

Department for Transport

DRAFT AVIATION POLICY FRAMEWORK

SUBMISSION FROM THE RICHMOND HEATHROW CAMPAIGN

October 2012

This submission is made in response to the Department for Transport's consultation document Draft Aviation Policy Framework (July 2012).

The Richmond Heathrow Campaign represents three amenity groups in the London Borough of Richmond upon Thames: The Richmond Society, The Friends of Richmond Green and The Kew Society, which together have over 2,000 members.

Our members are affected adversely by noise from Heathrow's flight paths, particularly in the night period. We nevertheless recognise the importance of air transport and we seek to make a positive contribution to the issues set out in the consultation document.

We would be happy to provide additional information. We are content for our response to be published.

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Chapter 2: The Benefits of Aviation

Do you agree with our analysis of the meaning and value of connectivity as set out in Chapter 2?

1.1 We agree that the growth in connectivity has been important for the UK economy, and that maintaining and extending connectivity will continue to be important in the future. We note the assessment in the consultation document that the UK is currently one of the best connected countries, with London well served by its five main airports (Heathrow, Gatwick, Stansted, Luton and London City) and with direct connectivity increasing at airports in the regions outside South East England.

1.2 We consider that there are three components to the connectivity profile of an airport:

- destination connectivity: the identity of the individual destinations and the total number of destinations that are served or could be served;
- frequency connectivity: the frequency with which individual destinations are served or could be served over a given period (e.g. per week, per day, per morning, per afternoon, per evening, per night);
- direct connectivity: the extent to which individual destinations are served or could be served directly (i.e. point to point) or indirectly (i.e. by transferring or transiting at an intermediary airport).

1.3 We consider that the analysis in Chapter 2 should have gone somewhat deeper in: (a) identifying what drives the demand for connectivity; and in (b) assessing whether the connectivity model that has developed over the last fifty years will meet the demand for connectivity over the next fifty years, particularly given the expected large increase in passenger numbers. We consider that the Aviation Commission should go back to first principles as part of its consideration of whether additional capacity and how much may be needed in order to meet the UK's future connectivity needs.

1.4 For example, the consultation document refers to the need to maintain hub capacity without offering a clear definition of what hub capacity is; or explaining its role in meeting future connectivity needs. The hub model for airports assumes that the best connectivity profiles occur at large airports such as Heathrow that have the capacity to handle a large number transfer passengers from other airports in addition to "local" terminating passengers. The transfers are said to enable a wider range of destinations to be served with a greater frequency of service than would be economically viable if the hub handled only terminating passengers. But the hub model and what happens at Heathrow have diverged over the last twenty years. Given the centrality of the hub model and Heathrow in the debate about future aviation strategy, the Heathrow experience merits close analysis.

1.5 Transfer passengers at Heathrow have increased since 1991 in absolute numbers and at a faster rate than the increase in the number of terminating passengers¹, with a parallel increase in the number of air transport movements from 362 000 in 1991 to 476 000 in 2011. According to the hub airport model, Heathrow should have been serving more destinations in 2011 than it did in 1990. But in fact Heathrow served fewer destinations in 2011 than it did in 1990². As a result Heathrow now serves fewer destinations than Gatwick³ even though the total number of passengers at Gatwick is half the total number at

¹ See Annex 1 to this response for fuller details on the numbers of terminating and transferring passengers at Heathrow since 1972. The breakdown between terminating and transferring passenger numbers has been published annually only since 1996. 1991 has been taken as the base year for this exercise partly to review the trend over twenty years and partly because 1991 is the earliest year in which the proportion of transfer passengers began to increase relative to terminating passengers compared to the years prior to 1991 (i.e. 1972, 1978, 1984, 1987) for which data have been published.

² See Annex 2 to this response for fuller details on the number of destinations served by Heathrow in 1990, 2001 and 2011. 1990 has been taken as the base year for this exercise because air travel was depressed in 1991 and it is assumed that 1990 would have been more representative of Heathrow's destinations approximately twenty years ago. A comparison has not been made between 1990 and 2010 because air travel in 2010 was still in recession in line with the global economic downturn.

³ According to the respective websites for Heathrow and Gatwick.

Heathrow, with far fewer transfer passengers at Gatwick than at Heathrow in absolute numbers and in proportion to terminating passengers.

1.6 The trend towards fewer destinations at Heathrow cannot be explained by a lack of capacity. As is argued in fuller detail in response to the final question in Chapter 2, Heathrow has now reached virtually its runway capacity in unbroken segregated mode, but there is still considerable unused actual terminal capacity and potential passenger capacity per aircraft movement. Moreover, the largest decrease in the number of destinations served by Heathrow occurred between 1990 and 2001¹, during which period there was considerable spare runway capacity².

1.7 A closer examination of the changed destination profile at Heathrow since 1990 indicates that the lost destinations were in declining order: (i) within the UK; (ii) to Western and Central Europe; and (iii) to the Near East and Africa. The great majority of lost destinations were on routes carrying less than 2 000 passengers per year. Some of these low demand destinations and the majority of lost destinations carrying larger passenger numbers (e.g. Antwerp, Corfu) are now served by one or more of London's other main airports (Gatwick, Stansted, Luton, London City), so the loss of destinations at Heathrow has not meant a loss of destinations for London.

