Network Rail October 2007 Strategic Business Plan

Supporting document

Current Passenger Demand

Executive Summary

There have been very considerable increases in the number of rail passenger journeys since privatisation. This has been especially the case for the number of commuters choosing rail to travel into major regional cities around Britain and for people making longer trips between major cities with direct rail connections.

Rail patronage has nearly doubled in some major cities, such as Manchester and Bristol; and even some of the most established rail networks, such as that around Glasgow, have witnessed growth in the number of trips of more than 50 per cent over the last ten years.

Many of the regional inter-urban services have seen significant increases in patronage over the last few years. For example, Liverpool – Manchester, Manchester – Leeds and Cardiff – Bristol have all seen the city pair rail passenger numbers double over the last ten years. Even the most heavily patronised inter-urban rail route in Britain, between Edinburgh and Glasgow, has seen an increase in end to end passenger numbers of more than 50 per cent. This has resulted in some passengers on the busy Glasgow Queen Street – Edinburgh Waverley route having to stand for the entire 50 minute journey. On most of these important regional routes crowding only becomes a problem later in the journey where the trains are used by local commuters at the ends of the route. This presents a problem in the evening peak because occasional passengers may have to stand for part of their return journey and this may discourage them from making discretionary rail trips in the future.

On-train overcrowding is most persistent in London. More than 500,000 people travel by heavy rail into London each day and one in five of them do not get a seat. This lack of capacity leaves business and leisure travellers little prospect of avoiding crowded conditions if they choose rail to travel into London before ten o' clock in the morning. Key corridors into regional cities suffer crowding conditions comparable to the worst overcrowding experienced in London on some trains. This particularly affects key corridors into Glasgow and Leeds.

1 Introduction

This paper sets out our understanding of current rail demand at a high level. We draw on the industry's analysis from RUSs, where they are available or where one is underway, to present more detail about our understanding of key markets within the sector.

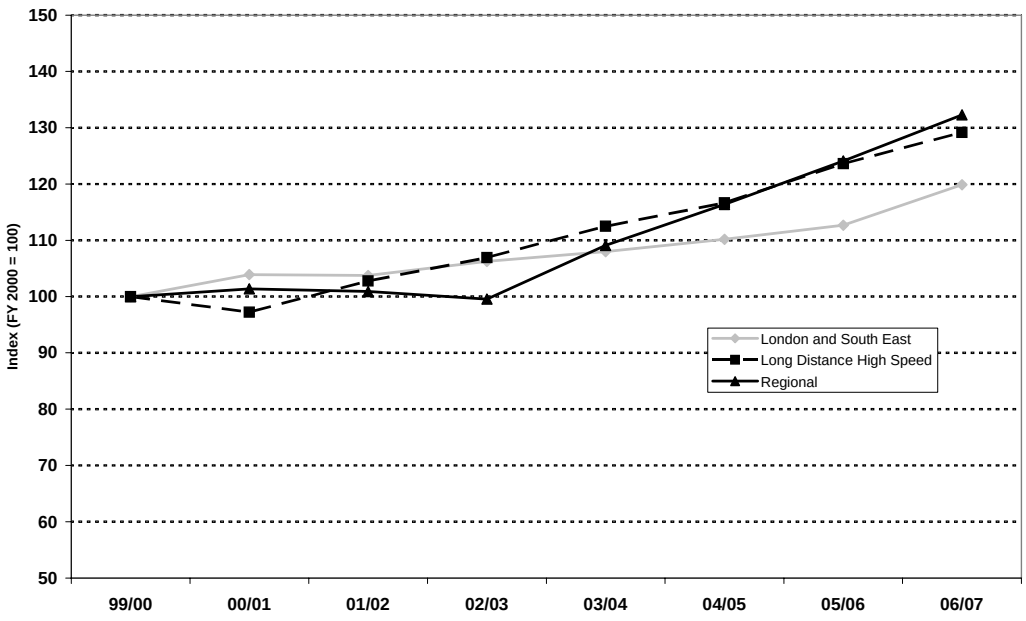
Section 2 presents a national overview of historic demand.

