

**Final Report**

**REGIONS TO LONDON AND  
LONDON'S AIRPORTS STUDY**

**Public Version**

**Prepared for the  
Strategic Rail Authority**

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**PUBLIC VERSION**

**BOOZ·ALLEN & HAMILTON WERE COMMISSIONED TO EXAMINE THE IMPACT OF A RANGE OF RAIL INITIATIVES BETWEEN LONDON AND THE REGIONS, IN THE CONTEXT OF POTENTIAL RAIL-AIR SUBSTITUTION**

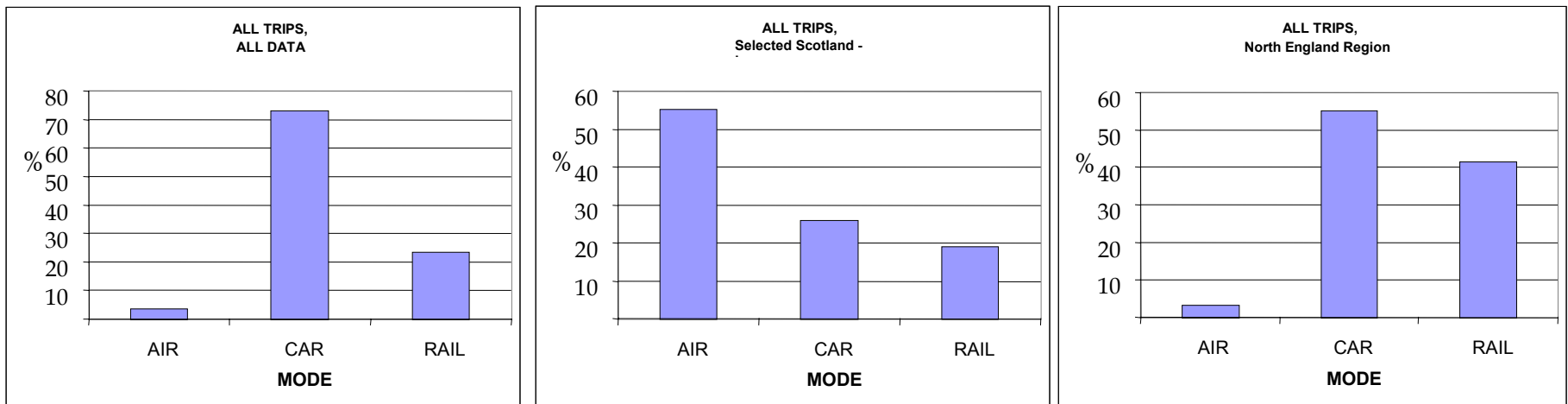
- The rail initiatives considered included:
  - The most ambitious East and West Coast rail route developments under negotiation between Railtrack and strategic stake holders:
    - West Coast Mainline developments were assumed to include ‘Phase 2’ proposals incorporating tilting trains, 140 mph running and significant frequency improvements
    - East Coast Main Line Upgrades were also assumed to include tilting trains, and significant speed and frequency enhancements
  - New dedicated high speed airport services from Manchester/Birmingham to Heathrow
  - A London (Heathrow) Hub providing dedicated services to Heathrow from St Pancras, Watford Junction and Reading (these hubs also provide services to Gatwick and, in the case of St Pancras, London Luton)
  - Other potential initiatives such as direct services from Scotland and the North East of England to Heathrow or Gatwick were rejected due to the difficulty and expense in achieving sufficiently fast journey times to make such services attractive to air passengers
  - Access from the South West and Wales was not considered in the context of air/rail substitution

**A SERIES OF DEMAND MODELS HAVE BEEN BUILT TO FORECAST THE IMPLICATION OF THE INITIATIVES- THE MODELS COVER "DOMESTIC" TRAVEL BETWEEN LONDON AND THE REGIONS BY RAIL, CAR AND AIR, AS WELL AS "INTERNATIONAL" TRAVELLERS ACCESSING LONDON'S AIRPORTS**