1.8 Over the same period new destinations have been opened from Heathrow to Eastern Europe, the Far East and the Americas. But the largest impact of the net loss of destination connectivity - coinciding with growth in aircraft movements and total passenger numbers (and disproportionate growth in transfers) - appears to have been an increase in the frequency connectivity to destinations for which there was already a demand in 1990. Thus many popular destinations now have multiple daily services across the day, evening and night periods on long haul (e.g. New York) and short haul (e.g. Manchester). But in our view the Aviation Commission should consider whether the number of daily movements to popular destinations could be reduced by carrying more passengers per movement without any great inconvenience to passengers, thereby freeing up slots for other destinations.

Do you support the proposal to extend the UK's fifth freedom policy to Gatwick, Stansted and Luton? Please provide reasons if possible.

1.9 Yes. As a general principle we support the liberalisation of rules limiting the access of airlines to airports because we consider that such restrictions have distorted the market and have over-concentrated air traffic at specific airports such as Heathrow at the expense of other airports.

1.10 We prefer the airlines to provide more direct services and to phase out services that inflate disproportionately the number of passengers who are required to transfer or transit (because we think that passengers would prefer direct services instead of transfers and transits). But we recognise that some level of transfers and transits are inevitable for less popular destinations. To the extent that fifth freedoms facilitate transfers and transits, we would prefer the airlines to have the option to use fifth freedoms at as many airports as possible in order to avoid or remove market distortions.

Are there any other conditions that ought to be applied to any extension of the UK's fifth freedom policy to Gatwick, Stansted and Luton?

1.11 The number of conditions should be kept to a minimum and the same conditions should apply at all fifth freedoms airports in order to avoid distortions in the market.

Do you agree that the Government should offer bilateral partners unilateral open access to UK airports outside South East England on a case-by-case basis?

1.12 Yes. As a general principle we support the liberalisation of rules limiting the access of airlines to airports in any region of the United Kingdom because we consider that such restrictions have distorted the market and have over-concentrated air traffic at airports in South East England at the expense of airports

¹ See Annex 2 to this response.

² The number of air transport movements increased from 362 000 in 1991 to 458 000 in 2001.

in other regions. A study should be undertaken of the number of additional destinations that could be served in other regions. Presumably the great majority of these new destinations will be in countries within the European Union, countries in which aviation state aid should not exist and where therefore there should be a strong presumption in favour of unilateral open access.

Do you have any other comments on the approach and evidence set out in Chapter 2?

1.13 We would like to comment on making best use of existing capacity at Heathrow and surface access to Heathrow.

Making best use of existing capacity at Heathrow

1.14 We agree that a key priority for the short term should be to make better use of existing runways at all UK airports, subject to the caveat that better use options do not extend to removing existing restrictions on airports (e.g. the operation of unbroken segregated mode and runway alternation at Heathrow, together with the annual limit of 480 000 on the permitted number of air transport movements).

1.15 Thus, although we support the short term measures set out in the consultation document, we have increasing concerns that the resilience trials at Heathrow may be used to undermine the case for continued unbroken segregated mode and runway alternation; and that the monitoring of the trials may be understating the extent of the adverse noise impact.

1.16 We are surprised that the measures for making better use of existing capacity listed in the consultation document did not include resolution of the inconsistency between allegations reported in the media that Heathrow with 69 million passengers in 2011 was operating at capacity and the Terminal Five Public Inquiry findings that Heathrow with Terminal Five would be able to handle 90 million passengers per year in 480 000 air transport movements (with unbroken segregated mixed mode and runway alternation)¹.

1.17 The number of ATMs at Heathrow in 2011 (476 000) virtually reached the forecast maximum number of ATMs per year with unbroken segregated mode, while the number of passengers (69 million) was 21 million short of the forecast maximum number of passengers per year. In view of the fact that Heathrow is operating within its forecast ATM and passenger capacity, it must follow that the apparent lack of spare runway capacity with which to manage promptly periodic disruptions to flight schedules (particularly for arriving aircraft) and to serve new destinations is not due to the number of ATMs or passengers exceeding their forecast capacity.

1.18 In our view both problems have arisen from a failure to utilise the capacity efficiently, with the disruption problem due to over-scheduling the number of ATMs in particular hours of the day; and the new destinations problem - in so far as it can be said to exist in reality at present² - due the shortfall between the number of passengers per ATM anticipated at the Terminal Five Public Inquiry and the actual number of passengers per ATM.

1.19 We consider that the disruption problem could be resolved by giving the airlines incentives (e.g. differential airport charges) to spread their slots more evenly across the day in order to avoid spikes in the number of slots in particular hours that are vulnerable to disruption. The simultaneous use of both runways for arrivals should be reserved only for the most extreme cases of disruption and not for routine disruption. We set out in Annex 3 to this response more details of the scheduled movements per hour at Heathrow.

¹ See the report from the Terminal Five Public Inquiry to the Secretary of State for Transport.

² Business leaders have complained in the media in recent months that direct flights are not available from Heathrow to certain destinations in the Far East. But BA has acquired additional slots at Heathrow from BMI and has indicated that a proportion of these slots will be re-directed from existing short haul destinations to new long haul destinations as they become commercially viable. (The displaced passengers on the short haul routes can presumably be accommodated in the flights that BA already undertakes to those destinations). A more immediate route development has been the announcement by Virgin Atlantic that it will run six additional flights per day between Heathrow and Manchester from next spring, presumably a reflection that at present there is more actual demand on that route than on the Far Eastern routes to which the business leaders drew attention.