Section 3 presents more information about the inter-city and commuter markets. We have paid particular attention to the commuter markets highlighted in the government's High Level Output Specification (HLOS) and present estimates of the current levels of demand and load factors into those cities during the morning peak.

2 Historic Demand

The number of rail trips made on the network has increased steadily over the last four or five years with sharper increases more recently. Patronage was broadly flat over the three years from 2000 to 2003 during which time industry performance and the public's perception of it was relatively poor. ATOC calculate an estimate of the number of rail passenger trips and passenger kilometres and these data are reported

Figure 1 Rail Passenger Trips 1999/00 - 2006/07 (Index 1999/00 = 100)



by ORR in its publication, National Rail Trends. The trend in passenger trips for the eight years of comparable data that ORR publish is shown in Figure 1 and the volume of trips are reproduced in the table in Figure2. This shows the number of trips in three sectors. Each of these is defined in National Rail Trends. Broadly, trips are classed as being in the relevant sector if made with a TOC that operates primarily in that sector; so, for example, trips with inter-city operators are usually classed as Long Distance even if the trip is a commuter journey at one end of the route.

Figure 2 Rail Passenger Trips (millions)

	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07
London and South East	639	664	663	679	690	704	720	766
Long Distance	72	70	74	77	81	84	89	93
Regional	220	223	222	219	240	256	273	291
Total	**931**	**957**	**960**	**976**	**1,012**	**1,045**	**1,082**	**1,151**

Source: National Rail Trends Yearbook 2006-07, ORR.

The compound annual growth rate (CAGR) of rail trips between 1999/2000 and 2006/07 was 3.1 per cent. Growth in CP3 has been 4.4 per cent a year (CAGR) so

far, on average, with a 6.4 per cent increase last year[1]. In a study commissioned by the Passenger Demand Forecasting Council to investigate the high growth rates in demand, Steer Davis Gleave, a Transport Consulting firm, conclude that this recent rapid growth is most likely to represent a period of catch-up with the long term trend rates of increase in rail demand following the lower rates of growth that were witnessed during the period between 2000 and 2003 rather than a general breakdown in the relationship between rail passenger demand and the industry standard forecasting parameters compiled in the Passenger Demand Forecasting Handbook (PDFH). They also identified that passenger numbers were being driven consistently higher than predicted by PDFH for regional city commuting and long distance journeys.

The rate of increase has been especially high in the Regional Sector. Since the trend returned to growth in 2003 we have seen an increase of more than 30 per cent. Our work for the North West RUS identified that recent increases in the number of people travelling by train into Manchester were far higher than predicted using the PDFH parameters. We think that this is not all explained at a local level by a return to previous trend levels of patronage and are investigating this further through development work in RUSs.

Figure 3 Rail Passenger Kilometres 1999/00 - 2006/07 (Index 1999/2000 = 100)

