



High Speed Two: East and West

The next steps to Crewe and beyond

Presented to Parliament
by the Secretary of State for Transport
by Command of Her Majesty

November 2015

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Foreword



This Command Paper provides an update on our plans for HS2. The first section sets out the case for, and progress on, delivering HS2. Section Two sets out our plans to deliver the next section of the HS2 route, as far as Crewe, earlier than planned. The final section gives an update on plans for the rest of the “Y” network – to Manchester in the west and Leeds in the east.

Transport is central to the success of our country. This Government, more than any before, is committed to making sure we have the infrastructure we need to deliver economic growth, not just in the immediate future, but for the long term. HS2 offers

us a unique opportunity to do that. To realise the opportunity we must do two things: first, take key decisions on the infrastructure we need; and second, start work with operators, communities and passengers to ensure we deliver a service across our railway which meets the needs of people not only in 2026 when Phase One opens, but well into the future.

Today I am confirming that we will accelerate the section of route from the West Midlands to Crewe, so that it opens six years earlier than planned in 2027. This means that cities across the North West and Scotland will realise more of the benefits of HS2 sooner.

We are developing our plans for the rest of Phase Two. We continue to work closely with towns and cities to agree how best to serve the North, and intend to make a decision on the rest of the route in autumn 2016. In this Command Paper I have set out my current thinking on station and depot locations, links onto the existing network and integration with our work on the Northern Powerhouse Rail programme. I welcome the way local authorities, most recently those in Leeds, the Northern Gateway Partnership and the East Midlands, have come together to support HS2 plans in their areas.



HS2 will not be a separate, standalone railway. It will be a key part of our national rail network, and wider transport infrastructure. Private sector companies will not only be able to bid to run HS2 services, but they will be able to use the capacity released on our existing network to offer a wider range of services. Passengers will not only be able to travel more quickly between key cities but also to access more reliable, more frequent and more varied rail services across the country. Local authorities and communities are developing regeneration plans for HS2 station places.

HS2 will stand alongside the railways built by the Victorians, and the motorways built in the 1950s and 1960s, as transport infrastructure that creates a step change in the prosperity of our nation. The railway on which people will travel from 2026 must meet the needs of our country at that time, and have the ability to adapt to deliver into the 22nd century and beyond. We cannot decide on everything now and we will continue to review and develop plans to ensure they deliver for our growing and evolving nation. Over the coming years we have choices to make and will work closely with the newly formed National Infrastructure Commission, Transport for the North, train operating companies, local authorities and communities to deliver a rail network that creates growth and prosperity.



The Rt. Hon Patrick McLoughlin MP
Secretary of State for Transport

High Speed Two: East and West. The next steps to Crewe and beyond



Figure 1: How HS2 connects with the existing rail network

HS2: The case for action

HS2 will deliver increased rail capacity, improved connectivity and will support our growing, modern economy. We need HS2 because:

Our rail network needs extra capacity

- There is growing demand for rail travel. Since privatisation, passenger numbers have more than doubled:
 - Twenty years ago, 735 million rail journeys were made every year
 - Last year this had increased to 1,654 million journeys
 - Freight has increased by 70 per cent since privatisation and is anticipated to grow by around 90 per cent by 2033 compared with 2011, as international trade continues to expand
 - Demand for Virgin West Coast Main Line (WCML) services has been growing by more than the average for long distance services. In just two years since 2013, annual passenger journeys have increased by 13.5 per cent – to 34.5 million in 2015
 - On London Midland services, annual passenger journeys grew by 7.9 per cent in the last two years and Euston is now the fastest growing London terminal station
 - The number of trains per day has increased in response to this demand. In 1994, there were 17 trains per day from London to Manchester. In 2013, this had increased to 47 trains per day
 - There is already overcrowding on peak services. London Midland trains also regularly appear in the Government's annual list of the 10 most crowded services. More than 10 per cent of passengers arriving on peak hour services into Birmingham and Manchester were standing
 - If growth continues at 3.7 per cent per year, we estimate that by 2033/4, on a typical weekday in the evening peak, 3,200 passengers would have to stand on intercity trains departing London on the WCML. Of these people, 40 per cent would be standing for an hour or more as they would be on trains with a first stop that is an hour outside London. On Friday evenings this situation would be even worse, with substantial numbers of people standing for 90 minutes – as far as Crewe or Warrington

