effectiveness of their networks and to close the gap in costs and productivity with the NFCs.

2.12 There is a clear difference in load factor between traditional and NFC carriers. For international routes/route groups on which both traditional and NFC airlines operate, CAA data for 2002 Q1-Q3 suggests a 66 per cent load factor for traditional short haul carriers but 80 per cent for international NFCs. Similarly, traditional carriers on domestic routes were at 64 per cent load factor compared with 76 per cent for NFCs. A sufficient proportion of costs are independent of load factor; therefore there would be material reduction in unit costs per passenger with load factors closer to those achieved by NFCs on successful NFC routes if this is consistent with providing capacity for business and other passengers with fully flexible tickets.

2.13 Claims have been made that the development of airline alliances has already allowed many traditional carriers to make worthwhile cost savings. While such alliances are continuing to attract members, current regulations have prevented mergers between airlines that would undoubtedly allow the rationalisation and increased efficiency of network services. But with prospects for further global liberalisation and the relaxation of nationality requirements, such arrangements will facilitate the development of greater cost savings in the future, particularly if they enable mergers.

Charter

2.14 In 2002, there were 38m charter passengers compared with 35m in 1998. Over the five year period from 1998, Charter has grown by only 2.4 per cent per annum – under half that experienced by UK leisure traffic as a whole for the same years. Yet Charter aircraft get very high utilisation in the "holiday" months, usually with load factors exceeding 90 per cent and with high aircraft utilisation rates due to night time operations, and Charter costs do not seem to be higher than NFCs.

2.15 Traditional package holidays offered by charter operators seem to represent a mature market. Demand for independent travel, including weekend breaks, on the other hand is increasing; the charter operators have aimed to compete in this market with the introduction of 'one way, ticket-only' deals. But whether this change away from the traditional package template will remain sustainable – and retain appeal throughout the year – is uncertain and may crucially depend upon the market at which such deals are aimed.

2.16 Although NFC passengers on average have higher incomes than charter passengers, NFCs seem to have achieved significant abstraction from the charter market, largely because they have provided a competing product tailored to consumer demand.

Effects of Competition in the Scheduled Market

2.17 In 2002, traditional scheduled carried 78 mppa in markets contested by NFCs ie the international short haul market plus the domestic market. This compared with NFC traffic of 28 mppa, if 7.5mppa traffic on international traffic on 'holiday' routes competing in principle with charter is excluded. This gives NFCs in 2002 a 26 per cent market share of scheduled short haul traffic including domestic markets.

2.18 NFCs on mature routes competing with traditional carriers (e.g. Dublin to Birmingham, Gatwick, and Manchester) have only achieved 50 per cent capture. Some routes would never be contested by full service carriers, and vice versa. New fare structures and attempts by traditional carriers to increase load factors started some time after the explosive growth of NFCs began, so the competitive response by traditional carriers would seem to have some distance to go.

2.19 The large cost advantage of NFCs provides significant scope for bringing down the average cost level simply due to their increased market penetration. Since the short haul scheduled markets contestable or captured by NFCs in 2000 comprised around one–half of total UK traffic in that year, a potential 20 per cent average reduction in airline costs (both from the direct effect of the lower NFC cost base and from the competitive response of other carriers) translates to a 10 per cent cut in costs at the aggregate national level.

NFCs and Continental Europe

2.20 The UK air travel market is much further advanced in terms of NFC penetration than that in continental Europe. Traditional carriers there will face much the same threat from NFCs, but also much the same opportunities. Some observers see NFCs having potential to penetrate up to say 60 per cent of the intra-continental European air travel market. However, NFCs have only reached 20 per cent of the US domestic sector, a quarter century after deregulation. In the US, the only NFC to survive and succeed for a sustained period of time has been Southwest.

Long Haul Sector

2.21 NFCs starting long-haul services are perhaps most likely to do so on the dense routes to the US. There are no regulatory barriers to an UK- or US-based NFC operating to the US from any UK airport other than Heathrow and Gatwick; despite this there is a conspicuous absence of NFCs on long-haul routes. There are very few NFC routes which involve more than 2.5 hours flying time. Some foreign former charter airlines operate a few low frequency scheduled services, e.g. to Florida and the Caribbean. But even the long haul charter market from the UK has been stagnant in recent years. 'Secondary' airports with less strong catchments such as Stansted have not been able to retain US scheduled services. Thin long haul routes may well not survive - catchment is key.

2.22 The economics of planes like the planned Boeing 7E7, with around 250 seats, are not yet known. Smaller, cost-effective planes will tend to make potential direct long haul services commercially viable sooner – although a dedicated plane for business passengers could need a stronger business market in support than today's 'multi cabin planes' which draw on a range of markets, leisure as well as business. Our forecasts of air traffic movements at UK airports see less dependence on the B747 in the decades ahead, and only limited take-up of planes of the size of the A380. Smaller B777s, which enable the frequencies which many business passengers require, are projected to increase their share of the fleet.

2.23 It may be more difficult on long-haul routes for NFCs to establish a clear advantage over network carriers. There seems to be less scope for NFC entry in long haul and aircraft utilisation is high. There is high seating density in the Economy Class cabin but IATA's method of allocating costs (which may give a reasonable guide to the economics of the Economy Class if it were to be provided as a stand alone product) suggests that, even in long-haul routes, stand-alone Economy Class yields would be marginal.

2.24 Commercial advantage lies with comparative advantage; would NFCs see more profitable services in the Europe and Mediterranean regions than in long haul?

Recapitulation

2.25 NFCs have provided a competitive spur in short haul markets to which the full-service airlines are responding and the traditional dividing lines between the two can already be seen to have narrowed. Full-service carriers have introduced competing fare structures, cut cost bases and increased load factors. But the expansion of the NFC sector has also yielded certain changes – not least characterised by the presence of the low-cost market at hub airports. The extent to which the boundaries between these two sectors can and will change further on short-haul routes is open to interpretation. Individual airlines may, to some extent, see an advantage in maintaining their own individual business styles with which to define themselves. Nevertheless, the dynamics of the short-haul market look set to change further. Whether or not this pattern will be repeated on the long-haul sector remains to be seen.