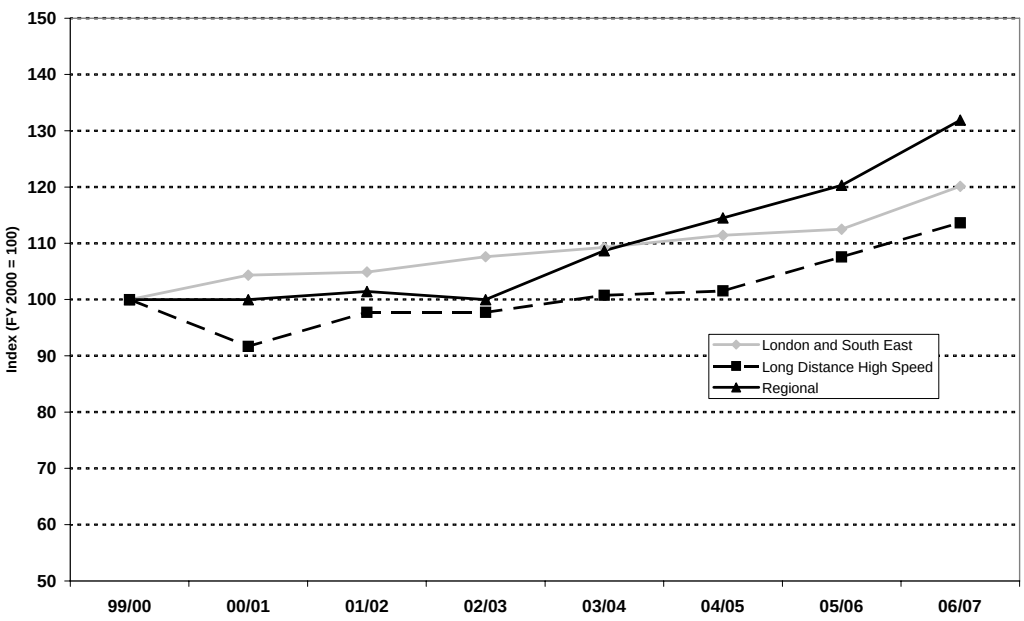


Figure 3 shows the trend in passenger kilometres travelled on the network. This shows a similar overall trend to that described for rail trips. The downturn experienced in the Long Distance sector was longer lasting in terms of passenger kilometres than it was for the number of rail trips however: it took five years to get back to the 1999/00

[1] ORR revised its estimates of 2006/07 rail patronage in its latest publication of National Rail Trends 2007-08 Q1. The number of rail journeys made in 2006/07 is revised upward to 1,164 million and growth on previous year is around 7.5 per cent.

level rather than one year, as it did for the number of trips made. The volume of passenger km, as reported in National Rail Trends, is reproduced in Figure 4.[2]

Figure 4 Rail Passenger Kilometres (billions)

	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07
London and South East	18.4	19.2	19.3	19.8	20.1	20.5	20.7	22.1
Long Distance	13.2	12.1	12.9	12.9	13.3	13.4	14.2	15
Regional	6.9	6.9	7	6.9	7.5	7.9	8.3	9.1
Total	**38.5**	**38.2**	**39.1**	**39.7**	**40.9**	**41.8**	**43.2**	**46.1**

Source: National Rail Trends Yearbook 2006-07, ORR.

[2] Total passenger kilometre for 2006/07 has been revised in ORR's latest publication of National Rail Trends 2007-08 Q1 to 46.5 billion.