- On commuter trains, in a similar growth scenario, overcrowding would become a serious operational issue by 2033
- On the existing WCML, we are reaching the end of our ability to squeeze more trains on to the existing rail network. Incremental upgrades are not enough to meet the long term growth in demand. Only HS2 can deliver the step change in long term capacity that is needed. It will:
 - Provide up to 18 trains per hour running in each direction by 2033
 - Triple the number of seats available out of Euston in peak hours
 - Release capacity on the existing rail network, improving performance and allowing train companies to provide new or more frequent services
 - Allow more freight paths on the WCML that could take 800 lorries off the road, on average, each day
 - Bring over £60 billion of benefits to transport users and £14 billion of wider benefits – delivering more than £2.20 of benefits for every £1 of investment

We need to improve connectivity

- Our economy is changing. The Northern Powerhouse and the Midlands Engine are rebalancing our economy so that national economic growth is distributed more evenly across the country
- Jobs are being created in our city regions at more than twice the rate as elsewhere. Between 2008 and 2014, 700,000 jobs were created in Britain's 10 biggest city regions
- Our economy is shifting towards knowledge based industries and we expect 40 per cent of the jobs created between 2012 and 2022 to be in knowledge based sectors, such as financial and professional services, information technology and advanced manufacturing. We know that people working in these sectors tend to travel more by rail
- So good rail connections, such as HS2, which offer fast, city centre to city centre travel, can directly support our modern, 21st century economy. In addition to the investment in HS2, Network Rail has embarked on one of the most ambitious programmes of rail modernisation since the Victorians. This will help deliver more and better journeys
- Of course HS2 is not only about supporting UK business. It is also about opening up new possibilities for leisure travel – making it easier for families and friends to meet up and allowing people to make day trips to cultural or sporting events, which would otherwise not have been possible

HS2 will directly connect 8 out of 10 of our largest cities, with significant reductions in journey times:

- London to Manchester will reduce from 2 hours 7 minutes to 1 hour 7 minutes
- London to Glasgow will reduce from 4 hours 31 minutes to 3 hours 38 minutes
- Birmingham to Manchester will reduce from 1 hour 28 minutes to 40 minutes
- Birmingham to Leeds will reduce from 1 hour 58 minutes to 53 minutes
- Leeds to Sheffield (Meadowhall) will reduce from 53 minutes to 15 minutes

- HS2 will become the new backbone of our rail network, carrying 300,000 people a day, with connections to the rest of the rail network and well integrated into wider transport systems
- HS2 will reduce the pressure on the existing network, helping to improve punctuality, and free up capacity for new and different services. Network Rail estimate that around 100 cities and towns could benefit from new or improved rail connections

HS2 will create local growth opportunities

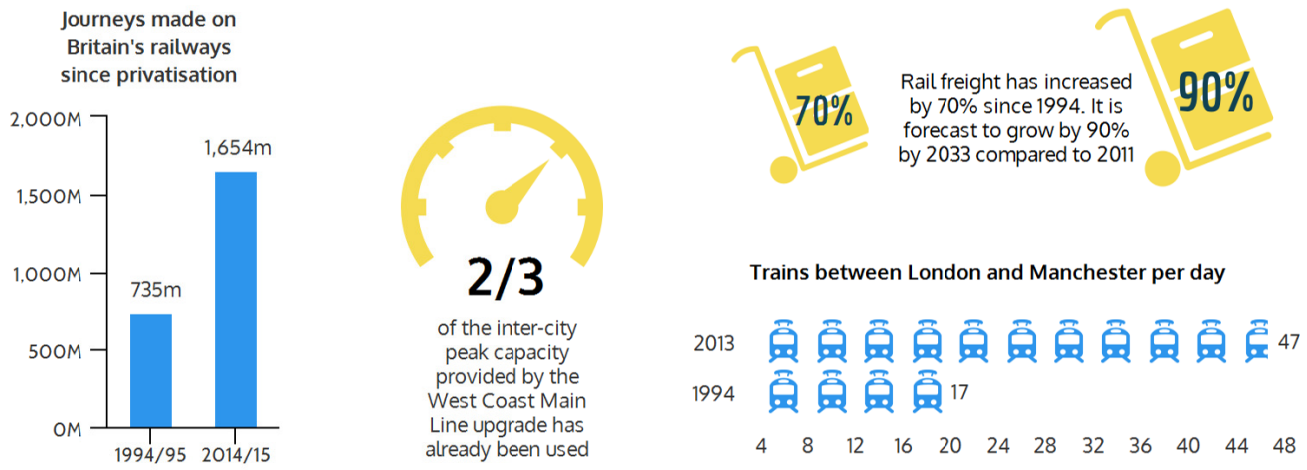
- HS2 presents an opportunity to deliver a step change in local growth on and around the route. Local areas are aware of this unique opportunity and have developed plans to capitalise on this. These plans include the creation of:
 - 55,000 jobs and 24,000 new homes near Old Oak Common
 - 36,000 jobs and 4,000 homes around Birmingham Curzon station
 - 16,500 jobs and 1,900 homes in a ‘modern Garden City’ at Birmingham Interchange
 - More than 100,000 new homes and 120,000 new jobs through the creation of the Northern Gateway Development Zone around Crewe, Stoke-on-Trent and Stafford
 - Integrated proposals for improved local and sub-regional connectivity to HS2

