

Network Rail

- Network Rail owns and operates Britain’s rail network. It is a private, independent, ‘not for dividend’ company directly accountable to its Members and regulated by the Office of Rail Regulation. Profits made go straight back into improving the railway. The aim of the business is to provide a safe, reliable, efficient and sustainable railway, fit for the 21st century.
- Network Rail owns around 20,000 miles of track; 40,000 bridges and tunnels; 1,000 signal boxes; 9,000 level crossings; 2,500 stations that are leased to train operators; 17 large stations that are managed and operated directly by the company, and a further 8,200 commercial properties all of which fund the rail network infrastructure.
- In a complex and entirely interdependent system, both Network Rail and the train operating companies share the responsibility of delivering train services to the travelling public and to the nation.
- Network Rail welcomes the All-Party Parliamentary Group for High Speed Rail’s intention to conduct an inquiry into the issues connected to the country’s rail capacity, and the opportunity to respond.

1. How do you view the current capacity situation on Britain’s railways?

- 1.1 More people travel on the railway today than ever before. Trends in recent years have shown strong growth in both passenger and freight markets and forecasts predict that this growth will continue into future decades. More and more passengers are choosing to travel by rail, and more and more companies are choosing to move their goods by rail.
- 1.2 Demand for rail is high and has grown significantly over the last decade. Almost 1.4 billion passenger journeys are made each year, a 40 per cent increase from ten years ago. Of these, approximately 900 million journeys are made in London and the South East and 130 million are long distance journeys. Over this period, demand for long distance journeys has grown the fastest among all sectors, at an average growth rate of 5.5 percent per annum¹.
- 1.3 London is the largest attractor of rail journeys in Britain with over half a billion of all journeys made to and from London annually. On a typical weekday, 575,000 passengers travel into Central London by rail in the morning three-hour peak (07:00 to 10:00).² Train crowding is experienced on many radial routes into London particularly in the high peak hour (08:00 to 09:00). Despite the high level of rail investment and extra capacity added to the network in the last decade, rail demand growth continues to outstrip supply.

¹ National Rail Trend Statistics, Yearbook, 2010-2011

² London and South East Route Utilisation Strategy, July 2011

- 1.4 The West Coast Main Line is one of the busiest routes in Britain. Demand on the line ranges from commuter demand into London Euston, which is served by short distance services or longer-distance interurban services, and business and leisure demand served by long distance high speed services. Millions of passengers travel on the West Coast Main Line each year, and London Euston is the busiest station on the route. Approximately 36 million passengers travelled to and from London Euston in 2011³. The London and South East RUS states that 23,000 people arrived at London Euston in the morning peak (07:00 to 10:00) on a typical weekday in 2010. Shorter distance journeys to London Euston are mainly driven by peak commuting demand from places such as Northampton, Milton Keynes and Watford Junction. Passengers commuting from stations between Northampton and London Euston currently experience crowding, especially during the commuter peaks at London Euston. Passenger counts shows that around 60 per cent of all peak services on this route are carrying more passengers than seats available, with many passengers standing for more than twenty minutes.
- 1.5 Demand for long distance rail travel between London and the Midlands, North West and Scotland is high. In 2009, 2.7 million passenger journeys were made between Manchester and London, a 70 per cent growth since 1999. Another 2.4 million passengers travelled between Birmingham and London, 1.5 million between Leeds and London and 1.2 million between Liverpool and London. Demand for rail on these long distance routes is usually highest on Friday and a high level of seat utilisation is experienced. Passenger counts show that more than twenty long distance services arriving/departing London Euston have passengers standing on a busy Friday⁴.
- 1.6 The ability to accommodate this growth depends on the route in question and the market it needs to provide for. Many rail corridors are at, or approaching, their maximum capacity. Main line routes (such as the West Coast Main Line) are mixed traffic railways, accommodating long distance services which stop at few stations alongside short distance commuter and inter-regional services which need to stop at many more stations to meet the needs of the passenger market. This is as well as acting as some of the country’s main rail freight arteries, providing long distance freight flows. It is this mix of services and the range of markets they have to serve that consume the network capacity on our north-south routes.
- 1.7 We are responding to the capacity challenge with major projects like Thameslink, the Northern Hub and Crossrail, along with other incremental capacity enhancements around the country which will allow longer and/or additional trains to run. However, on some routes, there will come a point where continued incremental enhancements will no longer provide the necessary outputs. Something more fundamental will be required.