3 Demand in Key Markets

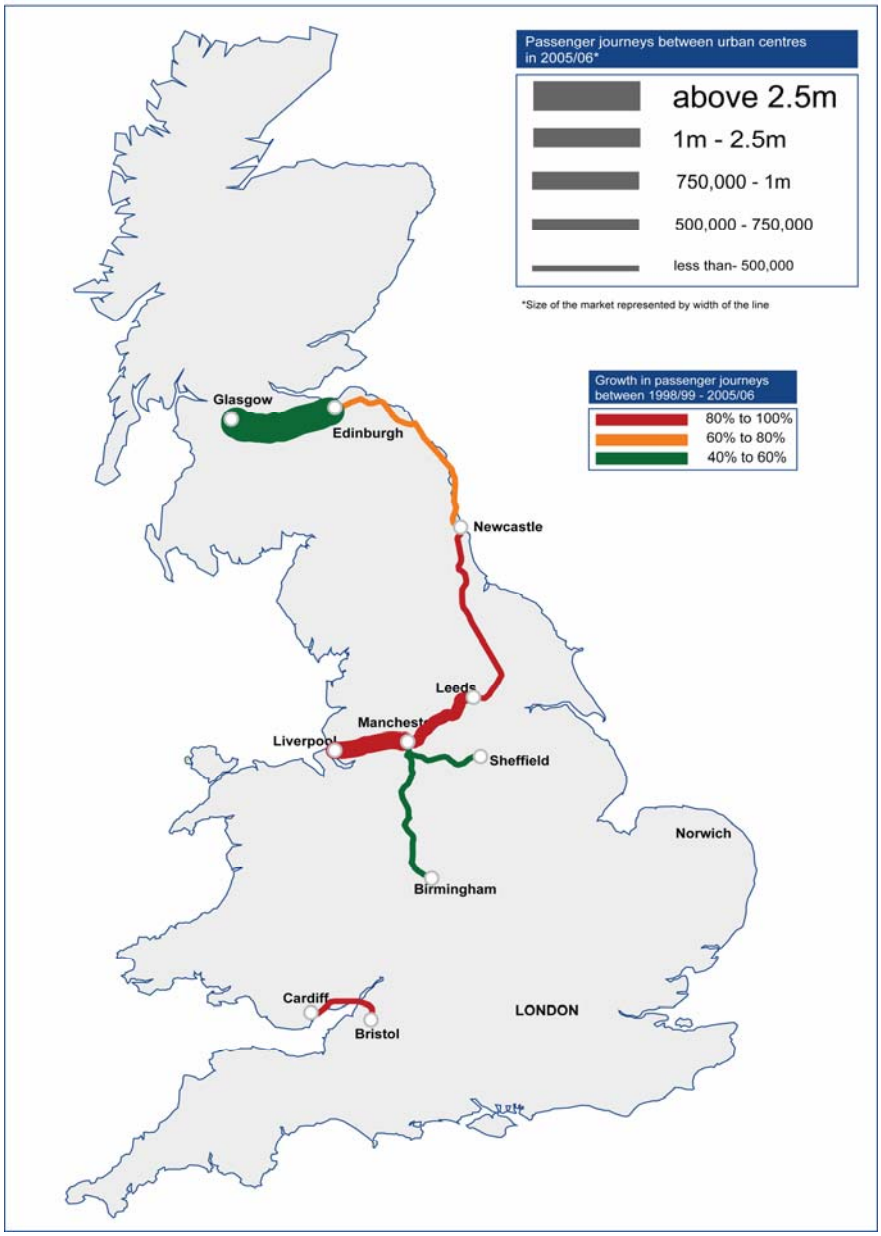
Inter-City Travel

Non-London Inter-urban

Many of the regional inter-urban services have seen significant increases in patronage over the last few years. For example, Liverpool – Manchester, Manchester – Leeds and Cardiff – Bristol have all seen the city to city rail passenger numbers double over the last ten years. Even the most heavily patronised inter-urban rail route in Britain, between Edinburgh and Glasgow, has seen an increase in end to end passenger numbers of more than 50 per cent. This has resulted in some passengers on the busy Glasgow Queen Street – Edinburgh Waverley route having to stand for the entire 50 minute journey. On most of these important regional routes crowding only becomes a problem later in the journey where the trains are used by local commuters at the ends of the route. This presents a problem in the evening peak because occasional passengers may have to stand for part of their return journey and this will discourage discretionary rail trips and hamper future growth prospects. The volume of trips and ten year growth rates are shown in Figure 5 for the largest end-to-end markets.[3]

[3] We include all non-London city pairs with more than 250,000 end-to-end trips recorded in the LENNON database.