HS2 will create direct opportunities for people and businesses

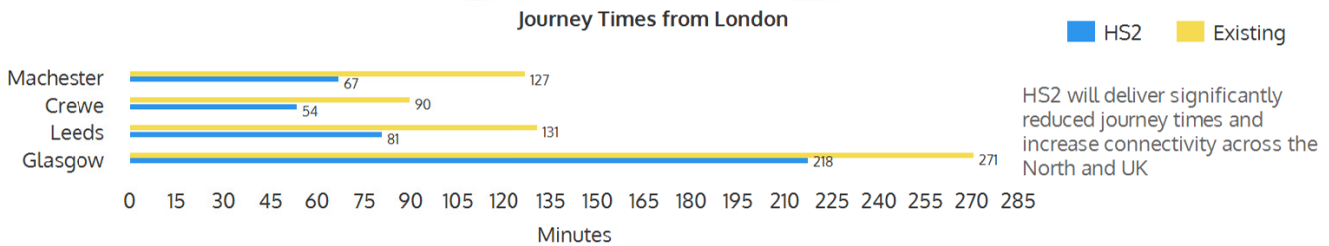
- £11.8 billion of contracts for the main civil engineering works for Phase One with further opportunities to follow with Phase Two
- 25,000 private sector jobs to build HS2, with over 1000 people each year being trained at the new National College for High Speed Rail in Birmingham and Doncaster from 2017
- 3,000 jobs to operate HS2
- The creation of up to 100,000 jobs through growth around HS2 stations
- Create significant growth and job opportunities across the UK with over 70 per cent of the new jobs created by HS2 being outside London
- 2000 new apprenticeships

HS2: The Case for Action

Existing Capacity



Journey Times



Jobs



£11.8bn

UK engineering contracts for Phase One with future opportunities on Phase Two



1,000+

trainee construction workers per year at new National College for High Speed Rail from 2017



3,000

new railway operations jobs



25,000

private sector jobs to build HS2



100,000

jobs created through growth around HS2 stations

Business Case



12.5m

passengers per year in 2037 travelling on HS2 from London to



60mins

journey time reduction between London and Manchester



£1.05m

per day in benefits, by 2037 from passengers travelling between London and Manchester