³ LENNON rail ticket sales data, 2010/11 and Passenger Count Survey

⁴ West Coast Main Line Route Utilisation Strategy, July 2011

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- 1.8 In 2008/09 we undertook a vast amount of analysis to understand the long-term capacity issues facing the major inter-city routes as part of our New Lines Study.
- 1.9 This analysis looked at the ability of these routes to satisfy passenger and freight demand, both now and in the future. The conclusions that could be drawn from this work were clear, that all the major inter-city routes will face huge challenges in terms of having sufficient capacity for future decades.
- 1.10 The challenges this brings are substantial and complex and, of these routes, the challenges are at their most acute – and present themselves soonest – on the West Coast Main Line.
- 1.11 At first, the problems will manifest themselves in communities such as Milton Keynes or Northampton, where people wishing to travel to London or Birmingham will simply not be able to get on a train at all at certain times of the day. Further ahead, similar problems will begin to form on the long distance flows such as from London to Birmingham, or from London to Manchester. By this point, the restricted capacity of the rail network between our major cities will have become a significant brake on, and barrier to, sustainable national economic growth.
- 1.12 The work undertaken in the New Lines Study, and all analysis since, suggests that nothing short of additional running lines will provide the significant increase in capacity required at the southern end of the West Coast Main Line
- 1.13 Though the West Coast Main Line will be the first of the country’s north – south routes to feel the effects of the increasing demand being placed upon the network, similar effects will be felt later on our other north – south routes (the East Coast Main Line and Midland Main Line).

2. What capacity do you believe Britain’s rail network will require in the future?

- 2.1 Demand for rail is predicted to continue to grow. Network Rail’s passenger forecasts predict the highest demand growth in the long distance market⁵:
 - London – Manchester is estimated to grow by up to 50 per cent between 2011 and 2026
 - London – Liverpool is expected to grow by up to 44 per cent in the same period
 - London – Leeds is predicted to grow by up to 47 per cent in the same period
 - London – Birmingham is expected to grow by up to 36 per cent in the same period.

⁵ Network RUS: Scenarios and Long Distance Forecasts, June 2009

- 2.2 Committed schemes such as platform lengthening for longer Class 390 trains, the West Coast Main Line Power Supply Project, the Stafford Area Improvement Project, the East Coast Main Line Intercity Express Programme and electrification of routes in the North West will help to increase capacity in the long distance market. However, further interventions are required to provide the additional capacity that is required to meet the fast growing demand in the long distance market.
- 2.3 Crowding on commuter services into London, where rail has a dominant market position, is already widespread. Even modest demand growth causes problems and significant rail enhancement is needed to supply the required capacity. Total peak hour demand into Central London is predicted to grow by 36 per cent to 2031⁶, and this forecast varies by route. Some of the expected demand growth to central London stations such as London Paddington and London St Pancras is being met by committed schemes including Thameslink, Crossrail, and a significant programme of platform lengthening. However further intervention is required on some routes including the West Coast Main Line to provide the much needed capacity to meet demand.
- 2.4 London Euston is one of the busiest stations in central London with high future levels of crowding predicted. Demand from stations between Northampton and London Euston is expected to grow at around 30 per cent over the next 15 years and this is predominately driven by London employment growth. There is also significant growth expected in the Milton Keynes region as part of the Milton Keynes South Midlands sub-regional strategy, which is not reflected in this forecast.
- 2.5 The West Coast Main Line Route Utilisation Strategy concludes that passengers commuting from stations between Northampton and London Euston are expected to experience high levels of crowding by 2024, especially during the commuter peaks at London Euston. Over 85 per cent of all peak services on this corridor are expected to have more passengers than seats, with many passengers standing for more than twenty minutes. Analysis shows that even lengthening all peak trains to their maximum length is insufficient to address the mismatch between supply and demand. The West Coast Main Line is predicted to be full by 2024 and further additional capacity to outer suburban stations will be required.
- 2.6 Rail demand into many urban centres and cities outside London has grown very strongly in the last decades. In some of the largest centres, rail now has a significant market share and crowding levels of some routes are similar to those around London, albeit on a smaller scale.