Section 3: Air Traffic Demand and Airport Capacity

Key points

- ***Traditionally, UK and European travel patterns have supported a high proportion of connecting traffic at major hubs, reflecting a multiplicity of ultimate destinations.***

- ***NFCs would reduce supporting feed to hubs insofar as they fly to secondary airports, and insofar as their route networks bypass traditional hubs. But the airport with the largest increase in passengers on international NFC routes in 2002 was Gatwick (a hub). Stansted, the largest NFC airport in the UK, is becoming more 'hub-like' with passengers engaging in 'do-it-yourself' connecting.***

- ***Successful point-to-point services require a large catchment area. A large catchment area tends to be supported by hubs (with or without formal connecting traffic) which bundle passengers from diverse secondary destinations not large enough to support direct services to a wide range of destinations.***

- ***Long haul traffic needs strong catchments; European 'megahubs' will continue to have a substantial long haul dimension, the market in which major carriers will have a comparative advantage. Smaller European flag carriers will feed traffic from secondary hubs to 'megahubs'; they will likely increasingly depend on alliances with major carriers for survival but will still need to cut costs and capacity.***

- ***Demand for air travel to specific overseas destinations is not spread evenly across the UK; it is highest in the South East. There is a hierarchy of airports according to their catchment area. Most regional UK airports have a large number of very small markets which are unlikely ever to be served by anything other than connecting services through a major airport. Many regional airports lack sufficient catchment for a very wide range of destinations.***

- ***In a market-based system, passengers' generalised costs (surface access costs, and frequency as well as fare) determine the best location of new airport capacity. Extra airport capacity which improves the fit between the geographical distribution of capacity and the geographical distribution of demand will give rise to greater economic benefits than an extra bit of capacity which worsens that fit.***

- ***Calculations reported in*** **The Future Development of Air Transport in the United Kingdom: South East** ***show that the greatest economic benefits accrue from a dispersed pattern of capacity around the South East – and not from concentrating capacity at a single new 'megahub'. By 2030, a new runway at each of a number of airports would still enable substantial hubbing, while efficiently serving local catchment demand, including that served by NFCs, for point-to-point trips.***

- ***The differences between NFCs and other airlines serving the short haul market are likely to become more blurred over time. Recent experience shows NFCs' interest in serving wide and deep catchments and playing an (albeit 'informal', as yet) connecting role. NFCs cannot be barred from slots made available by additional runways. As they take up such slots, NFCs are likely to become co-opted into a mainstream hubbing role.***

- ***NFCs, like other airlines, should bear the costs associated with expansion of regional or South East airports.***

Hubbing vs Point to Point

3.1 Connecting traffic will always exist where interchanging reduces the perceived **generalised cost** of the journey. Airlines may fine-tune their products to encourage or discourage connections. But passengers will continue to find transfers or connecting flights if such activities reduce their overall travel costs. Connecting traffic allows the same aircraft frequencies with somewhat larger aircraft and/or more frequencies. High connecting frequencies offset the cost of interchange for many passengers. Business passengers, with their high value of time, require the higher frequency of services found at hub airports.

3.2 Airlines will prefer to connect routes through hubs with a substantial direct **catchment area**. This will ensure that hubbing traffic can be supported by a strong base of point-to-point demand traffic and vice versa. Where point-to-point services have started up to new long haul destinations (e.g. the recent new scheduled service from Heathrow to San Diego), they start first at hubs because hubs tend to have the richest catchment areas. The contribution of connecting passengers – around 25 per cent of the total on trans Atlantic routes – may be the difference for regional airports between commercial viability and short-lived 'thin' routes.

3.3 A hub airport with waves of incoming and outgoing aircraft will have a lower daily utilisation than is achieved at Heathrow which is not a hub in that sense, rather a major interconnector between long haul and short haul flights. A 'wave' hub uses its runway capacity at a relatively low level of overall utilisation but benefits passengers who have shorter waiting times and delays between flights.

Connecting Traffic Today

3.4 'Mid continent' hubs in the US have a larger share of passengers who are changing planes than European hubs. In the US, the hub and spoke model of route networks has survived the growth of low cost travel in the US. That said, airlines everywhere need to see that they are allocating 'full' costs to connecting passengers, so that they are not subsidised by other passengers and to consider, for example, the optimal number of back-up aircraft needed.

3.5 As reported in Doganis, 58 per cent of passengers at Paris Charles de Gaulle in 2000 were connecting passengers (Frankfurt 50 per cent, Amsterdam 41 per cent and Heathrow 34 per cent). A high proportion of passengers at UK airports have **changed planes** somewhere on their journey. CAA data from all surveyed UK airports shows, despite the growth of NFCs, that a steady 30 per cent of passengers changed planes somewhere on their journey.

3.6. There are three basic types of connecting journey which affect UK airports:

A. Domestic International Connections: i.e. passengers who connect at a domestic airport to reach an international destination. Even with constrained slots at Heathrow, 5 mppa of traffic at Heathrow is domestic connecting traffic from elsewhere in the UK. Smaller UK airports have significant numbers of passengers on a multiplicity of routes which can only be sensibly bundled up as indirect services to larger airports. This will be the case for many such routes, even 2-3 decades down the line.

B. International Connections: i.e. passengers who travel from an UK airport via a foreign hub to reach an ultimate foreign destination. Around one half of such traffic is from regional airports. But there is also a significant market from London hubs to continental hubs for onward destinations in Europe and beyond.

C. International-to–International (I-to-I) Connections: i.e. passengers who start at one overseas destination and use an UK hub to reach another overseas destination. This is the largest form of connecting traffic at Heathrow and Gatwick. I-to-I connecting taffic is fed by a wide multiplicity and **diversity of routes**. The required route diversity will only be found at a hub airport used by alliances, and the attractiveness of hubs to airline alliances supports route diversity. The 25 largest I-to-I routes for connecting traffic at Heathrow in 2000 are shown in Table 2 below, but there were altogether over 6,000 different inward and outward legs enabling I-to-I connections. Overall, there were 20mppa of I-to-I connecting passengers at UK airports in 2000, the last 'normal' year, or almost three times the number of domestic-international connecting passengers. In 2001, affected by the foot-and-mouth outbreak and September 11, the total fell to 17 mppa.

3.7 US-Europe routings account for around half of the total. Europe-Asia/Oceania connections account for 20 per cent of passengers with 13 per cent between North America and Asia /Oceania; 9 per cent of passengers are on intra European routes. Any impact of NFCs on this traffic is therefore limited (unless they expand beyond the short haul market) since short haul to short haul connecting traffic is only a small proportion of the total.