1.20 As regards new destinations and passenger numbers, we estimate that Heathrow's 90 million passenger capacity would not be fully utilised until 2027 if the airlines increase the number of passengers per ATM to the level envisaged at the Terminal Five Public Inquiry and assuming a similar rate of increase to the annual average since 1991¹. We set out our analysis in more detail in Annex 4 to this response.

1.21 Increased passenger numbers per ATM in the short term could be delivered if the airlines aimed at a higher ratio of passenger numbers to passenger capacity in their existing fleet. The number of seats per ATM at Heathrow averaged at about 200 over each of the last five years, with the number of passengers per ATM in 2011 averaging at 146, a seat capacity use of about 73 per cent². There is therefore scope to increase the average number of passengers per ATM, particularly on the most popular routes that are served by many flights per day³.

1.22 Increased passenger numbers per ATM in the medium term could be delivered if the airlines replace much of their existing fleet at Heathrow with aircraft with larger passenger capacities. This would not mean switching every aircraft to Jumbo size; but it would mean more aircraft with seats for more than 200 passengers and fewer aircraft with seats for less than 200 passengers⁴. This could be done incrementally in line with routine fleet replacement, with the option of code-sharing between airlines to further defray the costs of switching to larger capacity aircraft.

1.23 More passengers per ATM would enable the same number of passengers to be carried in fewer daily movements, particularly on the most popular routes, which in turn would free up slots for new destinations.

1.24 It is not clear why market forces and the rules of supply and demand - congestion pressures at Heathrow and competition between the airlines - have not resulted in larger passenger numbers per ATM. But carrying more passengers per ATM would create unused slots that would have to be surrendered without compensation under the European Union "use it or lose it" rule. The airlines may wish to retain the slots that they currently hold in order to open new routes in the future; or in order to keep competing airlines out; or in order to sell slots at their most lucrative value⁵.

1.25 We consider that utilising Heathrow's spare passenger capacity could also deliver improvements to the local noise environment. In particular:

- sufficient spare resilience capacity could be created so that the simultaneous use of both runways would occur only in extremis and not as a matter of course;
- unbroken segregated mode and runway alternation could be maintained during the day and evening periods;
- scheduled movements 2300 - 0600 could be phased out within a two-year period, with scheduled movements 2300 - 2330 and 0600 - 0700 phased out subsequently over a longer period.

Surface access to Heathrow

1.26 Heathrow's spare passenger capacity would meet short and longer term resilience and passenger capacity needs, while delivering improvements to the local noise environment. But there is a potential downside from any increase in passenger numbers. Surface access to Heathrow by terminating passengers places significant demands on the local road network, with direct adverse consequences for local air quality.

¹ Assuming also the continued disproportionate growth in transfer passengers at Heathrow and no loss of terminating passengers from Heathrow to other London airports or to airports in other UK regions. We consider transfer passengers in response to Questions (c) and (d) below.

² Data from the Civil Aviation Authority and Airports Co-ordination Limited websites.

³ Our analysis - incomplete at the time of preparing this response - suggests that the ratio of passenger numbers to passenger capacity is lower on the most popular routes from Heathrow than the aggregated ratio on all routes from Heathrow.

⁴ At present about 65 per cent of ATMs at Heathrow have a passenger capacity of less than 200 seats (data from Airports Co-ordination Limited website).

⁵ The sale value would presumably be higher from a gradual release of spare slots rather than a sudden flooding of the market with all the available spare slots.

Any increase in road traffic demand from additional terminating passengers would exacerbate both problems.

1.27 Heathrow has spare capacity to handle an additional 21 million passengers per year (see paragraph 1.17 above). Assuming a continuation of the ratio of two terminating passengers to one transferring passenger (a ratio that has been roughly constant at Heathrow since the mid 1990s) then there would be an additional 14 million terminating passengers per year at Heathrow by the time that its passenger capacity is fully utilised. How would those additional 14 million passengers get surface access to Heathrow?

1.28 The table in Annex 5 to this response sets out the different modes of transport that have been used by terminating passengers for surface access to Heathrow between 1972 and 2010. In 2010 (the most recent year for which the detailed data was available at the time of drafting this response) 30.8 million passengers accessed by road (private car, hire car, taxi/minicab, bus/coach) and 10.8 million passengers accessed by rail (including underground), a ratio of three road accesses to one rail access that has been roughly constant at Heathrow since the opening of the Paddington connection in 2000 (prior to 2000 the ratio was 4:1). Assuming the future continuation of the 3:1 ratio, 10.5 million of the additional terminating passengers would use road access, an increase in the total number of road access to 41.3 million per year. Increased passenger numbers would in turn increase the quantity of consumer goods and other supplies that are delivered to Heathrow primarily by road.

1.29 The road network around Heathrow already experiences significant levels of road traffic congestion, in part because of the high volume of road traffic to and from Heathrow. In many of these areas the air quality is already poor, with road traffic emissions identified as the main pollutant source. Reducing these related adverse impacts is proving difficult even with the present level of Heathrow access road traffic. If increased terminating passenger numbers stimulate increased Heathrow access road traffic there will be a corresponding increase in the magnitude of the adverse impacts on local road traffic congestion and air quality.