0.14%

HS2 as a proportion of GDP in the spending review period 2016/17 to 2020/21

Figure 2: HS2: The case for action

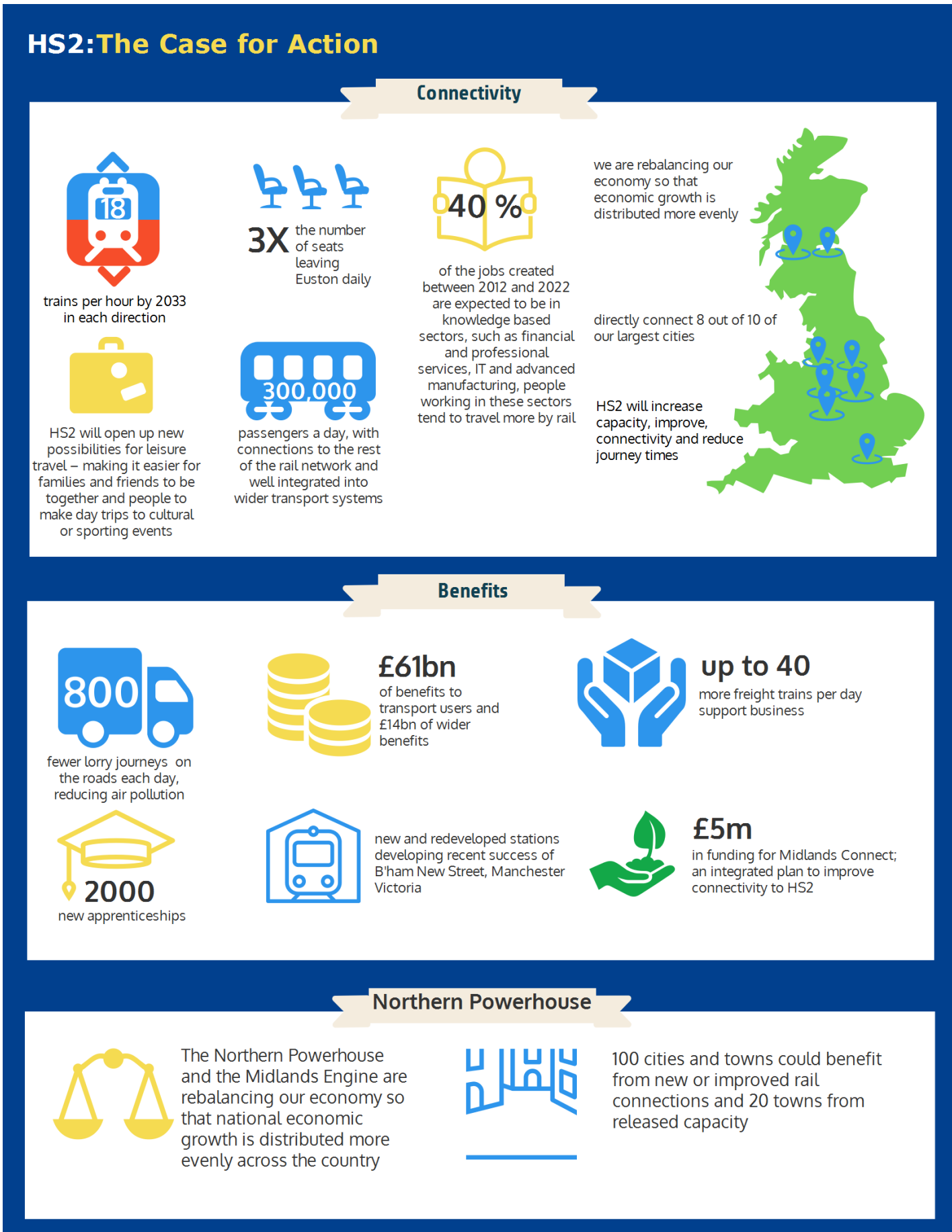


Figure 2: HS2: The case for action

HS2: reducing journey times

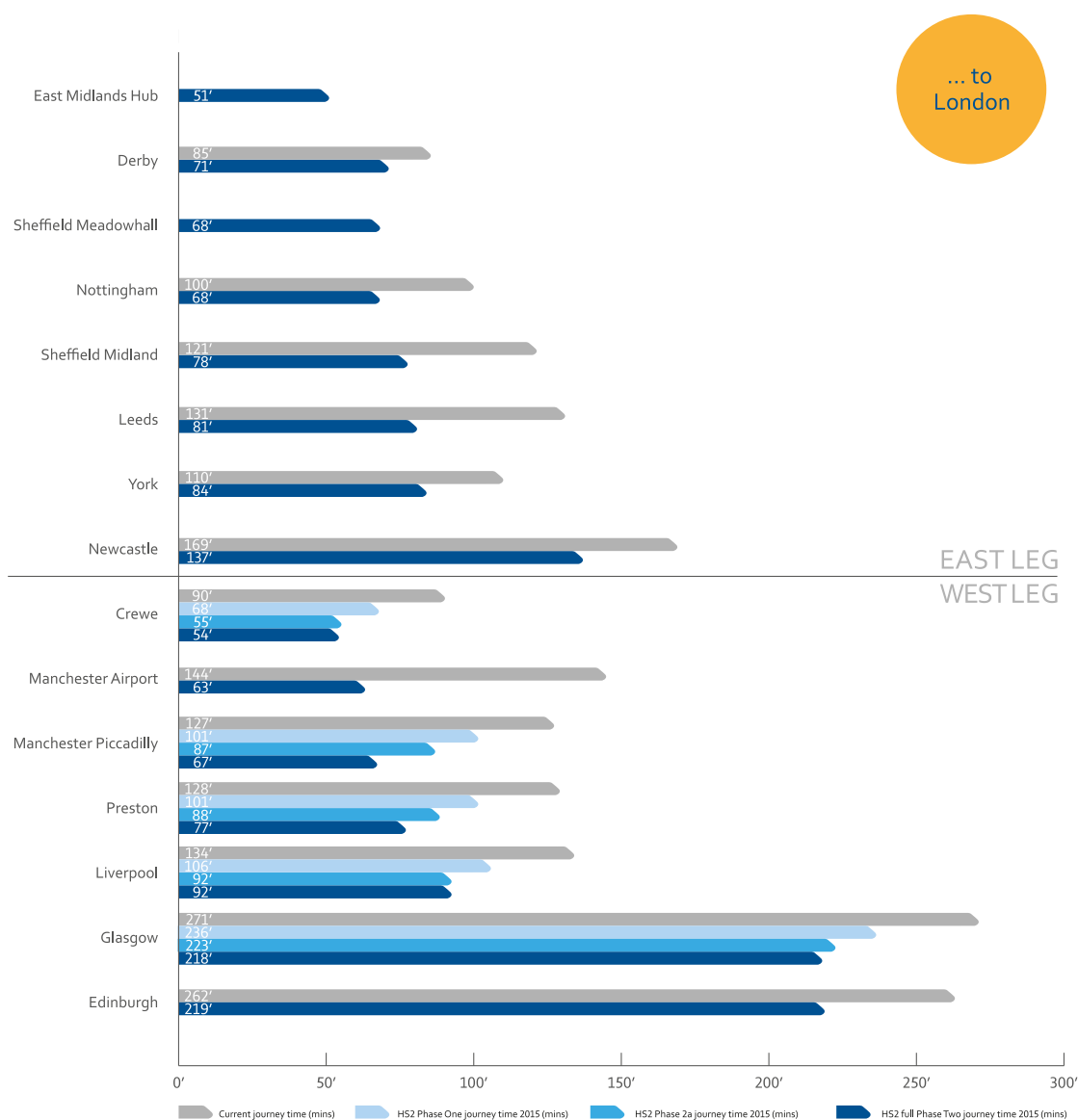


Figure 3: Journey times between major economic centres¹

¹ Fastest typical HS2 times and current rail times are shown in the image. Five minute interchange times are assumed at East Midlands Hub station and Sheffield Meadowhall. This represents the quickest possible interchange time, allowing a walk time between platforms but no wait time at the connecting service platform. Edinburgh times are to Edinburgh Haymarket.



Executive summary

Introduction

1. The Government is developing our whole railway network to ensure that it delivers for passengers and businesses now and in the future. In order to grow a balanced economy that benefits people across the country, we need a high quality transport system that brings our towns and cities closer together. That is why we are investing significantly in all forms of transport.
2. HS2 is a key part of that investment. In the 20 years since privatisation demand for rail travel has more than doubled² and whilst we continue to make improvements to our existing network, this alone will not be enough to deliver the step change in service that is required.
3. HS2 will enable us to meet the huge growth in demand for rail travel; it will bring cities closer together through greater connectivity and quicker journey times; and it will free up capacity for local and regional services. It will be an integral part of our national rail network. It will transform the experience of passengers by helping to improve services and reliability across the whole of our rail network.
4. Delivering this transformative programme for our railways first requires us to confirm the infrastructure we need – the route, the stations, the depots; and then to work with train operators, passenger groups, local authorities and communities to develop services across our network which meet the needs of the day, and can flex into the future.
5. As with all major programmes managing costs will be challenging, but doing so is essential. In making decisions now and over the coming years we will need to think carefully about affordability and value for money, to ensure that HS2 delivers the right outcomes for taxpayers as well as passengers.

² https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/466412/rail-passengers-crowding-2014.pdf

Delivering HS2

The route