3.8 **Trans-Atlantic** demand is the vital component of I to I demand. The UK is the dominant European destination for American passengers and therefore has a head-start in both thickening trans-Atlantic frequencies and starting new US routes. Table 3 below shows that the UK accounts for 40 per cent of passengers travelling between the US and the EU, a market share which, according to the CAA, has remained broadly unchanged over the past decade. About 4.4 mppa of the UK total are I-to-I passengers, but the continental hubs, especially Amsterdam, also have I-to-I connecting passengers. The UK has a larger origin/destination catchment than any other country.

Table 2

Largest I-to-I Connecting routes at Heathrow, 2000

LHR	73,248	0I-I0	Madrid-Heathrow-Tokyo (Narita)
LHR	67,219	0I-I0	Paris (Charles De Gaulle)-Heathrow-Tokyo (Narita)
LHR	64,821	0I-I0	Oslo-Heathrow-Miami International
LHR	44,548	0I-I0	Miami International-Heathrow-Cape Town
`LHR	43,569	0I-I0	San Francisco-Heathrow-Dublin
LHR	42,314	0I-I0	Amsterdam-Heathrow-New York (Jf Kennedy)
LHR	39,345	0I-I0	Washington-Heathrow-Stockholm
LHR	38,634	0I-I0	New York (J F Kennedy)-Heathrow-Dublin
LHR	38,047	0I-I0	Tokyo (Narita)-Heathrow-Rome (Fiumicino)
LHR	37,927	0I-I0	Milan (Linate)-Heathrow-Tokyo (Narita)
LHR	36,242	0I-I0	Tokyo (Narita)-Heathrow-Athens
LHR	35,514	0I-I0	New York (J F Kennedy)-Heathrow-Rome (Fiumicino)
LHR	34,975	0I-I0	Los Angeles International-Heathrow-Warsaw
LHR	34,487	0I-I0	Dublin-Heathrow-San Francisco
LHR	33,077	II-I0	Singapore-Heathrow-Dublin
LHR	31,434	0I-I0	Dublin-Heathrow-Madrid
LHR	31,005	0I-I0	Boston-Heathrow-Rome (Fiumicino)
LHR	30,535	0I-I0	Rome (Fiumicino)-Heathrow-Osaka
LHR	30,445	0I-I0	Frankfurt International-Heathrow-Osaka
LHR	29,480	0I-I0	Stavanger-Heathrow-Rio De Janeiro (Galeao)
LHR	29,480	0I-I0	Karachi-Heathrow-Sao Paulo (Guarulhos)
LHR	29,480	0I-I0	Oslo-Heathrow-Sao Paulo (Guarulhos)
LHR	28,734	0I-I0	Amsterdam-Heathrow-Los Angeles International
LHR	28,669	0I-I0	Paris (Charles De Gaulle)-Heathrow-Osaka
LHR	28,589	0I-I0	Rome (Fiumicino)-Heathrow-Los Angeles International

Source: CAA data

Table 3

Europe-US Passengers

Passengers	*Year end December 2001*	*Year end June 2000*	*Average Annual Growth Rate*		
			90 to 00	*95 to 00*	*98 to 00*
Belgium	1,192,611	1,482,598	7%	17%	10%
France	6,003,242	5,549,814	5%	8%	7%
Germany	6,830,672	7,530,907	5%	5%	5%
Ireland	1,609,361	1,596,597	9%	10%	14%
Italy	2,494,874	2,660,571	6%	7%	9%
Netherlands	4,286,393	4,589,685	12%	10%	5%
Spain	1,662,059	1,807,421	6%	10%	13%
UK	16,805,037	18,281,498	7%	8%	6%

Source: US DOT T-100 Segment data

3.9 UK hubbing is predominantly long haul on at least one leg. Traditional carriers will be anticipating an eventual return of traffic on long haul routes and can be expected to defend vigorously their position on short haul routes feeding passengers to long haul networks.

3.10 The UK, with its thickness of point-to-point demand, would have a comparative advantage in I-to-I connecting traffic if UK airport capacity permits. Other things being equal, the airport with the largest existing catchment on an indirect routing will be the first to set up a successful direct route. The pattern of I-to-I traffic will change over time as other European hubs extend their services and frequencies; the same effect of rising demand over time will make more American destinations (perhaps ones such as Salt Lake City, Des Moines, San Jose, and Portland) commercially viable as direct routes. Currently, however, the number of US gateways available from the UK and elsewhere in Europe is limited by bilateral agreements, so that, for example, Atlanta cannot be served directly from Heathrow.

3.11 Over the next 30 years, in a liberalised environment, demand growth will mean many more direct routes between North America and Europe. The Brattle report assumed that liberalisation would lead to a substantial increase in capacity and frequencies on US-UK routes, despite congestion problems at Heathrow and Gatwick. US airlines will continue to regard London (particularly Heathrow) as a prime destination because of the size of its origin/ destination demand area, compared to the European competition, and its geographical position. So they will not miss out on London traffic, even when they are part of an alliance with a major Continental airline. Flying direct from a UK hub to new ultimate US destinations rather than servicing US airline hub airports may mean that competition with US hubs becomes as significant as competition with European hubs to UK airlines.

3.12 In the national forecasts, we predict I-to-I connecting passengers to grow at the same rate as foreign leisure traffic. But I-to-I connecting routes will change over time; there will be opportunities to grow new connecting markets as hubs with large origin/destination demand bring on new services. London has the potential to develop deeper services in the decades ahead to regions where it has strong historic links e.g. Southern Africa and to emerging markets in the former Soviet bloc and China.

Hubbing in Europe

3.13 Smaller European national flag carriers need to cut costs and capacity; such carriers are likely to give up their long haul pretensions and hence would provide a market opportunity for I-to-I connecting traffic through European hubs including Heathrow. More generally, as airlines rationalise or merge, it will be more efficient to close the weaker hub and concentrate on the stronger hubs. Secondary European hubs such as Brussels, Lisbon, Athens and Vienna may become ‘niche hubs’ only. Only one or two of the existing STAR hubs- Frankfurt, Copenhagen, Munich, Vienna and Warsaw – are likely to be ‘mega hubs’. So continued liberalisation, the ‘integration’ of alliances, and the greater use of large long haul aircraft could reinforce the pull of ‘mega hubs’.

Connecting Traffic and NFCs

3.14 *"Airline Business"*, September 2002, says that 30 per cent of Southwest's passengers transfer planes somewhere on their journey. In the UK, this sort of 'informal intralining' is beginning to develop in the NFC sector. This is not intralining provided by through ticketing but independently organised by passengers themselves. Stansted currently has more domestic connecting passengers than Manchester and as many I-to-I connecting passengers (mainly to and from Ireland).