Chapter 3: Climate Change Impacts

Do you have any further ideas on how the Government could incentivise the aviation and aerospace sectors to improve the performance of aircraft with the aim of reducing emissions?

2.1 National Governments are presumably able to take unilateral action against their own airlines but not against overseas airlines. But unilateral action would harm the competitiveness of national airlines. It is therefore not clear whether national Governments have any real freedom of action on this issue. But see our response to the next question.

Do you have any other comments on the approach and evidence set out in Chapter 3?

2.2 The implications of a significant increase in the number of air passengers in future are that there would be corresponding increases in the number of aircraft movements, in the consumption of fuel, and in the emissions of CO₂. Studies should be undertaken of the extent to which these corresponding increases could be reduced by the more widespread use than is currently the case of aircraft with larger passenger capacities.

Chapter 4: Noise and Other Local Environmental Impacts

Do you agree that the Government should continue to designate the three largest London airports for noise management purposes? If not, please provide reasons.

3.1 We agree.

Do you agree with the Government's overall objective on aviation noise?

3.2 No, a clearer commitment is needed to reducing the number of people who are adversely affected by aviation noise, particularly at night.

Do you agree that the Government should retain 57 dBA Laeq 16-hour contour as the average level of daytime aircraft noise marking the approximate onset of significant community annoyance?

3.3 There may be a case for continuing to use the 57 dBA Laeq 16-hour contour for monitoring the long term trend in the size of the contour since it was first introduced twenty years ago (see Annex 6 to this response). But there is no basis for continuing to claim that the contour marks the onset of significant community annoyance.

Do you think that the Government should map noise exposure around the noise designated airports to a lower level than 57 dBA? If so, which level would be appropriate?

3.4 Major airports must map noise exposure by reference to *Lden* (55 dBA for 12-hour day and 4-hour evening, 50 dBA for 8-hour night) as the starting point for their noise management plans. But *Lden* has to be measured only every five years. There is the risk that the measured year may be significantly untypical of the trend. In our view *Lden* should be measured annually. This would still permit 57 dBA to be measured as providing the longer term yardstick, at least until *Lden* has been measured for a continuous number of years.

3.5 We consider that community annoyance begins below 55 *Lden* but we are not able to say at what value it does. Perhaps at the level at which aircraft noise becomes audible against the background noise levels. The benefit of periods of respite for continuous noise exposure (e.g. from runway alternation at Heathrow) is also likely to influence the onset of annoyance. But neither 57 dBA or *Lden* are able to measure the benefits of respite. A supplementary noise indicators is therefore needed that is not based on averaging peaks and troughs in noise levels.

Do you agree with the proposed principles to which the Government would have regard when setting a noise envelope at any new national hub airport or any other airport development which is a nationally significant infrastructure project?

3.6 We do not agree: historic precedents from daytime noise contour limits and night time noise quotas at Heathrow indicate that the “envelope” will be too large to provide any inducement on the airlines to change to less noisy aircraft.

Do you agree that noise should be given particular weight when balanced against other environmental factors affecting communities living near airports?

3.7 We agree.

What factors should the Government consider when deciding how to balance the benefits of respite with other environmental benefits?

3.8 We do not understand this question. It appears to undermine implication behind the previous question. If noise respite is needed it should be given. That does not mean that any other adverse consequences must be permitted: they must be addressed, but in a way that does not result in greater noise exposure.

Do you agree with the Government's proposals in paragraph 4.68 on noise limits, monitoring and penalties?

3.9 We agree.

In what circumstances would it be appropriate for the Government to direct noise designated airports to establish and maintain a penalty scheme?

3.10 Where breaches of the noise limits occur more regularly than the ratio 1:20 of all movements; or where breaches occur more regularly than 1:10 of all movements by one airline; with dispensations in both cases in the event of an emergency.

In what circumstances would it be appropriate for the Government to make an order requiring designated airports maintain and operate noise monitors and produce noise measurement reports?

3.11 All major airports that are required to undertake strategic noise maps and adopt a noise management plan should be required to maintain and operate noise monitors and produce noise measurement reports.

How could differential landing fees be better utilised to improve the noise environment around airports, particularly at night?

3.12 Landing fees should be linked to the noise class of the aircraft. The difference in fees should be used to make the noisiest classes subsidise the least noisy classes (i.e. higher fees for some aircraft should not be an additional revenue source for the airport operator). We consider that such an approach should be applied in the day and evening periods. But in the night period the only measure that will satisfy residents is a ban on movements.

Do you think airport compensation schemes are reasonable and proportionate?

3.13 No.

Do you agree with the approach to the management of noise from general aviation and helicopters, in particular to the use of section 5 powers?

3.14 We agree.

What other measures might be considered that would improve the management of noise from these sources?

3.15 Establish airport consultative committees and require the adoption of five-year noise management plans. In the case of helicopters, consider setting time limits within which the noisiest classes would no longer be permitted to operate.

Do you have any further ideas on how the Government could incentivise the aviation and aerospace sector to deliver quieter planes?

3.16 If the Government has the freedom to do so under international law, encourage airport operators to widen the difference in airport charges for different noise categories of aircraft (i.e. the noisiest to subsidise the less noisy, not simply a mechanism for the airport operator to make additional profit).

Do you believe that the regime for the regulation of other local environmental impacts at airports is effective?

3.17 Clearly not, in view of the surface access congestion and bad air quality in areas around Heathrow. We are not in a position to say why the regulation is not effective.