6. We have already made significant progress in developing Phase One of HS2 from Euston to the north of Birmingham. We confirmed the route for Phase One. We issued safeguarding directions to protect land along the route from conflicting development in July 2013. We have started to acquire land where the track will be laid. We have introduced the High Speed Rail (London – West Midlands) Bill (“the Phase One Bill”) into Parliament where it is currently being scrutinised by the Phase One Select Committee. High Speed Two Limited (HS2 Limited) has started the procurement process for the main civil engineering works, that includes tunnels, viaducts and embankments, which will be worth £11.8 billion, through the publication of a pre-qualification questionnaire (PQQ). We have submitted plans to Parliament for the redevelopment of Euston station with eleven new platforms dedicated to HS2 and improved interchanges with London Underground. The plans also enable potential redevelopment of the remaining existing station platforms and concourses, subject to future funding and approvals.
7. By taking these steps, the Government remains on course to start construction of Phase One in 2017 and open the Phase One route in 2026.
8. However, we want to see even more of the benefits of HS2 reach more of the country as soon as possible. We have been working with local authorities and local stakeholders to confirm the right national and local solutions on the Phase Two route from Birmingham to Manchester and Leeds, and to challenge ourselves to deliver as much of the Phase Two route as quickly as possible. In this Command Paper we focus on our plans for delivering Phase Two of HS2.

Services and passenger experience

9. Ensuring a great passenger experience is at the heart of the vision for HS2. We are designing a world-class transport solution that is reliable and easy to use for all passengers, and fully integrated with wider transport systems. We aim to set new international standards of service excellence, including train and station presentation, passenger information and retail facilities. We plan to use innovative technical solutions to ensure that HS2 is attractive and accessible to all by enabling individualised, door-to-door journey planning and real time support.
10. HS2 is not separate from the existing rail network, it will be integral to its long term success. Over the coming years we will be working with local authorities, passenger groups and train operators to ensure we use the HS2 network and the wider capacity it creates to deliver the services that passengers need. We have interchange, classic compatible³ and released capacity⁴ opportunities which we must exploit. We cannot know now exactly what services will be needed in 2026 and beyond, but delivering

³ Denotes HS2 rail services that are able to run on the existing railway infrastructure as well as the High Speed network.