3.15 Interestingly, both EasyJet and Ryanair have begun operating out of Gatwick, which saw the largest increase in passenger numbers on international NFC routes in 2002. With approximately 30 per cent of all passengers at UK airports changing planes somewhere en route it would appear that, whether or not by design, it is likely that informal transfer arrangements are going to become increasingly common with respect to NFC flights if they continue to develop their presence at 'hub' airports.

3.16 It is uncertain whether NFCs will be able to facilitate arrangements for connecting passengers and if so, on what terms. It is possible to envisage a range of scenarios :

- NFCs will simply see their role in delivering passengers from A to B as quickly and cheaply as possible and maintain their current arrangements. The current IATA practices, to which the full service carriers adhere, will act as a deterrent to any NFC 'add-ons';
- NFCs will see feasibility in the limited development of 'add-on' services, such as around through-ticketing and baggage transfer to further NFC flights;
- Some NFCs will get co-opted into a more mainstream hubbing role, operating connecting flights for full service carriers;

Distribution of Airport Capacity around the UK

3.17 Demand for air travel to specific overseas destinations is not spread evenly across the UK. The bars in the map below show overall air travel demand by region in 2000; this is the product of its population and its propensity to fly. Included with the map is a table showing propensity to fly by region, which is defined here as the number of passengers – both UK and foreign residents – on one-way trips per head of regional population. A hub is most likely to develop if there is strong origin/destination demand supporting it.

The Regions

3.18 Our air traffic modelling assumes that demand in the regions grows somewhat faster than in the South East, reflecting a degree of catching up. Although capital expenditure will be required in due course to fully utilise the capacity of existing runways in the regions, capacity in the South East is much more constrained. Additional runways in the Midlands and Scotland are indicated on a more extended timescale within the 30-year planning period. NFCs, like other airlines, will need to meet the incremental costs of the provision of any additional airport capacity which they will use. Locating additional airport capacity away from market demand will incur costs, including surface access costs, and projects are less likely to be commercially viable.

3.19 Our modelling sees growth in long haul services from UK regional airports as demand grows. Even one outward frequency a day to a hub in the US is viable on the basis of regional demand (although many passengers may comprise hubbing traffic at the overseas destination). A range of regional airports offer long haul services, including charter services. But there is a hierarchy of airports according to their catchment area and whether that catchment area is contested by airports with a wider range of services and frequencies. Most regional UK airports have a large number of very small markets which are unlikely ever to be served by anything other than connecting services through a major airport (for example, CAA surveys record passengers at Aberdeen airport using some 300 indirect routes). Many regional airports lack sufficient uncontested catchment for a very wide range of destinations.

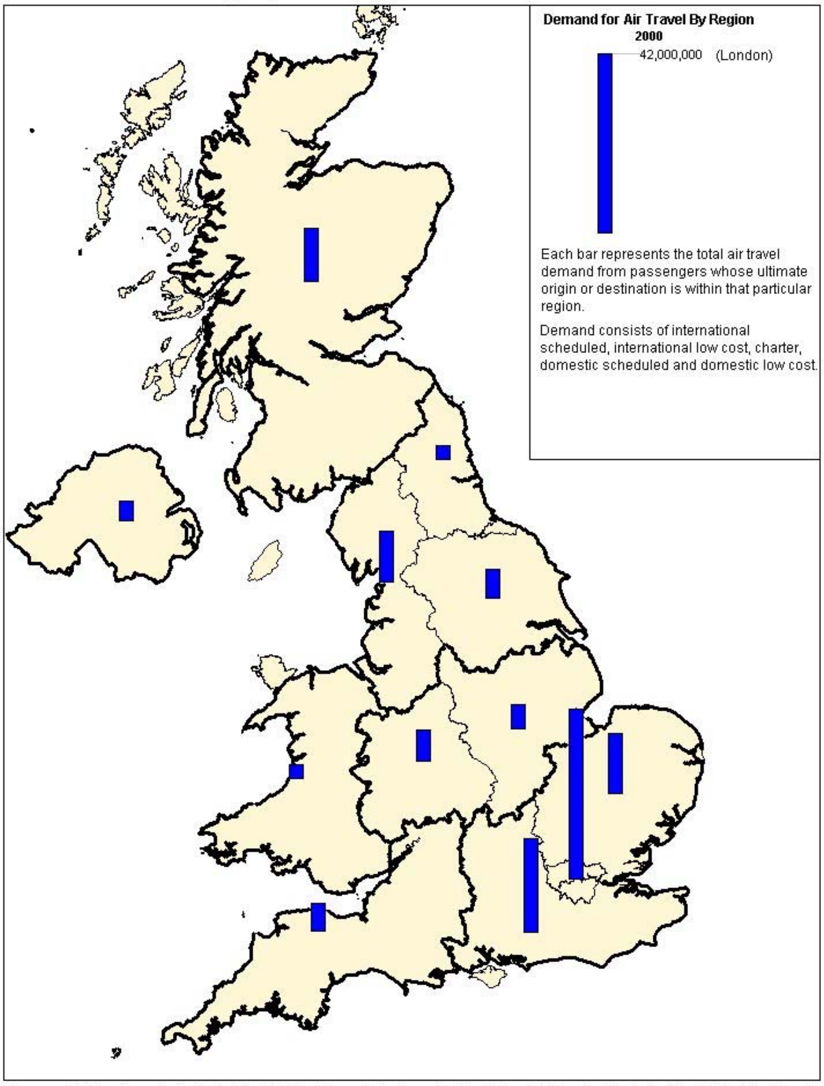
The South East

3.20 As well as asking consultees about the amount of additional capacity and its location, ***The Future Development of Air Transport in the United Kingdom: South East*** asks whether the South East should have one or more hub airports. The document also states that "*Heathrow's extensive route network is only viable because of the large number of international passengers transferring through the airport (at around 15mppa – almost a quarter of the total – the most at any airport in the world). As a result, UK travellers and businesses benefit from having direct flights to more destinations and higher frequencies.... Regional travellers benefit from having an increased range of destinations served one-stop via a hub*."

3.21 In considering alternative scenarios of the future, the degree to which an airport is constrained will affect the degree to which 'fare premia' are applied to balance demand with available slot capacity. To an extent, airlines will tend to use larger planes, but inevitably, pricing off demand from congested airports will mean that some passengers will be lost from UK airports completely, and others will divert to less preferred airports. I-to-I connecting passengers who hub through London airports will be particularly hard hit since they will face fare premia on both arrivals and departures. As the breadth and depth of the route network at a constrained Heathrow comes under greater pressure, connecting traffic from the UK – including from South East airports to continental hubs - would increase.