Do you think that noise regulation should be integrated into a broader regulatory framework which tackles the local environmental impacts from airports?

3.18 We agree that all the local impacts from airports need to be regulated and that there should a framework to ensure that regulations of the different impacts do not hinder or conflict with each other. We are not in a position to specify the most appropriate legal framework for achieving this objective.

Chapter 5: Working Together

Do you think that Airport Consultative Committees should play a stronger role and if so, how could this be achieved?

4.1 In our view the Heathrow Airport Consultative Committee serves as a useful forum for representatives from the aviation sector and the local communities to exchange information and views about the operations of the airport. Getting agreement between the two sides, particularly on contentious issues, is more problematic. It must therefore be doubtful whether the consultative committees would be able to play a stronger role.

Is there a case for changing the list of airports currently designated to provide consultative facilities?

4.2 In our view all airports should provide consultative facilities for those affected by their operations.

Do you agree that the Civil Aviation Authority should have a role in providing independent oversight of airports' noise management?

4.3 Not unless the Civil Aviation Authority's remit specifically provided for equal weight to be given to noise management as to the other factors involved in operating an airport. Moreover, although the CAA has long experience in assessing the noise from air traffic, it is not apparent that the CAA has any practical experience of managing air traffic noise.

Do you agree with the Government's overall objective on working together?

4.4 Yes, but consensus building requires concessions on both sides. Whereas we recognise that BAA has indicated a willingness to work in good faith with the local communities, the same cannot be said for the airlines that use Heathrow.

Is the high-level guidance provided in Annex E sufficient to allow airports to develop solutions with local partners?

4.5 We are not in a position to comment.

Do you agree that master plans should incorporate airport surface access strategies?

4.6 We consider that Heathrow does need a surface access strategy. It is not clear that the strategy would benefit from being incorporated into the master plan. A better framework might be a surface access action plan in parallel with Heathrow's action plans for noise management and air quality.

Do you agree that, where appropriate, the periods covered by master plans and noise action plans should be aligned?

4.7 We are not in a position to comment, but if the proposal is pursued it should not result in any delay to the impending five-year review of Heathrow's first noise action plan.

Heathrow: Terminating and transfer passengers 1972 - 2011

Years	Terminating passengers		Transfer passengers		Total passengers	
	(millions)	%	(millions)	%	(millions)	%
1972	14.3	76.4	4.4	23.6	18.7	100.0
1978	20.8	77.2	6.1	22.9	26.9	
1984	22.6	76.6	6.9	23.4	29.5	
1987	27.0	76.9	8.1	23.1	35.1	
1991	29.8	73.8	10.6	26.2	40.4	
1996	37.3	66.8	18.5	33.2	55.8	100.0
1997	38.6	66.6	19.1	33.0	57.9	
1998	40.6	67.4	19.6	32.5	60.3	
1999	?	?	?	?	?	
2000	44.7	70.2	19.0	29.8	63.7	
2001	41.1	68.6	18.8	31.4	59.9	100.0
2002	39.6	64.0	22.3	36.0	61.9	
2003	40.1	63.7	22.8	36.3	62.9	
2004	43.6	65.2	23.3	34.8	66.9	
2005	43.6	65.3	23.2	34.7	66.8	
2006	44.2	65.9	22.9	34.1	67.1	100.0
2007	44.0	65.8	22.9	34.2	66.9	
2008	43.2	64.6	23.6	35.3	66.8	
2009	40.9	62.1	24.9	37.9	65.8	
2010	42.2	64.2	23.5	35.8	65.7	
2011	45.9	66.4	23.3	33.6	69.2	100.0

Source: Civil Aviation Authority *Passenger Surveys Reports*¹. Where the totals do not sum this is due to rounding. At the time of preparing the table the Report for 1999 had not been consulted.

Note: The Reports for the years 1972 to 1998 give the number of terminating and transfer passengers only as percentages of the annual total number of passengers. The numbers in the table for the years to 1998 have therefore been calculated from the percentages and the total number.

Comment: The table shows consistent growth in the total number of passengers at Heathrow between 1972 and 2004, with stabilisation between 2004 and 2010 and renewed growth in 2011. Within this overall growth there were increases in the absolute number of terminating and transferring passengers throughout the period. But since 1991 the rate of growth has been faster among transfers, who have accounted for one or more passengers in three since 2002 compared with less than one passenger in four prior to 1991. The number of air transport movements (ATMs) at Heathrow increased from 362 000 in 1991 to 476 000 in 2011.

The large number of transfer passengers increase the present levels of congestion at Heathrow. It is argued that transfers enable the airlines at Heathrow to serve a wider range of destinations than would be economically viable with only terminating passengers. But the period of exponential growth in transfers since 1991 coincided with a fall - rather than an implied increase - in the number of destinations served by Heathrow (see separate table for details).

¹ The surveys have been undertaken annually at Heathrow since 1996, and at less frequent intervals prior to 1996.