⁴ The train paths that could be released for other services on the existing railway network, as a result of intercity services moving onto HS2.

the services passengers want and need is at the heart of our vision for HS2 and our railways as a whole.

Growth and regeneration

11. HS2 will support growth and regeneration in towns and cities across the country. Local areas recognise the opportunity it presents and have been working with the private sector to develop plans for their areas. We have already supported Phase One station places to develop their HS2 growth strategies, and we are releasing funding for both Crewe and the East Midlands to help them to develop their local area plans further.

Opportunities for the private sector

12. HS2 is currently the largest infrastructure project anywhere in Europe and we want the private sector to play a leading role in delivering HS2.
13. HS2 will create many opportunities for the private sector whether that be in the construction of infrastructure, the development of land on or around the route, or the building of new rolling stock. Operating HS2 will also create significant private sector opportunities, with an estimated 3,000 jobs to be created for the day to day operation of the line.
14. We have already invited companies to bid for the main civil engineering works for delivering Phase One but there are many more opportunities to come. Over the coming years, we will continue to work closely with the private sector to ensure that businesses across the country can benefit from the economic opportunities created by HS2.

The business case for HS2

15. We made the case for investing in HS2 in the 2013 Strategic Case⁵ and the Spending Review confirms we are taking the action needed to deliver this transformative railway.
16. Since 2013, we have undertaken further analysis on the business case for HS2, which we are publishing alongside this Command Paper. Key findings are included in the opening section of this Command Paper and in more detail in Chapter 2.
17. What is clear is that demand for passenger and freight services is growing. Passenger rail journeys have more than doubled since privatisation 20 years ago, and journeys between London, Birmingham and Manchester have trebled in the same period. Total rail freight volumes have risen by 70 per cent since privatisation in the mid-1990s⁶.
18. Whilst we continue to invest in the existing railways this alone will not meet long term demand. The West Coast Main Line (WCML) is now operated at a higher intensity than other European fast lines and despite an extensive £9 billion upgrade programme completed in 2008, 60 per cent of the peak intercity capacity created was used by 2014. By 2033 further capacity will be required to accommodate demand.
19. HS2 will create capacity for up to 18 additional intercity trains per hour out of Euston, trebling the amount of seating capacity. It will free up capacity on the existing rail

⁵ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/260525/strategic-case.pdf

⁶ Source: Freight Market Study (Network Rail 2013).

network for more freight and more conventional passenger services. This will reduce the number of lorries on the roads so easing congestion, reducing carbon emissions and improving safety. It will also enable train operators to offer more local and regional services on the existing network.

20. HS2 will also improve overall reliability, both through its own services and by reducing pressure on the current network. The level of congestion on the WCML means that recovery from incidents is difficult and the knock-on effect from such incidents is more serious. At present around 5 million intercity passengers arrive at their destinations more than 10 minutes late each year. HS2 will help to address this.
21. The case is clear. HS2 will deliver much needed improvements for capacity, freight and performance issues which constrain our railway today. It will create a higher performing rail network for the country as a whole. Delivering a programme of this scale is not without challenges, but we must strive to secure the benefits of HS2 as quickly as possible.

Phase 2a: the route between the West Midlands and Crewe

Acceleration

22. As part of the 2013 Phase Two consultation process we have been asked whether there are opportunities to deliver some or all of the Phase Two route sooner. Sir David Higgins, in his report, "Rebalancing Britain" (October 2014) recommended accelerating the section of the consultation route, with some minor refinements, from Fradley, north of Birmingham, to Crewe, now known as Phase 2a.
23. Whilst we recognise that accelerating delivery will be challenging the Government agrees that there is a clear case for doing so where that is viable. Accelerating a section of Phase Two will improve journey times to northern cities sooner, support growth and jobs in the local area, and help to create the conditions for both the Northern Powerhouse and the Midlands Engine. We have considered a number of options but agree with Sir David Higgins that the route to Crewe is the right section to build sooner.
24. The Secretary of State has therefore decided that powers for this section should be sought through a separate hybrid bill, in order to allow it to open by 2027, six years earlier than planned, and so bring the benefits of HS2 to the North sooner.
25. There are a number of other sections of the consultation route which, it has been suggested, could bring benefits if delivered earlier than the rest of Phase Two in 2033. These include the section between Sheffield and Leeds, building HS2 from the north down, the western leg all the way to Manchester, or the section of route between Birmingham and the East Midlands. However, decisions have not yet been made on these sections of the Phase Two route, and we have still to finalise the scope of work needed to deliver them. That said, if, in the future, we identify ways that we can accelerate construction of other sections of the route, then we will.