3.22 An increase in airport capacity reduces fare premia at all airports in a system, not just at the airport where capacity increase takes place. The reduction in fare premia across an airport system due to more capacity is larger the more that airport capacity is matched with market demand to use that airport. An extra bit of capacity which improves the fit between the geographical distribution of capacity and the geographical distribution of demand will give rise to greater benefits than an extra bit of capacity which worsens that fit.

Total Air Travel Demand By Region



The seven RCD regions (as indicated by thick black boundaries) are the South East, Wales, Scotland, the South West, Northern Ireland the Midlands, and the North of England.

, Region Name	Propensity to Fly
East Midlands	1.47
Eastern	2.93
London	5.95
North	1.39
North West	1.89
Scotland	3.49
South East	2.78
South West	1.45
Wales	1.15
West Midlands	1.51
Yorkshire & Humberside	1.44
Northern Ireland	2.92

3.23 Table 14.6 in ***The Future Development of Air Transport in the United Kingdom: South East*** shows that the greatest economic benefits accrue from a dispersed pattern of capacity around the South East - rather than a concentrated pattern around a single new 'megahub' (of course, 'economic benefits' are only one factor to be taken into account in locating airport developments). In our appraisal, benefits to I-to-I passengers are not scored, although the benefits of higher frequencies to other passengers are scored. I-to-I passengers do not bring the same wider economic benefits to the UK as foreign residents who travel to the UK on business or for leisure, and they do not bring reductions in fare premia which directly benefit passengers who are UK residents.

NFCs and the Distribution of Airport Capacity within the South East

3.24 The main effect of NFC growth at Luton and Stansted has been a reduction in the short haul share of Heathrow and Gatwick in the London airports' total. The catchment areas of these 'NFC airports' is wide, including many regional passengers who would switch to nearer airports if those airports can provide commercially viable routes. Presumably slot availability at Gatwick is the principal constraint on further NFC development there. But the rapid development of NFCs at Gatwick points to a strength in underlying catchment. If NFCs have access to slots at airports such as Gatwick, then it is likely that they will take them, despite the charges, because of the strong levels of origin/destination demand.

3.25 In a market-based system, passengers' generalised costs (surface access costs, and frequency as well as fare) help determine the best location of new airport capacity, although final decisions must be taken by airports on a commercial basis. Artificial limits on the ability of different types of airlines to take up slots are fundamentally uncompetitive and would work against the case for spreading runway capacity around the South East.

3.26 At first sight, a higher proportion of passengers carried by NFCs might seem to switch further capacity away from developments at hub airports. But the differences between NFCs and other airlines serving the short haul market may become more blurred over time. Recent experience shows the NFCs' interest in serving wide and deep catchments and their passengers' wish to use the NFC services as a network. NFCs cannot be barred from slots made available by additional runways. The indications are that they would take up such capacity if available; even Ryanair has been using Gatwick for some years. As they take up available slots, more passengers may choose to connect from one NFC flight to another. It is possible that the NFCs themselves will at some stage seek to encourage transfer traffic, applying cost reflective fares on each leg. Indeed, some might eventually become co-opted into a mainstream connecting role - a development which may have implications for the future of short haul routes operated by traditional carriers at hub airports.

Recapitulation

3.27 The development and success of hubs in the UK is a result of both strong catchment area and high connecting levels. The connection of routes through hubs with a substantial origin/destination catchment ensures that hubbing traffic can be supported by a strong base of point-to-point demand. At the same time, this point-to-point demand provides the fuel for the operation of new routes which can be supported through connecting traffic. With strong international-to-international connecting traffic on trans-Atlantic routes, a large domestic trans-Atlantic origin/destination catchment, and forecasts of increasing demand for the future, the UK is on a strong foothold for further hub development providing airport capacity permits.

3.28 Demand for air travel in the UK varies between regions depending on population and propensity to fly. In this respect, most UK airports have a large number of very small markets which are unlikely ever to be served other than through connecting services. The development of point-to-point services from regional airports is therefore likely to be limited unless the catchment for any specific destination is strong. This suggests that no matter what NFC developments occur, hubs will at least remain to serve as a focus for connecting services bundling up demand too small to be met by individual point-to-point operations. Hubs will therefore be serviced by NFCs as they play an increasingly important role for connecting traffic.

3.29 So, in order for the provision of any further capacity to be commercially viable in serving a wide range of destinations, it must be located around strong origin/destination demand. We suggest that this would be best distributed in a dispersed pattern around the South East.

Section 4: **Conclusions**

4.1 Around one year's UK overall air passenger growth has been lost as a result of the impact of 11 September 2001 and weak world economic activity. The 'gap' between outturn and forecast, however, has been substantially reduced in large part by growth in international and domestic NFC services. The extent to which NFCs will take market share (if at all) will depend on a range of factors, not least the competitive response of traditional airlines cutting their costs.

4.2 The international outlook remains uncertain, with foreign demand weaker than expected. The exact reasons for this are unclear, though certainly the lack of growth in the long haul market has played a key part. However, the degree to which our forecasts have assumed growth in foreign resident demand to exceed that of UK residents' demand makes clear the extent to which the market must now grow to meet that forecast.

4.3 Nevertheless our 2030 forecast of unconstrained demand still seems sensible, supported by the impact of competition and lower costs from the NFC sector both directly and in terms of its knock-on effect on traditional airlines, even with a 10 per cent environmental tax in place.

4.4 The differences between NFCs and other airlines serving the short haul market are likely to become more blurred over time. Already we are beginning to see a convergence of strategies born out of the recent intense short haul competition. NFCs are also to be seen increasingly utilising capacity at hub airports. For the moment, however, the impact of NFCs on the connecting traffic market is marginal as only a small fraction of international-to-international connecting passengers travel on intra-European routes.

4.5 In considering alternative scenarios of the future, it is clear that international-to-international connecting traffic will play a key role in determining the nature of future demand and the long-term viability of airline networks. Crucially, it is also this traffic that will be most adversely affected by airport constraints as 'fare premia' are applied on both arrivals and departures.

4.6 NFCs cannot be barred from any increase in slots made available by additional runways at constrained airports in the future. Should they take up such opportunities, they may become co-opted into a mainstream connecting role and may, to some extent, develop their own simplified (and perhaps informal) hubbing role and gradually diverge their pricing strategies to reflect this change.