- The models contain data on rail and air demand derived from rail ticket data, airline survey data and a series of market share studies undertaken on behalf of British Rail's InterCity Sector in the late 1980's and early 1990's
- Base year quality of service data has been based on timetabled journey times and frequency of service information (for air and rail)
- Car and taxi trip costs have been based on average distances and assumed average speeds and operating costs
- Model sensitivities are based on available 'elasticities' which have measured observed changes in rail, air and car demand against changes in their times and costs
- All forecasts, whether based on assumed elasticities or calibrated on the data held in the model, have important uncertainties associated with them
- Major areas of uncertainty in our model include – rail market share, rail yield assumptions and the response of demand to changes in service quality and the macro-economic environment
- Forecasts have been based on 'unconstrained' scenarios, that capacity constraints at airports, on the rail system and on the motorways have not been directly considered

**ROAD TRIPS MAKE UP THE BULK OF TRAVEL IN THE UK DOMESTIC MARKET, WITH AIR ACHIEVING ITS BEST SHARE ON THE LONGEST DISTANCE ANGLO-SCOTTISH ROUTES – AS A RESULT IT CAN BE CONCLUDED THAT ROAD (RATHER THAN AIR) DIVERSION WILL BE KEY TO RAIL SUCCESS**

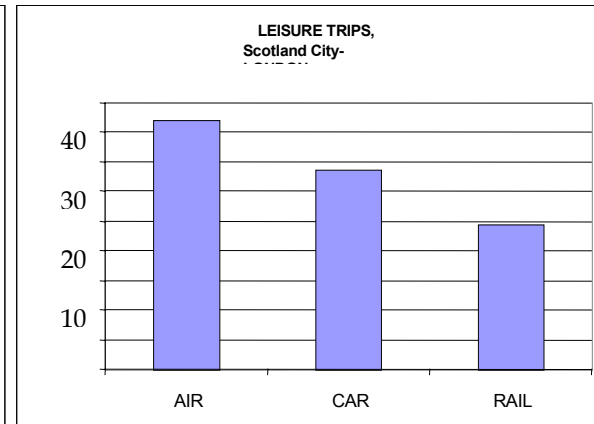
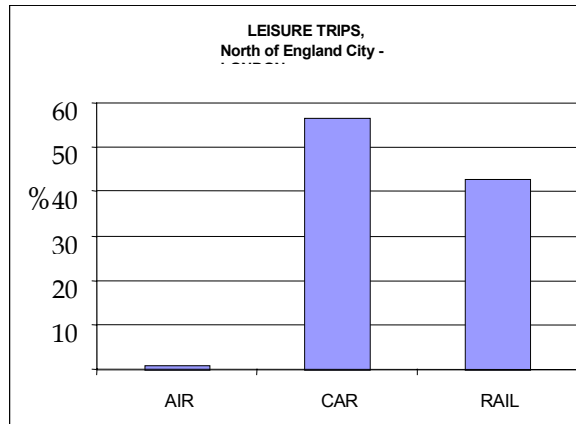
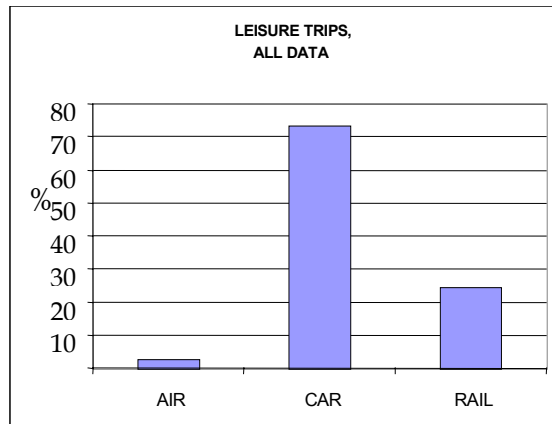
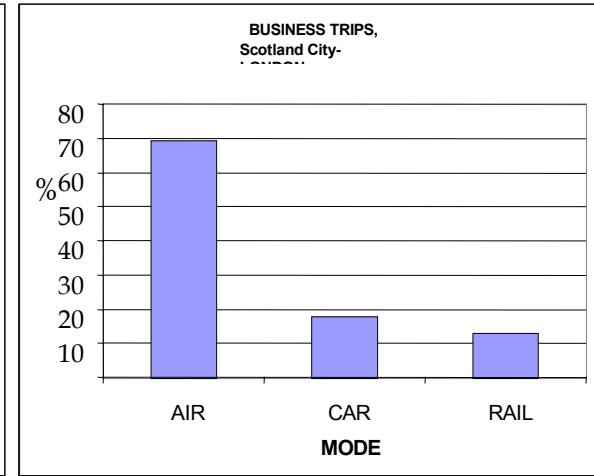
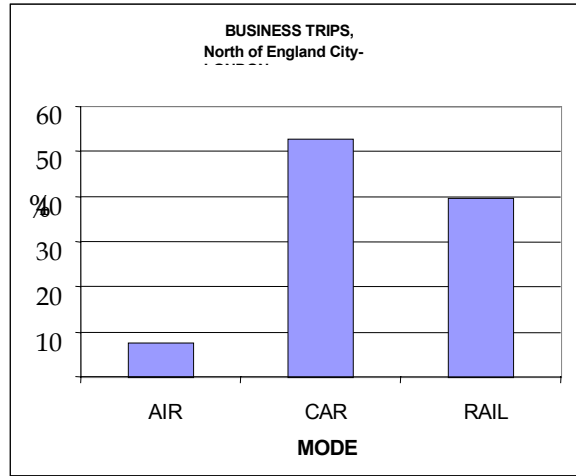
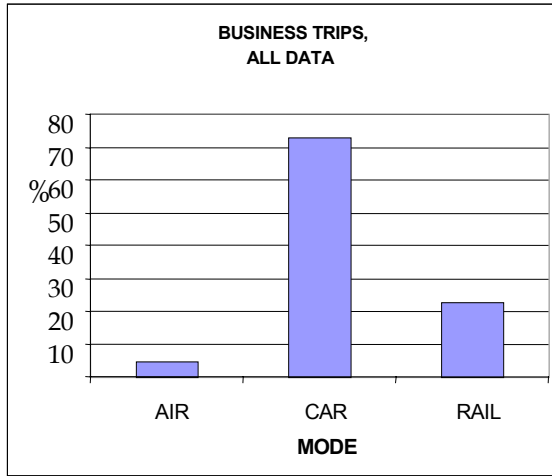
Longer Distance Trips to London and South East