⁶ London and South East Route Utilisation Strategy, July 2011

3. What is the best way of providing capacity and future-proofing Britain’s rail network?

- 3.1 In order to identify where additional passenger or freight capacity is required across the rail network, Network Rail works with the rest of the industry to look at future network capability compared with demand, and identify where one cannot accommodate the other. Options are then considered that will both bridge the capacity gap and provide value for money. This process was undertaken for the whole of the British rail network via Network Rail’s programme of Route Utilisation Strategies.
- 3.2 When looking at options to provide additional capacity, simpler and lower cost interventions are always considered first, before turning to more complex and expensive options. Opportunities for optimisation of the current infrastructure via timetabling solutions are investigated first, followed by train lengthening and only then running additional trains which could trigger infrastructure enhancements. The most appropriate solution would depend on the characteristics of the route and what is constraining growth.
- 3.3 The outcome of this process to date has been a programme of train lengthening and infrastructure enhancements as laid out in Network Rail’s CP4 Delivery Plan and the Initial Industry Plan for CP5, along with major projects like Thameslink, Northern Hub and Crossrail. But further into the future, we need to look beyond incremental enhancements to provide the necessary capacity on the busiest routes.
- 3.4 The most challenging capacity gaps are those on the radial routes into London. The London and South East RUS concluded that on some routes “more expensive options such as major infrastructure upgrades or new routes appear to be needed if predicted peak demand is to be fully accommodated”. This relates to some routes south of London as well as the principal routes to the north.
- 3.5 The New Lines Study concluded that the most effective way to provide the much-needed capacity on the West Coast Main Line is the construction of a new line. This is based on the fact that nothing short of new running lines will provide the necessary uplift in capacity at the south end of the West Coast Main Line. This is because the mix of traffic on the route means that during the busiest times it is not possible to run additional services, and train lengthening beyond 12-cars would have major implications for terminal stations and signalling systems. Further incremental enhancements at key locations may provide some capacity but not enough to be sustainable for the long-term and not where it is most needed. Running double-decker trains on the existing infrastructure is not viable due to the height and width restrictions associated with bridges and other structures.
- 3.6 The Study also concluded that to provide the best value for money, any new line should have high-speed capabilities.

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- 3.2 The Study demonstrated there was a robust business case for a high speed rail line on the basis that it serves a sufficient number of cities. An optimised network which serves the key targets – London, Birmingham and Manchester – and adds more destinations to spread the costs over more journeys produces a strong business case.
- 3.3 Our findings indicated that the extension of any line to Scotland would increase the economic benefits in the business case. London-Scotland is a substantial market which is currently dominated by aviation.
- 3.4 Our New Lines Study only looked at the key transport markets on the West Coast Main Line – London, Birmingham, Manchester and Scotland. Later (though unpublished) work confirmed that the second part of the Y – to the East Midlands, South Yorkshire and Leeds, also had a strong business case. This would address the long-term capacity issues faced by the East Coast and Midland Main Lines.
- 3.5 In 2011, the Department for Transport asked Network Rail to review two proposals (produced by consultants for 51M and the Department for Transport) that suggest alternative strategies to HS2. Both strategies comprise enhancements to the classic network and a restructuring of the timetable to allow additional services to run.
- 3.6 The assessment of the proposals confirmed that incremental infrastructure and rolling stock enhancements are not the appropriate solution to the overall capacity problem on the West Coast Main Line. This conclusion was reached based on a number of factors that emerged from the analysis:
 - Neither proposal would meet the forecast demand on the suburban commuter services at the south end of the West Coast Main Line.
 - The intensive off-peak service pattern in the alternative strategy produced for the DfT would mean that freight growth could not be accommodated.
 - Both proposals would likely require remodelling at London Euston station.
 - Both proposals would result in long periods of disruption along the route whilst infrastructure interventions are constructed.
 - The high utilisation of the fast lines in both proposals would negatively impact on route performance.
- 3.7 The assessment surmised that whilst a strategy based around enhancements to the classic network could provide some relief from overcrowding on certain services, they leave other issues unresolved and, as they fail to provide sufficient capacity for commuters at the south end of the West Coast Main Line, do not solve the main capacity constraint that is the primary driver for intervention on the route.