4.7 The economic modelling based on our forecasts suggests substantial net economic benefits from the provision of additional airport capacity, which would allow more passengers to fly, provide them with a greater range of frequencies and routes, and reduce delays.

4.8 Whether a passenger prefers one airport to another depends on location and the frequency of services on offer. The South East has a rich catchment, particularly around the two largest airports. Extra airport capacity which improves the fit between the geographical distribution of capacity and the geographical distribution of demand will give rise to greater economic benefits than an extra bit of capacity which worsens that fit.

4.9 Calculations reported in The Future Development of Air Transport in the United Kingdom: South East show that the greatest economic benefits accrue from a dispersed pattern of capacity around the South East - rather than a concentrated pattern around a single new ‘megahub’, with a poorer catchment.

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ANNEX

NO FRILLS CARRIERS AND THE NATIONAL AIR TRAFFIC FORECASTS

The Approach in the National Forecasts

A1. The national forecasts were prepared on the basis that forecasting the growth of passengers on NFCs was not possible using econometric techniques because of the short run of data on this market. The methodology adopted for the national forecasts was to base estimates of growth around the observation that few NFC routes operate with fewer than 70K passengers per year.

Assessment of the Approach in the National Forecasts

A2. At end 2002, the UK had 197 international NFC routes and 53 domestic NFC routes, a vast increase over the situation in 1998. In hindsight, a number of criticisms may be made of the approach in the 2000 forecasts:

- The ***base year*** (1998) ***total of NFCs***, according to CAA data, was 7.7 mppa, not 6.9 mppa. No estimate of the generated portion of NFC traffic is possible from CAA surveys.

- The ***market for domestic NFC services*** was not explicitly considered at all, with no domestic scheduled routes as candidates for competition by NFCs. In practice over1998-2002, ***domestic NFC passengers*** reached a higher market share than did international NFCs in the international market and ***accounted for 40 per cent of the total NFC increase between 1998 and 2002***.

- Similarly, the scope for ***NFC services competing on existing charter routes*** was not examined because only major cities were projected to attract NFCs. In practice, NFCs to "sun holiday destinations" accounted for 40 per cent in the growth of international NFC traffic between 1998-2002.

- Hence, leisure charter and domestic routes together accounted for two thirds of the growth in NFC traffic between 1998 and 2002.

- "Generation" and "abstraction" are frequently used terms of art in the analysis of NFCs. NFC traffic is considered to be generated if it would not take place in the absence of the NFC service. Traffic not generated is abstracted. By examining the history of traffic to separate destinations, it is possible in theory to reach a view on how much traffic to date has been generated. But this is only appropriate if a scheduled or charter service was in existence when the NFC route was introduced. Many international NFC routes now in existence which started since 1998 were not competing on routes served by conventional airlines. On a route basis, generation in these cases is 100 per cent, although some passengers may have been abstracted from other routes. However, traffic may be not so much generated by NFCs, as brought forward. Some apparently generated traffic might have started up eventually through new conventional routes opening later on.

- No account was taken of the impact of airports which started material NFC operations since the national forecasts were published, including Gatwick and East Midlands.

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- No account was taken of the ‘stylized facts’ (*see below)* that high levels of generated traffic appear on "scheduled" routes which are growing fast, but there tends to be low generation on routes with low growth overall, and that an NFC market share of 50 per cent or seems to apply on mature NFC routes shared with traditional carriers.

A3. To attempt to build up an estimate at the national level from route-by- route specifics of net generated demand due to NFCs and the competitive response – including lower fares – from conventional carriers would be a massive exercise, and involve second - guessing the industry.

INTERNATIONAL NFC SERVICES

A4. The split of 12.2m international NFC passengers observed in CAA 1999-2001 surveys is: 56 per cent UK Leisure; 25 per cent Foreign Leisure; 14 per cent UK Business; and 6 per cent Foreign Business. So business passengers, on this basis, are only 20 per cent of the total. CAA data shows that NFC passengers have higher incomes than charter passengers and are almost as high on average as scheduled passengers. .

A5. The proportion of the business market captured by NFCs has been rising, but the share of business passengers on international NFCs could remain less than for leisure passengers. A business person travelling at short notice will be concerned less with the fare than with the availability of flights, and be prepared to pay a " high " fare whether he chooses a conventional or NFC carrier. Leisure passengers are more likely to take advantage of cheap tickets offered well in advance by NFCs (and increasingly by conventional carriers).

A6. In the International NFC market, the regions were more prominent in 1997-1998 when Ryanair routes to Dublin dominated the then much smaller international NFC market. The peak South East share in 2000 reflects the start of Buzz services at Stansted including the re-classification of some existing KLM UK Ltd routes. The increasing share of regional NFCs in 2001 is significant in that it includes new routes from Bristol, Edinburgh and Glasgow. There were more new International NFC passengers at Gatwick than at East Midlands in 2002. Table A1 below shows the growth of International NFCs on an airport-by-airport basis.

TABLE A1

		1998	1999	2000	2001	2002
461	Aberdeen	0	0	0	0	54,552
462	Belfast International	0	0	0	111,959	167,883
463	Belfast City	0	0	0	0	0
464	Birmingham	341,241	288,496	260,223	240,798	287,191
465	Bournemouth	80,797	71,243	83,568	87,645	178,936
466	Bristol	127,641	150,994	170,733	432,194	798,217
467	Cardiff Wales	62,384	61,334	66,238	69,181	88,072
468	East Midlands	0	0	138	1,415	791,485
469	Edinburgh	0	0	0	327,635	524,430
470	Exeter	0	0	334	120	0
471	Gatwick	300,583	322,928	386,434	657,161	1,906,788
472	Glasgow	0	0	151	102,542	205,790
473	Heathrow	0	0	0	0	0
474	Humberside	0	0	0	0	0
475	Inverness	0	0	0	0	0
476	Leeds Bradford	131,835	148,832	159,410	106,201	163,457
477	Liverpool	308,691	645,190	1,055,684	1,329,616	1,669,483
478	London City	0	0	0	0	0
479	Luton	1,554,332	2,135,850	2,639,566	2,895,731	3,139,525
480	Manchester	344,713	202,176	291,539	327,183	343,471
481	Newcastle	0	0	374	0	136
482	Newquay	0	0	0	0	0
483	Norwich	0	0	0	0	0
484	Plymouth	0	0	0	0	0
485	Southampton	0	0	0	0	0
486	Stansted	2,134,162	4,281,783	6,903,033	8,558,094	11,395,025
487	Teesside	62,713	62,208	65,009	68,196	86,551
491	Sheffield City	0	0	0	0	0
492	Prestwick	216,718	278,554	362,942	453,628	621,352
599	Non-SPASM UK	0	12,638	550	649	0
		5,665,810	8,662,227	12,445,926	15,769,948	22,422,344

A7. Table A2 below uses a colour scheme to illustrate the relationship of growth to the national forecasts:

- Green: Actual growth > 5 percentage points above forecast
- Yellow : Actual growth within ± 5 percentage points of forecast
- Red: Actual growth > 5 percentage points below forecast.

where ‘forecast’ is the application of the national forecasts for 1998-2002 taking account of the purpose split (UK Business; UK Leisure; Foreign Business; Foreign Leisure) to each destination.