Figure 5: Inter-urban rail travel (regional city pairs)



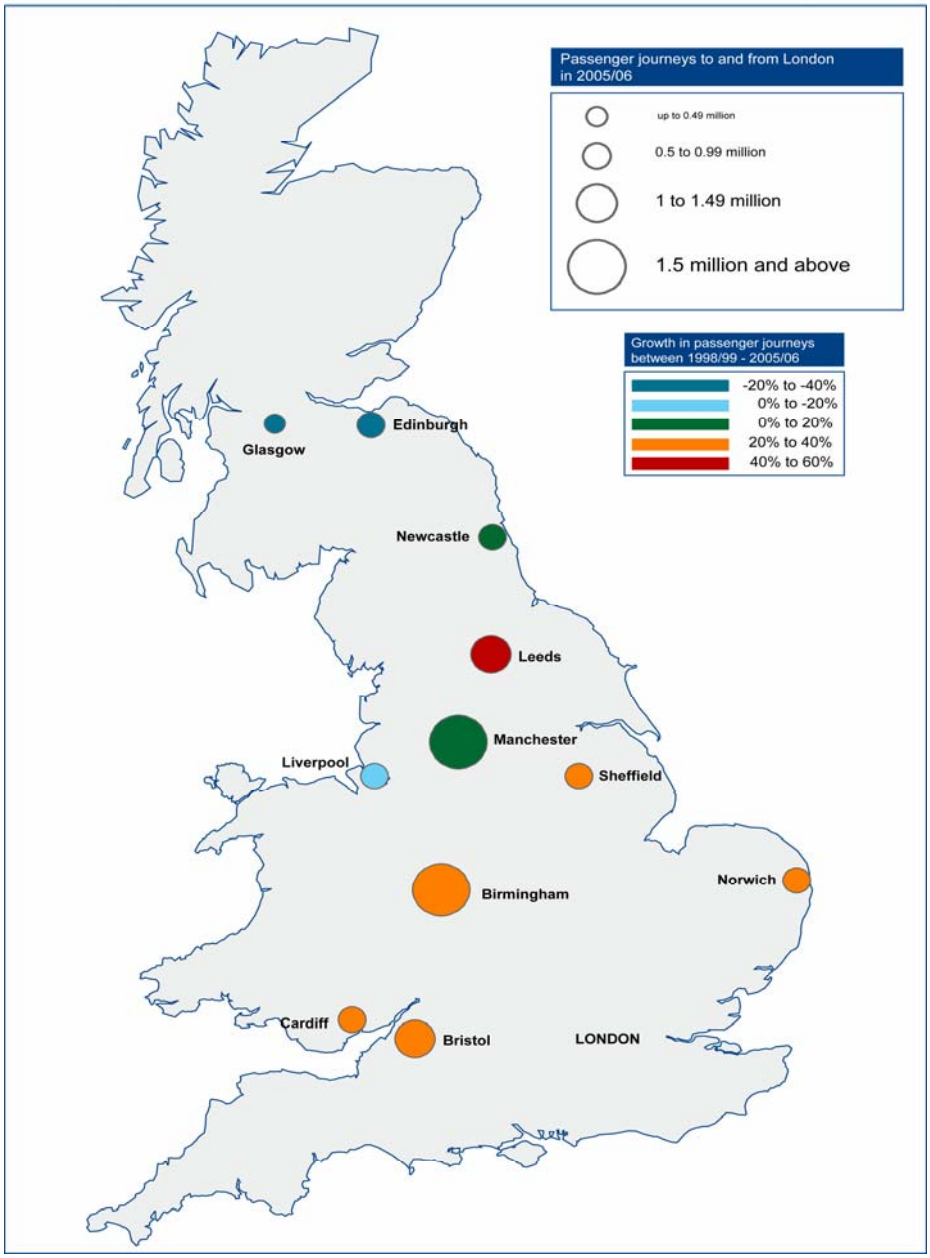
London Inter City

Current market size and historic passenger growth rates of major London inter-city routes are shown in Figure 6.[4] In summary, this shows that Manchester and Birmingham have the greatest number of passengers travelling between them and London; and that the Leeds – London market has been the fastest growing over the last ten years. The Glasgow and Edinburgh to London routes have seen significant decline in patronage over recent years due to competition from airlines.[5]

[4] We include cities with at least 250,000 rail trips a year recorded between the city and London.