The route

26. Having considered the consultation responses, the Secretary of State has now decided on the route for Phase 2a. The route is based on the proposals put forward for consultation in 2013. In determining the route, we have listened to what people have

said in response to the consultation and have also reviewed learning from the design of Phase One. The Phase 2a proposals include a number of refinements (see Chapter 5).

27. The Secretary of State has also issued safeguarding directions for this section of route, having considered responses to the separate November 2014 consultation on safeguarding. These directions protect the route from conflicting development.
28. We are committed to assisting those affected by HS2. We are therefore also launching today a consultation on a package of assistance measures for those living along this section of the route.
29. The delivery of Phase 2a is only the next step on our plans for the full HS2 network. This Command Paper also provides an update on the Government's intentions for the rest of the route.

Crewe

30. Crewe is already a key gateway station for the North West, allowing interchange between services to London, Manchester and Scotland; Chester and Liverpool; Stoke-on-Trent, Stafford and Derby; South Wales; and Shrewsbury and North Wales. It also serves a critically important role for national rail freight operations, with much of the freight traffic on the WCML routed through Basford Hall Yard, immediately south of Crewe.
31. However, the current railway layout through Crewe is outdated and acts as a constraint on the WCML. As Sir David Higgins recommended in his report "Rebalancing Britain" (October 2014), we believe there could be benefits from better integrating HS2 services with the existing network in a Crewe Hub. We are therefore working with Network Rail and HS2 Limited to examine options for a Crewe Hub which would allow additional HS2 services to call at Crewe, address the existing constraints, and provide for future growth.
32. Network Rail's work to date suggests it is feasible to deliver a new Crewe Hub station. However, further detailed work, including on costs and funding, is required on what approach to take before any decision can be made. The Government has asked Network Rail and HS2 Limited to continue this work, with a view to reaching a single proposal by the time further decisions are taken on HS2 Phase Two in autumn 2016. Affordability and value for money will be key.
33. A Crewe Hub station would generate significant opportunities – not only for Crewe itself but also for the surrounding sub-region. The Northern Gateway Partnership – a collaboration between seven local authorities and two Local Enterprise Partnerships (LEPs) – positions Crewe at the heart of a locally driven programme of investment to bring jobs, housing, growth and regeneration to Cheshire and North Staffordshire.
34. It is because this work is important that, as set out above, we have released initial funding of £0.6 million for the development of an HS2 Growth Strategy for the Northern Gateway. This funding will enable the region, led by the two local LEPs, to develop their strategy for maximising the benefits that HS2 will bring to the region.

Completing the full “Y” network

35. The Spending Review has confirmed the Government’s commitment to taking forward the whole of HS2 by setting a total budget of £55.7 billion in 2015 prices. The cost of HS2 has not changed since the 2013 Spending Review. Instead the prices have been updated to take account of inflation.

Managing costs

36. HS2 is an ambitious engineering project which will take many years to complete, and like any programme of this scale, controlling costs will be challenging. Our understanding of costs will develop over time. Once expert engineers and surveyors are on the ground we will develop a better understanding of where the key challenges are and where we can find savings. However, in order to manage costs, HS2 Limited is already looking at possible efficiency savings options. These include work looking at international best practice to learn lessons from high speed rail projects around the world as well as using the experience of Phase One to ensure the scheme is engineered to an affordable standard. The National Infrastructure Commission (NIC) will also look at international comparators for large scale infrastructure programmes as part of its work and we expect them to publish findings in due course.
37. We remain committed to delivering HS2 within the existing budget. Given this, and the Government’s wider commitment to manage public finances more effectively, we do not expect to be able to extend the scope of the programme further within the agreed funding envelope.

Ensuring delivery of the full “Y” network

38. Beyond today’s decision on Phase 2a between the West Midlands and Crewe, we are progressing plans for the remainder of the Phase Two route. We have not yet taken decisions on this section of the route. We will continue to examine the evidence available ahead of our route decision in autumn 2016.
39. We are also working with the Scottish Government to consider the viability of possible further improvements to journey times in Scotland. We will reach a decision on the remainder of the Phase Two route in autumn 2016, but we are also providing an update on our current intentions in this Command Paper. In doing so, we will take the necessary steps to manage cost pressures and ensure the final scheme is both affordable and delivers good value for money for the taxpayer.
40. Alongside this Command Paper, we have published the independent analysis by Ipsos MORI of all the responses to the 2013 Phase Two route consultation. The Secretary of State’s route decision on Phase 2a takes account of any consultation responses relevant to that section of the route. This Command Paper also responds to the cross-cutting issues raised. We will respond in full to consultation responses relating to the rest of the Phase Two route when a route decision is taken in 2016.