A8. This table therefore provides a source for classifying short haul destinations with NFC traffic as to whether growth was occurring:

- Group 1: faster than the national forecast with an NFC presence ;
- Group 2: growing as forecast but with significant growth of NFC traffic; and
- Group 3: growing slower than forecast, despite the presence of NFC traffic.

A9. Only short haul destinations are considered since there are no long haul NFC destinations to date. The data sources available - route by route CAA statistical returns and passenger interview surveys - cannot reliably determine the split between generated and abstracted traffic on NFC routes. This would require a new question in CAA surveys on the reasons for travel and perceived alternative for the journey. However the threefold classification suggested above suggests an association with;

- Group 1: high levels of generated traffic with the route not yet mature;
- Group 2: generation, but abstraction of scheduled services is more significant; and
- Group 3: generation is lower and there is more evidence of market maturity.

(a) Destinations where growth is faster than the national forecast and which have an NFC presence : The following SPASM destination zones (in **GREEN** in TABLE 1 above) included NFC services and were out-growing the forecast for all types of traffic: **Italy (other); Iberian Peninsula (Other); Barcelona; Madrid; Geneva; Nice; Germany (Other); Central Europe; Belgium/Luxembourg; France (Other);** and **Munich**. This group accounted for 40mppa total traffic in 2001, albeit half from **Iberian Peninsular (Other)** alone. NFCs accounted for 8.5 mppa of the 40mppa total.

For destinations where there is a significant charter market presence, including the very sizeable ones from **Iberian Peninsular (Other), Italy (Other) and France (Other),** there seems to have been more significant substitution of charter services since both the absolute level of charter on these routes has been stagnant, and charter's market share has fallen.

Route growth over all market types in Group 1 might suggest relatively high levels of generated international NFC traffic in addition to more limited substitution of existing scheduled traffic. Alternatively, at least in part, these routes may just have been intrinsically ‘high growth’ over this period.

Table A2

	INTERNATIONAL NFCs		1998	1999	2000	2001	2002
501	Belgium / Luxembourg	S	0	0	2	204,092	451,271
504	Canary Islands	S	0	0	8,541	9,747	0
505	France	S	88,285	351,212	753,934	1,084,073	1,588,459
506	Germany	S	55,473	123,304	482,152	628,584	1,001,087
507	Greece	S	0	0	0	0	0
508	Greenland / Iceland	S	0	0	17,719	40,953	0
509	Italy	S	388,052	1,106,221	1,706,427	2,066,747	2,793,223
510	Netherlands	S	0	0	0	0	75,768
511	Republic of Ireland	S	478,851	499,920	567,734	782,786	897,714
514	Iberian Peninsula	S	102,475	523,419	1,084,201	1,639,151	3,154,729
515	Other Med. States	S	0	0	0	0	0
516	Scandinavia / Baltics	S	351,907	426,095	750,325	1,030,568	1,254,183
517	Central Europe	S	0	20,960	121,432	307,434	675,394
518	East Europe	S	0	0	0	0	0
527	Channel Islands	S	0	0	0	0	0
528	Paris	S	0	0	160,755	177,998	509,077
529	Dublin	S	2,904,279	3,066,141	2,865,767	3,177,884	3,908,730
530	Amsterdam	S	265,626	361,867	632,782	1,277,739	1,825,517
531	Frankfurt	S	0	0	121,098	113,139	130,755
532	Brussels	S	0	0	0	0	5,561
533	Zurich	S	19,086	113,007	257,741	259,356	393,165
534	Dusseldorf	S	0	0	110,429	106,224	137,604
535	Copenhagen	S	72,013	180,051	230,924	135,025	152,490
536	Madrid	S	67,464	236,271	415,038	297,979	315,604
537	Munich	S	84,438	239,580	70,195	133,464	186,457
538	Rome	S	0	21,684	0	0	0
539	Milan	S	0	0	18,197	80,896	85,461
540	Stockholm	S	0	0	0	0	0
541	Vienna	S	0	0	0	0	0
542	Oslo	S	0	0	0	0	0
543	Barcelona	S	247,835	463,435	624,526	714,525	1,083,321
544	Athens	S	70,947	169,362	178,148	180,141	224,430
545	Hamburg	S	0	0	61,895	0	0
546	Lisbon	S	47,579	110,310	123,363	31,361	145
547	Geneva	S	84,528	228,043	604,607	635,138	734,703
548	Nice	S	336,973	408,707	477,994	654,944	910,312
	Total		5,665,810	8,649,589	12,445,926	15,769,948	22,495,162
	Short		5,665,810	8,649,589	12,445,926	15,769,948	22,495,162

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(b) Destinations growing close to forecast with NFC Routes: This group of routes – including **Amsterdam, Frankfurt, Ireland (Other), and Scandinavia/Baltics** - in YELLOW had a significantly lower proportion of UK leisure passengers and higher proportions of foreign passengers than the average for all international NFCs.

(c) Destinations growing less than forecast with NFC Routes: The following destinations (in BLUE in TABLE 2 above) have been growing less than forecast despite the presence of NFC services during the period: **Brussels**; **Zurich; Dusseldorf; Copenhagen; Milan; Athens; Hamburg; and Lisbon**. This group of routes has an even lower proportion of UK leisure passengers and a higher proportion of business passengers than the average for all international NFC routes. The BLUE destinations seem likely to have the least generated traffic.

A10. The analysis above is in terms of foreign destinations, not routes from individual UK airports**.** NFC growth may be higher as more UK airports offer routes to chosen destinations, remembering however that NFC passengers currently are willing to incur significant 'drive times' to reach an airport.