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- 3.8 The Department for Transport also asked Network Rail to review a high level proposal of an alternative strategy which aimed to provide long-term capacity on the East Coast Main Line and Midland Main Lines via incremental infrastructure upgrades and timetable restructures.
- 3.9 Network Rail's assessment similarly concluded that the proposal was not a suitable long-term strategy for the routes in question. This is due to the high level assessment indicating that neither route option could deliver the outputs stated with the infrastructure outlined in the report and, in some cases, considerably more infrastructure could be required. Both routes would also undergo a lengthy and highly disruptive programme of significant infrastructure works and the proposal would not solve the predicted crowding on suburban East Coast Main Line services.
- 3.10 The Government's proposed high speed line would provide significant additional capacity not only via the new high speed network, but also through the additional space on the classic network created by the transferral of long distance traffic to the new line.
- 3.11 In 2011, Network Rail and Passenger Focus were remitted by the Department for Transport to look at how the relieved capacity created by HS2 phase one could be used most effectively. Questionnaires were distributed to passengers on the south end of the West Coast Main Line, and to non-users who currently elect to travel by car instead of rail, to find out which journey characteristics (journey time, service interval etc) were considered priorities.
- 3.12 The data produced was used to create a set of conditional outputs by market segment (short-distance commuters into London, West Midlands commuters etc) which identify what level of service the industry should be aiming to provide to classic line flows once HS2 phase one has been implemented. An example being 'an increase in the provision of London suburban peak services to the level where all passengers travelling for more than 20 minutes have a reasonable expectation of a seat for the duration of their journey'.
- 3.13 This work outlines that there could be a wide variety of benefits to conurbations at the south end of the West Coast Main Line, including faster journey times, improved connectivity and a considerable increase in capacity. An initial capacity assessment indicates that the majority of the conditional outputs can be delivered by HS2 phase one.
- 3.14 One of the biggest groups to benefit would be commuters travelling between Northampton, Milton Keynes, Watford Junction and London, where the worst overcrowding is forecast in the coming years as demand for rail continues to grow. Initial analysis suggests as many as twelve trains per hour could operate on this section of the route in the busiest peak hours.
- 3.15 Other key beneficiaries would be passengers travelling between the major towns and cities of the West Midlands and between London and destinations in the Trent Valley, as well as companies that rely on moving goods by rail freight. There are

also likely to be opportunities to improve connectivity between the south end of the route and towns and cities further the north.

4. What will the effects of providing extra capacity be, beyond addressing journey supply? What would be risked by failing to provide that capacity?