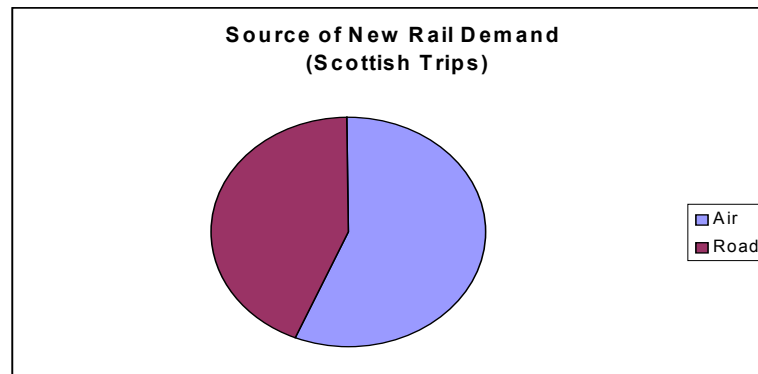
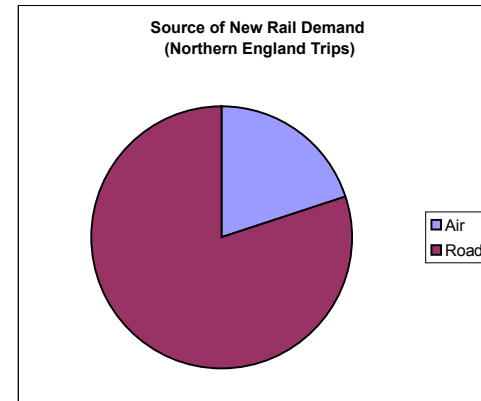
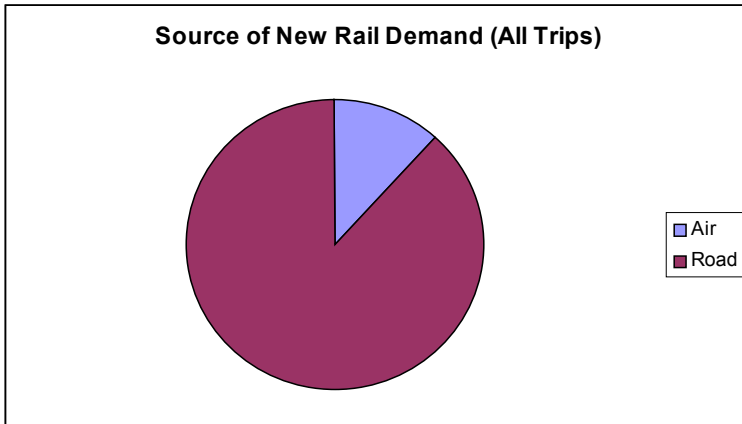
*Note that air trips exclude interlining passengers – that is they are restricted only to passengers travelling between a domestic origin and destination. Note in the CAA data sets there appeared to be some discrepancies between the proportion of interlining passengers, depending on whether surveys had been undertaken at Heathrow or at the Regional airports. Other sources of the above graphs include a variety of unpublished work undertaken for the British Railways Board in the early 1990's as well as CAA data and DETR data.*