International NFC services from UK airports at end 2002 were:

Stansted*: Aarhus , Alicante, Ancona, Barcelona, Berlin, Biarritz, Bilbao, Bologna, Bordeaux, Brescia, Carcassonne, Charleroi, Connaught, Copenhagen, Cork, Dinard, Dublin, Dusseldorf, Esbjerg, Faro, Forli, Frankfurt, Geneva, Genoa, Goteborg, Hahn, Ibiza, Jerez, Kerry, La Rochelle, Lubeck, Lyon, Malaga, Malmo, Marseille, Munich, Murcia, Naples, Nice, Nimea, Palma, Paris (CDG), Perpignan, Pescara, Pisa, Poitiers, Prague, Rimini, Rome, Salzburg, Sandefjord, Shannon, St Etienne, Stockholm , Toulouse ,Trieste, Turin, Vasteras, and Venice (60).*

Luton*: Amsterdam, Athens, Barcelona, Geneva, Madrid, Nice, Palma, Paris(CDG), and Zurich (9).*

Gatwick*: Amsterdam, Barcelona, Dublin, Geneva, Malaga, Nice, and Palma (7).*

Liverpool*: Amsterdam, Barcelona, Dublin, Geneva, Madrid, Malaga, Nice, Palma and Paris(CDG) (9).*

Bristol*: Alicante, Barcelona, Dublin, Faro, Ibiza, Malaga, Nice, Palma, and Prague (9).*

East Midlands*: Alicante, Barcelona, Dublin, Faro, Ibiza, Malaga, Murcia, Nice, Palma, and Prague (10).*

Prestwick*: Beauvais, Charleroi, Dublin, Hahn (4)]*

At other airports, there were: ***Edinburgh****: Amsterdam,Dublin (2);* ***Manchester****: Dublin;* ***Birmingham****: Dublin;* ***Glasgow****: Amsterdam;* ***Manchester****: Dublin;* ***Bournemouth****: Dublin, Hahn;* ***Leeds Bradford****: Dublin;* ***Cardiff Wales****: Dublin;and* ***Teesside****: Dublin.*

A11. International NFCs increased by almost 17 mppa between 1998 and 2002. Of this increase, Iberian Peninsula, Italy (Other), and France (Other) alone accounted for 7mppa. These are predominantly holiday destinations. The increase between 1998 and 2002 on mainly 'scheduled-like' international NFC routes therefore was 10mppa. 'Scheduled-like' international NFC routes accounted for 15mppa of the international NFC total of 22.5 mppa in 2002. International short haul scheduled traffic carried by traditional carriers was stagnant over the five years to 2002, by which time it had dropped back to 50 mppa.

DOMESTIC NFC SERVICES

A12. Recent CAA surveys report that 52 per cent of passengers on domestic NFCs are UK Leisure (42 per cent UK Business; 5 per cent are Foreign Leisure and 1 per cent Foreign Business). This compares with a c.70 per cent 'business' share for network airlines on domestic routes.

A13. **Total** domestic traffic increased by 22 per cent between 1998 and 2002 from 33.7mppa to 42.1 mppa. The annual increase averaged 5.1 per cent., compared with the year 2000 national forecast growth of 3.5 per cent per annum**.** Table A3 below shows the growth in Domestic NFC passengers by airport.

A14. 'Regional' NFC routes are assumed to be any route which does not use Gatwick, Luton or Stansted. Prior to 2001, only the Liverpool – Belfast International route (commenced July 1999) was 'regional' in this sense. In 2001, five of the seven new routes (Belfast International to Glasgow, Edinburgh and Bristol and Edinburgh and Glasgow to Bristol) were regional. The most dramatic growth has been in NFC traffic to Belfast, where 43 per cent of domestic traffic at both Belfast airports in 2002 used NFCs. NFCs in 2002 carried around 40 per cent of domestic traffic at Edinburgh and Glasgow. If Prestwick is included with Glasgow, NFCs had 46 per cent of the London-Glasgow market by the end of 2001. However, the 4.5m passengers carried by NFCs out of London in 2002 were only 30 per cent of domestic traffic at London airports; Gatwick has only one domestic NFC route, to Edinburgh.

A15. Only the Liverpool-Luton route has ceased to exist since 1998. Domestic NFC routes displaying strong signs of maturity or nearing maturity include Luton -Inverness and Luton -Aberdeen. There still seems organic growth on: London-Edinburgh; London-Glasgow (including Prestwick), and Stansted-Londonderry. Further strong growth may occur on London-Newcastle and possibly London-Belfast routes. Inter regional routes (Bristol-Scotland, Bristol-Belfast and Scotland-Belfast and Scotland-East Midlands) are all young and growing rapidly. However, with the exception of Scotland-Belfast, the numbers carried are relatively small.

Table A 3

DOMESTIC NFCs	1998	1999	2000	2001	2002
Aberdeen	68,794	143,540	160,937	160,287	165,557
Belfast International	47,484	372,584	615,234	1,418,208	2,344,250
Belfast City	0	0	545	0	0
Birmingham	0	0	495	1,289	9,717
Bournemouth	0	0	0	0	131
Bristol	0	0	0	118,383	583,394
Cardiff Wales	0	0	0	71	24,492
East Midlands	0	0	0	1,365	191,977
Edinburgh	344,651	706,626	816,588	1,173,969	2,043,315
Exeter	0	0	0	0	468
Gatwick	0	0	74	230	335,615
Glasgow	259,946	325,684	474,915	966,928	1,537,794
Heathrow	0	0	0	0	0
Humberside	0	0	0	0	0
Inverness	80,770	92,446	107,334	110,184	112,054
Leeds Bradford	0	0	69	99	0
Liverpool	0	159,864	460,100	491,847	543,843
London City	0	0	0	0	0
Luton	758,662	1,237,929	1,618,799	1,667,728	1,697,761
Manchester	0	0	511	219	246
Newcastle	0	0	0	24,440	216,842
Newquay	0	0	0	0	76,206
Norwich	0	0	0	0	0
Plymouth	0	0	0	0	0
Southampton	0	0	0	0	0
Stansted	264,899	679,108	1,055,331	1,809,960	2,413,605
Teesside	0	0	13	0	0
Sheffield City	0	0	0	0	0
Prestwick	221,916	276,392	443,895	629,474	706,007
Non-SPASM UK	0	0	142	125	0
	2,047,122	3,994,173	5,754,982	8,574,806	13,003,274