- 4.1 The obvious first effect of additional capacity, at least in the short term, is to reduce crowding. This has important knock-on effects because a higher-quality journey experience will encourage more people to travel. This will generate benefits which may be environmental (if the people transfer from other modes) or economic (if they are new journeys). Each of these effects is explained in more detail below. Additional infrastructure capacity can also improve train performance, although if the additional capacity is fully used by additional train services then (other things remaining equal) performance would be expected to remain the same.
- 4.2 Investment in rail capacity has significant environmental benefits by encouraging modal shift from road and air to rail. Passengers and freight companies switching from cars and lorries will both reduce carbon emissions and ease congestion on Britain’s road network. The Eddington Study estimated that time lost to road congestion costs the economy £7-8 billion every year, a figure that is set to rise to £22 billion by 2025.
- 4.3 However, perhaps the most significant impacts of additional rail capacity arise in the area of connectivity. Increasing the ability of passengers to travel between urban centres has been demonstrated to stimulate economic growth. Rail is enormously important to the business community: already, of the 1.4 billion passenger journeys made on the railways every year, 1 billion are made by people commuting or travelling for business.
- 4.4 Additional capacity is also vital to the continued growth of the rail freight industry. The rail network transports over 100 million tonnes of goods per year. It is of strategic importance – rail freight delivers over a quarter of the containerised food, clothes and white goods, and delivers nearly all the coal for the nation’s electricity generation. Rail freight has expanded by 60 per cent over the last decade, and is expected to grow by a further 30 per cent up to 2019 alone.
- 4.5 It is for this reason that expanding the capacity and improving the performance of our rail network plays a vital part in supporting sustainable economic growth.
- 4.6 If additional capacity is provided alongside a reduction in journey times, for example through high speed rail, then the benefits described above are amplified.
- 4.7 The high speed line proposed by Government would dramatically decrease journey times between the country’s key cities. Journey times between London and Birmingham would be reduced to 49 minutes under HS2 phase one, whilst London – Manchester would be reduced to 1hr41mins after phase one and 1hr13mins after phase two. The implementation of phase two would mean passengers can get to

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South Yorkshire and Leeds an hour faster than today and journey times from Birmingham to Leeds and Manchester would be halved. Journey time reductions of this scale are unachievable by any other means than a high speed rail network.

- 4.8 HS2 will encourage economic growth nationally, particularly in the cities served by new high speed services by effectively bringing them closer together. However, the positive impact of the new network capacity delivered by HS2 on economic growth would not be restricted to the cities it serves. A new high speed line will provide vital support for regional growth through agglomeration effects. By improving the connections between the major cities of the Midlands and the North a high speed line will help businesses by improving access to wider markets, bigger pools of labour and greater numbers of suppliers.
- 4.9 The capacity increase and journey time reductions that can be achieved by high speed rail would accelerate the modal shift that normally occurs with improvements to the rail network, with the associated reduction in carbon emission and road congestion.
- 4.10 The Government’s proposed Y-network will also create new journey opportunities across the country. The interchange at Old Oak Common would connect high speed services to Crossrail, Heathrow Express and the Great Western Main Line (for services to Reading, Swindon, Oxford and Bristol). The Government also plans to link the proposed new line to HS1 which not only opens up through journey opportunities to Europe, but also from the south east to the north of the country without the need to interchange in London.
- 4.11 This is an example of the importance of planning any new line to be integrated with the rest of the rail network to ensure the maximum number of passengers can take advantage of the additional capacity and journey improvements. This also maximises the connectivity benefits that can be achieved from the investment in HS2.
- 4.12 Continuing to plan for the future growth in rail patronage is vital. A failure to do so would result in people being dissuaded from travelling by rail in ever more crowded conditions, effectively stifling access to some of the country’s urban centres. We risk our transport infrastructure becoming a brake on economic growth, rather than the accelerant it is today.

Appendices

Appendix 1 – New Lines Study

<http://www.networkrail.co.uk/newlinesprogramme/>

Appendix 2 – London and South East RUS

See e-mail attachment.

Appendix 3 – Northern RUS

See e-mail attachment.

Appendix 4 – Scotland Generation Two RUS

See e-mail attachment.

Appendix 5 – West Coast Main Line RUS

See e-mail attachment.

Appendix 6– Review of Strategic Alternatives to High Speed Two

See e-mail attachment.

Appendix 7– Future Priorities for the West Coast Main Line – Released Capacity from a Potential High Speed Line

See e-mail attachment.