**HOWEVER, AIR DOES HOLD A SIGNIFICANT SHARE OF THE PREMIUM LONG DISTANCE BUSINESS MARKET – THE LEISURE MARKET IS PENETRATED ONLY IN SCOTLAND**

Longer Distance Trips to London and South East



**THE PROPOSED RAIL INITIATIVES WILL LEAD TO LONG DISTANCE RAIL GAINING THE BULK (ALMOST 90%) OF ITS NEW TRIPS FROM ROAD BASED MODES (CAR & COACH) – BUT, AIR WILL BE AN IMPORTANT SOURCE OF NEW DEMAND FROM SCOTLAND**



**HOWEVER, IN 'PERCENTAGE' TERMS THERE IS LITTLE IMPACT ON TOTAL SCOTTISH AIR TRAFFIC, IMPACTS ARE GREATEST ON DOMESTIC 'POINT TO POINT' AIR DEMAND AT MANCHESTER, LEEDS BRADFORD & THE NORTH EASTERN AIRPORTS, THERE IS ASSUMED TO BE NO IMPACT ON 'INTERLINE' DEMAND**

	Impacts of Enhanced West Coast main line Full Phase 2 Proposals All Journey Purposes
	Impact on Domestic 'Point to Point' Trips to London
	Change %
Scottish Airports <sup>1)</sup>	-3%
North East Airports <sup>2)</sup>	0%
Manchester Airport	-56%
Leeds Bradford Airport	-5%
Other Airports	-0%
Total English Airports	-29%
Total All Airports	-9%

	Impacts of Enhanced High Speed, High Frequency East Coast main line All Purposes
	Impact on Domestic 'Point to Point' Trips to London
	Change %
Scottish Airports <sup>1)</sup>	-3%
North East Airports <sup>2)</sup>	-23%
Manchester Airport	-1%
Leeds Bradford	-58%
Other Airports	-0%
Total English Airports	-15%
Total All Airports	-6%

**Impacts of Most Ambitious Rail Initiatives on Domestic Point to Point Air Traffic (Excluding 'Interliners')**

<sup>1)</sup> Aberdeen, Edinburgh, Glasgow, Inverness, Prestwick <sup>2)</sup> Newcastle, Teeside,

**AND AS 'INTERLINING' TRAFFIC DOMINATES DEMAND FROM ENGLISH AIRPORTS, OVERALL DEMAND TO HEATHROW ONLY FALLS BY 20% FROM MANCHESTER, 16% FROM LEEDS AND 13% FROM THE NORTH EAST (EQUIVALENT TO SOME 3 YEARS 'NORMAL' TRAFFIC GROWTH)**

## **THE AIR ROUTE WHERE MOST SUBSTITUTION IS ANTICIPATED AS A RESULT OF RAIL INITIATIVES, IS THAT LINKING MANCHESTER-HEATHROW**