[5] See East Coast Main Line RUS, Draft for Consultation for more detail.

Figure 6: Inter-city passenger travel (London trips)



Key Regional Rail Markets

The HLOS highlights ten regional cities in England and Wales and sets capacity requirements to be met by the end of CP4. The market size and rates of growth in each of these cities over the past ten years is shown in Figure 7. We include the same information for Glasgow and Edinburgh in the diagram. The size of the circle on the map represents the number of trips that start or end in the main stations in these towns as recorded in the LENNON database.[6] The colour of the circle indicates the rate of growth recorded in the number of trips over the last ten years.

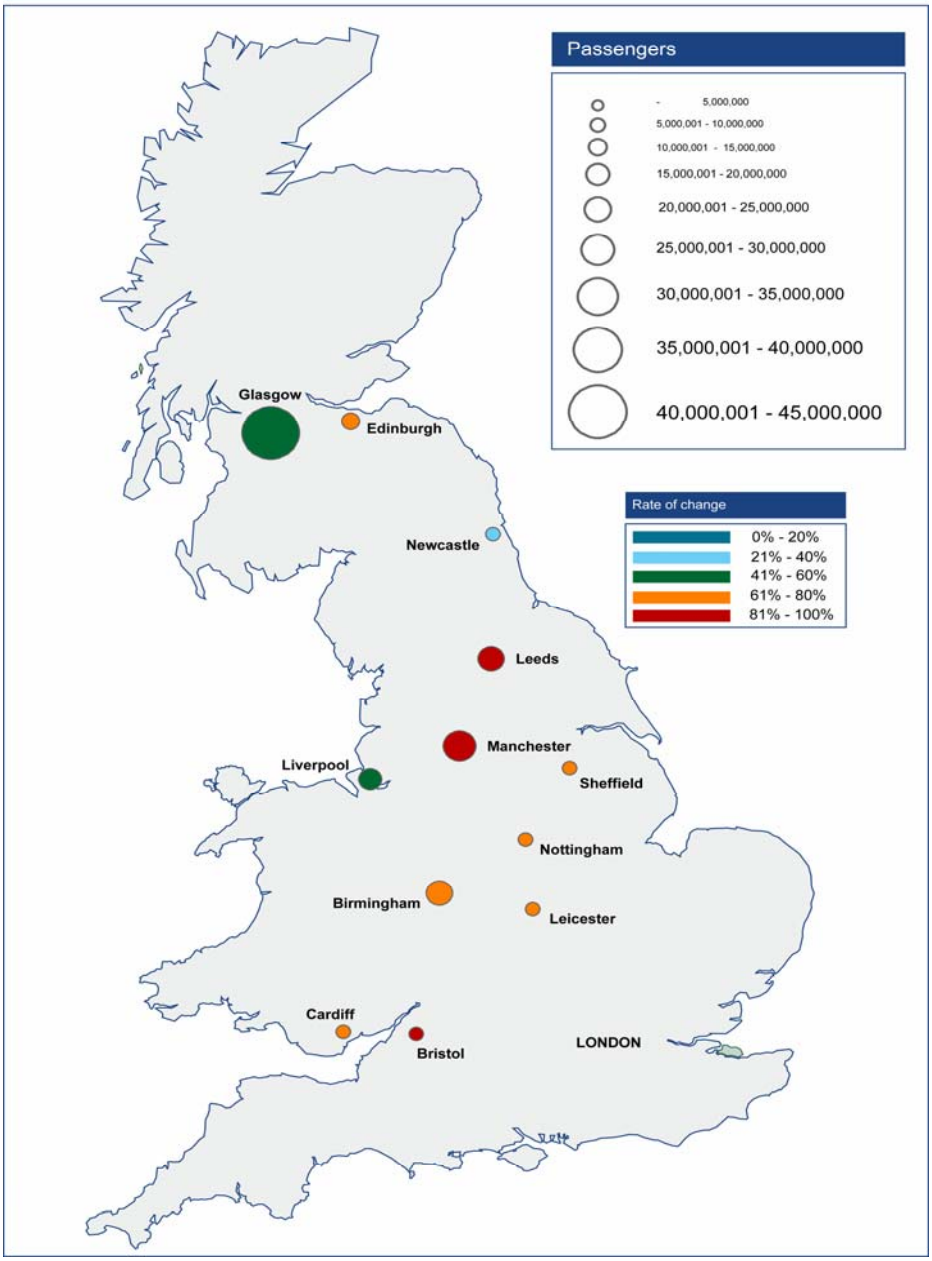
Glasgow has the largest rail market outside of London. Glasgow has a catchment area that houses more than three million people and an extensive suburban rail network. Growth in trips to and from Glasgow has been more than 50 per cent over