Heathrow: Number of destinations in 1990, 2001 and 2011

Region	1990			2001			2011		
	Total	≥ 2000	< 2000	Total	≥ 2000	< 2000	Total	≥ 2000	< 2000
United Kingdom	24	(18)	(6)	14	(10)	(4)	11	(7)	(4)
Western Europe	54	(40)	(14)	33	(32)	(1)	35	(29)	(6)
Central Europe	53	(41)	(12)	33	(31)	(2)	35	(32)	(3)
Eastern Europe	16	(13)	(3)	26	(23)	(3)	21	(21)	(-)
Near East	20	(17)	(3)	18	(17)	(1)	15	(14)	(1)
Africa	29	(24)	(5)	24	(21)	(3)	23	(23)	(-)
Far East	25	(25)	(-)	29	(28)	(1)	30	(30)	(-)
Americas	43	(33)	(10)	35	(34)	(1)	41	(36)	(5)
Totals	264	(211)	(53)	212	(196)	(16)	211	(192)	(19)

Source: Civil Aviation Authority, *Aviation Statistics*, Table 12.1 (International Air Passenger Traffic to and from Reporting Airports) and Table 12.2 (Domestic Air Passenger Traffic to and from Reporting Airports)

Notes: The table sets out the number of destinations per listed region served by air transport movements from Heathrow in the years 1990, 2001 and 2011. The first column of numbers is the total number of destinations. The second column of numbers is the number of destinations to which 2 000 or more passengers (arrivals and departures) were transported. The third column of numbers is the number of destinations to which less than 2 000 passengers (arrivals and departures) were transported.

The number of passengers at Heathrow increased from 45.6 million in 1990 to 60.4 million in 2001 (an increase by 32 per cent compared with 1990), and to 69.4 million in 2011 (an increase by 52 per cent compared with 1990). The number of air transport movements (ATMs) increased from 368 000 in 1990 to 458 000 in 2001 and to 476 000 in 2011.

Comment: The table shows that the total number of destinations served by Heathrow decreased by approximately 20 per cent in 2001 compared with 1990, with a further decrease of less than one per cent in 2011 compared with 2001, despite the increase in the number of ATMs in 2001 and 2011.

The number of destinations that carried less than 2 000 passengers in 1990 decreased by approximately 65 per cent. The number of destinations that carried 2 000 or more passengers in 1990 decreased by approximately 5 per cent.

The table shows that changes in the number of services to destinations carrying more than 2 000 passengers in 1990 varied between regions, with five regions experiencing net decreases and three regions experiencing net increases.

The largest decreases in destinations served affected the United Kingdom (down from eighteen destinations to seven), Western Europe (down from forty destinations to twenty nine) and Central Europe (down from forty one destinations to thirty two), with smaller decreases in the Near East (down from seventeen destinations to fourteen) and Africa (down from twenty four destinations to twenty three).

There were increased services to Eastern Europe (up from thirteen destinations to twenty one), the Far East (up from twenty five destinations to thirty) and the Americas (up from thirty three destinations to thirty six).

Analysis of the individual destinations within the regions served by Heathrow shows variation between regions and within countries, with some destinations closed and others newly opened. The data upon which the table is based indicate that the majority of destinations that are no longer served by Heathrow (e.g. Antwerp, Corfu, Las Palmas) are now served by one or more of London's other major airports (Gatwick, Stansted, Luton, London City).

Heathrow: Runway scheduling limits - movements per hour

	2006/07			2007			2010/11			2011		
	arrive	Depart	total	arrive	depart	total	arrive	depart	total	arrive	depart	total
0600-	35	26	61	36	27	63	37	28	65	38	25	63
0700-	36	41	77	40	43	83	35	41	76	39	46	85
0800-	34	42	76	38	42	80	33	43	76	37	43	80
0900-	39	41	80	39	42	81	41	42	83	40	43	83
1000-	41	42	83	39	40	79	40	42	82	40	41	81
1100-	38	42	80	42	42	84	37	42	79	41	42	83
1200-	42	43	85	40	41	81	43	44	87	39	41	80
1300-	39	41	80	43	43	86	39	40	79	43	43	86
1400-	42	38	80	41	41	82	42	39	81	43	42	85
1500-	44	43	87	44	44	88	44	43	87	41	44	85
1600-	43	46	89	42	44	86	44	46	90	42	43	85
1700-	41	45	86	42	43	85	40	45	85	43	43	86
1800-	40	44	84	43	44	87	40	42	82	44	44	88
1900-	40	42	82	43	44	87	39	43	82	43	44	87
2000-	38	40	78	39	39	78	38	40	78	38	38	76
2100-	40	37	77	44	39	83	41	36	77	44	38	82
2200-	20	21	41	21	30	51	22	21	43	21	31	52
Total	652	674	1 326	676	688	1 364	655	677	1 332	676	691	1 367
Hourly average												
	38.4	39.6	78.0	39.8	40.5	80.3	38.5	39.8	78.3	39.8	40.6	80.4

Source: Airport Co-ordination Ltd (ACL), seasonal reports for Heathrow, unnumbered tables entitled “Runway Scheduling Limits - Movements per Hour”.

Notes: The table shows the scheduled number of aircraft arrivals departures in each hour at Heathrow between 0600-2300 in the winter seasons Oct-March 2006/07 and 2010/11 and the summer seasons March-Oct 2007 and 2011.

Comment: Heathrow handled its largest number of ATMs (476 000) in 2007 and 2011, so the seasons in the table reflect the near-capacity scheduling of movements. It can be seen that the number of scheduled arrivals and departures varies depending on the hour. A more even spread of the traffic across the day and evening would produce a scheduling in each hour that is closer to the hourly average, which would reduce the risk of disruption in “over-subscribed” hours from movements ahead of or behind schedule.