- West Coast Main Line (WCML) proposals will reduce journey times from Manchester by 30% and double the rail frequency
- New Manchester/Birmingham Heathrow services, direct to Heathrow, could take advantage of the enhanced WCML and run trains direct to Heathrow, this would capture interline traffic but in order to maximise revenues the service would also have to carry 'normal' domestic rail passengers
- The new service has potential to reduce existing 'Interline' air demand by between 30% & 60%, depending on the operator's ability to 'market' the new rail service as a seamless component of air travel – given the need to carry 'domestic' passengers they are unlikely to achieve the higher levels of penetration (indeed if the service was viewed as a only a conventional rail service demand would be lower still)
- WCML enhancements are estimated to reduce existing domestic (people using air to travel from Manchester to London, not to interline) air demand by over 50%. However, this is equivalent to only a 20-25% reduction in air travel on the route as a whole, (as the bulk of demand on the route is made up of 'interliners')
- And against a backcloth of strongly growing domestic air demand (6-7% per year), the new high speed service is unlikely to 'force' withdrawal of all air services
- Consultation with the airlines indicate that air service frequencies could be reduced by 30%-50%, though this level of response is likely to depend on competitive pressures and resulting relative fares and yields

**OTHER INITIATIVES HAVE AN IMPACT BUT ARE LESS LIKELY TO CAUSE AIR SERVICE WITHDRAWAL, AS THE COMBINATION OF JOURNEY TIME REDUCTION AND INFRASTRUCTURE COSTS REQUIRED TO CREATE DIRECT HEATHROW RAIL SERVICES IS LESS ATTRACTIVE THAN ON THE MANCHESTER ROUTE**

**Impacts of Rail Initiatives on Air Demand**

	Reduction in Air Demand in England	Reduction in Air Demand in Scotland
• ECML 'Basic' Upgrade	5%	2-5%
• ECML 'Enhanced' Upgrade	12%	2-5%
• Anglia	-	-
• Wales and South West	-	-
• PUG 1 PUG2 WCML	21%	2-5%
• Midland Main Line	-	-

**HOWEVER, LEEDS BRADFORD AND TEESIDE AIRPORTS MAY ALSO COME UNDER PRESSURE TO RATIONALISE SERVICES**

**EUROPEAN EXPERIENCE OF HIGH SPEED RAIL IS MIXED BUT WE BELIEVE SUPPORTS THE VIEW THAT WITHIN THE UK THERE WOULD NOT BE TOTAL SUBSTITUTION OF DOMESTIC AIR SERVICES**

- The combination of an increasing market size and competition between modes results in both air and rail remaining active
- However, there may be a rationalisation of air services (as we predict there would be on the Manchester to London route if for example a direct service into Heathrow could be run)
- In France, for example, experience on the Paris to Lyon route showed an initial reduction/cessation in domestic air services (though some have argued this may not have been only the result of competitive pressure)

**BUT FOLLOWING DEREGULATION OF THE DOMESTIC AIRLINE INDUSTRY IN 1993 FRENCH AIRLINES RE-EMERGED ON THE CORRIDOR, NOW TWO CARRIERS OPERATE FREQUENT SERVICES ON THE ROUTE FROM BOTH CHARLES DE GAULLE AND ORLY AIRPORTS**

**WE ALSO ASSESSED THE IMPACT OF RAIL-AIR HUBS AT ST PANCRAS, WATFORD AND READING - THEY COULD ACT TO INCREASE RAIL DEMAND FROM THE REGIONS OUTSIDE OF THE SOUTH EAST TO HEATHROW BETWEEN 1-7 PER CENT.**

- A London super-hub with a direct St Pancras-Heathrow service, is projected to increase rail demand from the English Regions (outside of the South East) to Heathrow by 5%
- A Watford hub, was projected to generate 1% more rail traffic from the regions to Heathrow
- A Reading hub has a relatively stronger impact (7% additional traffic) than the other hubs - this is because Reading is located in the natural catchment area of Heathrow Airport, with a relatively large number of passengers benefit from any improvements
- If London and the South Eastern counties were added, far greater use of these potential hubs would arise; this is the subject of parallel research which will be reported as part of the SERAS Studies
- Results are conditional on assumptions of the degree of hub improvement - travellers are taken to be sensitive to interchanging between or within modes - reducing service uncertainty, improving station facilities (such as ease of movement with luggage) and introducing flight check-in facilities have all been modelled as reduced interchange penalties
- If the hub simply involves enhanced service links, without improved station facilities, the improvements in rail traffic are far more modest – in the case of the Reading option, the rail traffic increase would be only around 1 percent

**THE OVERALL CASE FOR INTRODUCING HUBS, WILL BE BASED ON THE NEEDS OF TRAVELLERS WITHIN THE SOUTH EAST, WHO MAKE UP THE BULK OF THE DEMAND TO HEATHROW**

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