[6] We have made a broad adjustment for trips made using local travel cards that are not recorded in LENNON in cities where these tickets are available.

the last ten years. This is exceptionally high given that the market is so well established and this period saw considerable disruption from strikes.

The recorded rail market has nearly doubled in size in Leeds, Manchester and Bristol over the last ten years. We have identified in the North West RUS and in early work for the Yorkshire and Humberside RUS that this has put considerable strain on services at the busiest times of the day.

Figure 7: Regional city rail use



Commuting to Regional Cities

HLOS Capacity Metric

We have examined the regional commuting markets in detail where they fall within the geographic boundaries of RUSs and draw on that information in this section to summarise our estimate of current demand levels and average load factors. [7]

Our best estimate of current (2006/07) arrivals at each of these key cities during the morning commuter peak on a typical weekday is shown in Figure 8. The table also shows estimates of typical load factors to total capacity (which includes standing space as defined for the HLOS capacity metric) in each city.

[7] We have used LENNON data accessible through the MOIRA Data Inspector function and the NMF Demand Module where counts and more detailed forecasts are not available.

Figure 8 Regional Commuting (2006/07 Estimate)
Passengers travelling to terminal on a typical weekday

	07:00 – 09:59		08:00 – 08:59	
	Passengers	Load Factor (to Total Capacity)	Passengers	Load Factor (to Total Capacity)
Birmingham	29,000	42%	14,600	56%
Cardiff	7,700	32%	3,600	41%
Leeds	22,000	58%	13,800	83%
Manchester	21,400	42%	12,000	56%
Bristol	4,900	43%	2,000	45%
Leicester	3,500	32%	1,400	40%
Liverpool (ex Merseyrail)	3,800	35%	2,100	56%
Newcastle	4,100	44%	2,000	60%
Nottingham	3,000	39%	1,500	48%
Sheffield	5,300	40%	2,500	52%

Note: Passenger numbers are rounded to the nearest hundred

The table shows considerable variation between the average load factors experienced by passengers arriving in each of the cities during the morning commuter peak. The estimated load factors suggest that over-crowding is most severe in Leeds. (We are looking at this in more detail in the Yorkshire and Humberside RUS.) Even though the average load factors vary significantly, we know that some trains are severely over-crowded in all of these cities.

The capacity underlying our estimates of load factors represents our best view of today's (October 2007) capacity. In order to estimate the total capacity of trains, the TOCs have provided us information on number of vehicles arriving in these urban centres and the types of rolling stocks being used. The capacity assumed for each rolling stock type is that defined by the DfT for HLOS .[8]

The train capacity on commuter stock assumed by the DfT is significantly greater than that used for planning purposes by the Passenger Transport Executives (PTEs). For instance, CENTRO has a standing allowance of 10 per cent on its trains arriving in Birmingham. For how long passengers stand during their journey is not considered in the DfT metric. This also differs from PTE planning practice where attempts are made, to limit the duration of standing to no more than ten minutes, for example.

[8] To develop the capacity metrics for the HLOS, the DfT has defined the capacity of each rolling stock type in its Network Modelling Framework. We have followed this definition to estimate current capacity at these urban centres.