Heathrow: Number of passengers per movement 1991 - 2011

Years	Passengers		Movements		Average per movement	
	(millions)	%	(thousands)	%		%
1991	40.3	100.0	362	100.0	111.3	100.0
1992	45.0	111.7	388	107.2	116.0	104.2
1993	47.6	118.1	396	109.4	120.2	108.0
1994	51.4	127.5	412	113.8	124.8	112.1
1995	54.1	134.2	421	116.3	128.5	115.5
1996	55.7	138.2	428	118.2	130.1	116.9
1997	57.9	143.7	431	119.1	134.3	120.7
1998	60.4	149.9	442	122.1	136.7	122.8
1999	62.0	153.8	451	124.6	137.5	123.5
2000	64.3	159.6	460	127.1	139.8	125.6
2001	60.5	150.1	458	126.5	132.1	118.7
2002	63.0	156.3	460	127.1	137.0	123.1
2003	63.2	156.8	457	126.2	138.3	124.3
2004	67.1	166.5	470	129.8	142.8	128.3
2005	67.7	168.0	472	130.4	143.4	128.8
2006	67.3	167.0	471	130.1	142.9	128.4
2007	67.9	168.5	476	131.5	142.6	128.1
2008	66.9	166.0	473	130.7	141.4	127.0
2009	65.9	163.5	460	127.1	143.3	128.8
2010	65.8	163.3	449	124.0	146.6	131.5
2011	69.4	172.2	476	131.5	145.8	131.0

Source: Civil Aviation Authority, *UK Airport Statistics*

Notes: The source gives the number of passengers and air transport movements, from which the number of passengers per movement have been calculated. The percentage columns are calculated from 1991 as the base year.

There are minor discrepancies in the passenger numbers given in *UK Airport Statistics* compared with the Civil Aviation Authority's *Air Passenger Surveys*. The *Air Passenger Surveys* are published later in the year than *UK Airport Statistics* and presumably contain the more accurate data. But the *Air Passenger Surveys* have been published annually for Heathrow only since 1996, so *UK Airport Statistics* have been used to compile this table.

Comment: The report to the Secretary of State on the Heathrow Terminal Five Public Inquiry advised that Heathrow would have an annual runway capacity of 480 000 air transport movements operating in unbroken segregated mode and would be able to handle 90 million passengers per year with Terminal Five fully operational. 480 000 movements carrying 90 million passengers is equivalent to an annual average of 187.5 passengers per movement.

The number of air transport movements (ATMs) per year increased from 362 000 in 1991 to 476 000 in 2011, an increase over twenty years of 114 000 ATMs (31.5 per cent). At the end of 2011 there was spare capacity to handle a further 4 000 ATMs per year (i.e. 480 000 less 476 000). The rate of increase in the number of ATMs between 1991 and 2011 was equivalent to an average annual increase of approximately 5 700. If the same rate of increase continues, the 4 000 spare capacity would be fully utilised by late 2012.

The number of passengers per year increased from 40.3 million in 1991 to 69.4 million in 2011, an increase over twenty years of 29.1 million (72.2 per cent). At the end of 2011 there was spare capacity to handle a further 20.6 million passengers per year (i.e. 90 million less 69.4 million). The rate of increase in the number of passengers between 1991 and 2011 was equivalent to an average annual increase of approximately 1.45 million. If the same rate of increase continues, the 20.6 million spare capacity would be fully utilised by early 2027.

The average number of passengers per movement increased from 111.3 in 1991 to 145.8 in 2011, an increase over twenty years of 34.5 passengers per movement (31.0 per cent). At the end of 2011 there was spare capacity - as implied by the findings of the Terminal Five Public Inquiry - to handle a further 41.7 passengers per movement (i.e. 187.5 less 145.8). The rate of increase in the number of passengers per movement between 1991 and 2011 was equivalent to an average annual increase of approximately 1.7 passengers. If the same rate of increase continues, the 41.7 spare capacity would be fully utilised by early 2036.

In view of the legal limit of 480 000 on the permitted number of ATMs per year and the impending arrival at that number of ATMs, the only way that Heathrow can make full use of its 90 million annual passenger-handling capacity is to increase significantly the number of passengers per ATM.

Heathrow: Passenger numbers per transport mode for surface access 1972 - 2010

Year	Car/taxi		Bus/coach		Tube/rail		Other		Total	
	millions	%	millions	%	millions	%	millions	%	millions	%
1972	-	59	-	32	-	0	-	2	14.3	93
1978	-	63	-	14	-	20	-	1	20.8	98
1984	14.9	66	3.3	14	4.5	20	0.2	1	22.6	101
1987	17.2	64	4.0	15	5.4	20	0.2	1	26.8	100
1991	19.7	66	3.9	13	6.0	20	0.2	1	29.8	100
1996	25.0	67	6.0	16	6.0	16	0.3	1	37.3	100
1997	25.3	66	6.2	16	6.6	17	0.4	1	38.5	
1998	27.2	67	5.7	14	6.3	18	0.4	1	40.6	
1999										
2000	28.4	63.7	6.2	13.9	9.8	22.1	0.3	0.4	44.6	
2001	26.6	64.7	5.4	13.1	8.9	21.5	0.3	0.7	41.2	100
2002	25.9	65.3	4.9	12.3	8.8	22.1	0.1	0.3	39.7	
2003	25.9	64.3	5.1	12.6	9.2	22.9	0.2	0.3	40.2	
2004	27.8	63.7	5.4	12.4	10.2	23.5	0.3	0.3	43.6	
2005	27.3	62.7	5.7	13.0	10.4	23.9	0.2	0.4	43.6	
2006	28.5	64.4	5.8	13.1	9.9	22.9	0.0	0.0	44.2	100
2007	27.2	61.5	5.8	13.2	11.0	24.9	0.1	0.3	44.1	
2008	25.7	59.8	6.1	14.1	11.1	25.7	0.1	0.3	43.0	
2009	24.5	59.6	5.7	14.0	10.6	26.0	0.2	0.5	40.9	
2010	25.2	60.5	5.6	13.4	10.8	25.9	0.1	0.3	41.7	