London & South East Commuting

Current Demand

Around 535,000 people a day travel into London during the morning peak. Passenger numbers for the commuter TOCs (ie excluding Inter-City TOCs) are shown in Figure 9. This shows that around 100,000 (20 per cent) stand during their journeys each day. We estimate that standing on trains typically starts about 45 minutes out of London on the busiest trains.[9] The number of passengers reported in Figure 9 is that on each train at the busiest loading point so is greater than the number of passengers that travel into the terminal stations.

Figure 9 London Commuting
Autumn Weekday travel to London (services terminating 0700 – 0959)

TOC	Passengers	Seats	Load Factor	Standing Passengers
C2C	27,200	25,500	107%	3,400
Chiltern	9,800	11,700	84%	500
FCC	55,800	51,500	108%	9,700
FGWL	13,700	12,300	112%	3,000
ONE	83,500	79,400	105%	13,000
Silverlink	12,900	13,300	97%	1,000
South Eastern Train	123,200	101,100	122%	27,300
Southern	84,900	67,300	126%	21,500
SWT	93,900	79,500	118%	21,500
Total (ex Inter-City)	**505,000**	**441,600**	**114%**	**100,800**

Source: Autumn 2006 Passenger Counts for TOCs/DfT
Note: All numbers are rounded to the nearest 100

Our understanding of demand levels on trains is not complete: ticket sales are recorded but this does not allow analysis of when people travel nor does it capture travel made using travelcards (issued at LUL outlets) or Oyster cards, which have become popular since their introduction. Our knowledge of train loadings is restricted to twice yearly on-board passenger counts conducted by London commuter TOCs for the DfT and survey data.[10] These provide a snapshot of demand. Not all TOCs report passenger numbers at the terminal. Instead they report on the busiest section of the journey – usually the approach to a station offering a tube connection.

HLOS Capacity Metric

The HLOS defines future required capacity through an estimate of passenger numbers and average load factor requirements.

[9] We have recently assed where standing starts in work for the Greater Anglia RUS. We found that standing starts on the busiest commuter trains of the morning about 45 minutes out of London. Comparison of loadings down other routes using MOIRA suggests that this is typical on most outer suburban commuter routes into London.

[10] Some TOCs now report average train loads estimated using train load weighing equipment.

Figure 10 shows, for a typical weekday in Autumn 2006, an estimate of passenger numbers arriving at or travelling through each named station and a load factor. We have used the terminal/cordon definition from the HLOS. We also report the load factor as defined for the HLOS, ie the ratio of passengers to seats plus standing space. Our underlying demand data are a mix of

- one day counts of passengers arriving at Fenchurch Street, Liverpool Street, Marylebone, Victoria and Waterloo
- estimates of passenger arrivals at other terminals using modelled inter-city train loads (from MOIRA) and passenger counts on commuter services[11]

Figure 10 London Commuting Passengers Arriving at London Terminals (services terminating 0700 – 0959)

	08:00 – 08:59 Arrivals	07:00 – 09:59 Arrivals
St Pancras	13,400	23,900
King's Cross	8,100	15,900
Moorgate	5,500	9,700
Liverpool Street	32,900	64,700
Fenchurch Street	12,300	23,000
London Bridge	68,900	129,900
Blackfriars	9,600	16,100
Waterloo	43,800	87,000
Victoria	36,700	70,300
Paddington	12,900	26,200
Marylebone	4,900	9,900
Euston	8,700	18,000
Total	**257,700**	**494,600**
Total Capacity	**315,300**	**721,500**
Load Factor (to total capacity)	**82%**	**69%**

Note: Passenger numbers are rounded to the nearest hundred

Note: The total capacity is of October 2007

[11] In this case the passenger count data are adjusted using MOIRA load profiles to estimate the number of passengers travelling to the cordon point defined for the DfT HLOS.