Source: Civil Aviation Authority *Passenger Survey Reports*. The surveys have been undertaken annually from 1996 at Heathrow; at less frequent intervals before 1996. The report for 1999 had not been consulted at the time of preparing the table.

Notes: The reports indicate the use of each mode of transport shown in the table ¹ as a percentage ² of the total number of terminating passengers ³. The reports from 2007 onwards indicate the percentage use of private, public and other surface modes of transport. The number of passengers using each mode has been calculated by applying the individual percentages to the total number of terminating passengers in each year from 1984 onwards ⁴.

The column car/taxi includes private hire cars and minicabs.

¹ The reports since 2007 indicate the percentage use of public, private and other surface modes of transport, but not the percentages for the individual modes of transport published in the reports prior to 2007. The percentages for the individual modes since 2007 have been supplied by BAA Heathrow to the local authorities.

² Rounded percentages prior to 2000, percentages to one decimal point since 2000. The individual percentages for 1972, 1978 and 1984 sum to 93 per cent, 98 per cent and 101 per cent respectively. For the subsequent years, the individual percentages sum to 100 per cent (or to one decimal point for 2000, 2003 and 2004).

³ Transfer passengers are excluded because they do not arrive at or depart from Heathrow by surface transport.

⁴ 1972 and 1978 are excluded because the data are evidently incomplete for those years - see footnote 2.

Heathrow: 16-hour (0700-2300) noise exposure contours and aircraft movements: 1991-2011

Year	Size of 57 dBA contour		Number of aircraft movements			
	km ²	%	16-hours	24-hours	calendar year (000s)	
						%
1991	234.9	100.0	-	1 046.6	382 (362)	100.0
1992	204.0	86.8	-	1 109.2	406 (388)	106.3
1993	182.3	77.6	-	1 126.0	411 (396)	107.6
1994	175.5	74.7	-	1 164.4	425 (412)	111.3
1995	169.2	72.0	-	1 191.8	435 (421)	113.9
1996	164.7	70.1	1 178.4	1 202.2	440 (428)	115.2
1997	158.3	67.4	1 167.0	1 208.2	441 (431)	115.4
1998	163.7	69.7	1 206.1	1 235.6	451 (442)	118.1
1999	155.6	66.2	1 215.5	1 254.8	458 (451)	119.9
2000	135.6	57.7	1 236.3	1 276.0	467 (460)	122.3
2001	117.4	50.0	1 237.7	1 271.2	464 (458)	121.5
2002	126.9	54.0	1 243.2	1 279.4	467 (460)	122.3
2003	126.9	54.0	1 232.2	1 271.2	464 (457)	121.5
2004	117.4	50.0	1 263.0	1 300.5	476 (470)	124.6
2005	117.2	49.9	1 248.7	1 309.7	478 (472)	125.1
2006	117.4	50.0	1 248.0	1 306.8	477 (471)	124.9
2007	119.6	50.9	1 258.2	1 317.8	481 (476)	125.9
2008	123.1	52.4	1 264.8	1 308.7	479 (473)	125.4
2009	112.5	47.9	1 230.5	1 276.7	466 (460)	122.0
2010	108.3	46.1	1 263.8	1 246.6	455 (449)	119.1
2011	108.8	46.3	1 268.6	1 317.8	481 (476)	125.9

Sources: Civil Aviation Authority: *Noise Exposure Contours for Heathrow Airport* for the size of the noise contour and the number of aircraft movements per 16-hour day (mid-June to mid-Sept). At the time of compiling the table the number of movements had not been identified for the years 1991 - 1995. Civil Aviation Authority: *UK Airport - Movement, Passenger and Cargo Statistics* for the number of aircraft movements per year. The number of aircraft movements per 24-hour day (Jan to Dec) have been calculated from the number of movements per year.

Notes: The percentage columns for the size of the air traffic noise exposure contour and the number of aircraft movements take 1991 as the base year for observing the extent of subsequent changes. The numbers marked in bold indicate the years in which there was a reversal in the prevailing general trend compared with the preceding year (a decrease in the size of the air traffic noise exposure contour and an increase in the number of aircraft movements - see comments below). The numbers in brackets in the column for the number of aircraft movements per year are the numbers of *air transport movements* (i.e. engaged in the transport of passengers, cargo or mail).

Comment: The general trends (0700-2300 hours) have been for a decrease in the size of the air traffic noise exposure contour in parallel with an increase in the number of aircraft movements. These trends were most pronounced and were continuous in virtually every year 1991 - 2001. The trends have been flatter since 2001, with several years showing a reversal in the trend for the contour size or for the number of movements; or for both.