Eastern Leg

41. The Eastern Leg of HS2 Phase Two runs from the West Midlands to Leeds, with a connection on to the East Coast Main Line (ECML) to allow trains to run to Darlington, Durham, Newcastle and York. It will connect cities across the Midlands and the North of England, improving existing journey times, opening up a wider range of possible journeys, and helping unlock economic growth. It will also be a vital component of the Northern Powerhouse. The Eastern Leg provides the highest benefits of the whole of HS2.
42. We are continuing to develop our plans for the rest of the Phase Two route. We expect to take a decision on the route in autumn 2016. This work is taking account of the consultation responses from 2013 and the learning from Phase One.

Leeds

43. Leeds station has seen significant growth in passenger numbers in recent years and such growth is set to continue. The additional passengers that both HS2 and improved rail services for the Northern Powerhouse would bring into the city would only add to demand.
44. The Chancellor commissioned Sir David Higgins to look into the best solution for a Leeds station. His report, which has just been published, recommends an integrated design for the HS2 station in Leeds, while maintaining a southerly route into the city. Further detailed work must be done but we welcome this report as an important step towards delivering Leeds the transport capacity and connectivity it needs, and finding the right transport solution that goes with the grain of Leeds' own vision for the future of the city.
45. A decision on the right solution for Leeds will be taken as part of the autumn 2016 Phase Two route decision. We are minded to agree with Sir David Higgins' proposal, subject to completing the detailed work needed.

South Yorkshire Hub station

46. Locating the South Yorkshire Hub at Sheffield Meadowhall was the Government's preferred option in the Phase Two route consultation. The evidence continues to suggest this is likely to be the best way of serving the wider South Yorkshire region. We are working with the NIC and TfN on the possible interfaces with Northern Powerhouse Rail. We also acknowledge there are arguments in favour of a city centre location and continue to examine the relevant analysis. We intend to make a decision in autumn 2016.

East Midlands Hub station

47. Sir David Higgins has confirmed that HS2 Limited recommends an East Midlands Hub station should be located at Toton, to serve the people of the wider East Midlands region, and the company is not doing further work on alternatives. Toton is also supported by East Midlands local authorities who are united behind this proposed location. The Government therefore continues to support Toton as the best location for an East Midlands Hub.

48. Network Rail are working with local stakeholders and HS2 Limited on options to optimise rail connectivity to the region and beyond. Local authorities have begun considering bus, tram and road access. HS2 Limited is continuing to develop robust solutions in terms of station design, construction and ongoing maintenance.
49. To ensure that the East Midlands is able to maximise the opportunities provided by HS2, we have released funding for the development of the HS2 Growth Strategy for the East Midlands Hub. This funding will enable the region, led by the LEP, to develop their strategy for maximising the benefits that HS2 will bring to the East Midlands.
50. The Government will make a decision on the location of the East Midlands station in late 2016.

Connecting to the ECML

51. Connecting to the East Coast Mainline (ECML). The Government consulted on the route for HS2 to connect to the ECML via Church Fenton. We continue to believe that a link onto the ECML is necessary and complements the Government's commitment to deliver better transport across the North-East and Yorkshire.

Western Leg

52. Completing the HS2 Western Leg to Manchester, with a connection back to the WCML further north, will be a vital component of the Northern Powerhouse. It will give a further improvement in journey times to Scotland, and between northern cities and London. It will improve capacity and reliability on the WCML. The 2013 Strategic Case demonstrated a strong case for HS2 going to Manchester and this still stands.
53. As with the Eastern Leg, we intend to make a decision on the Western Leg route in autumn 2016. As part of this we are considering the responses to the 2013 consultation on the Phase Two route and additional analysis done by HS2 Limited. This document provides further details on several key issues for the Western Leg.

Manchester Piccadilly

54. We believe that a station at Manchester Piccadilly continues to look like the right location for HS2's Manchester terminus. To maximise its potential to support economic growth in the region, it will be important to ensure effective co-ordination with the development of Northern Powerhouse Rail to transform east-west links across the north of England. We are continuing our work through TfN, and with the NIC, to explore synergies and integration between the schemes, in order to develop the right rail infrastructure that delivers growth across the whole of the north of England.

Manchester Airport station

55. The Government remains of the view that a Manchester Airport station is likely to be the right option, subject to agreeing an appropriate local funding contribution to the costs. A Manchester Airport station would serve South Manchester and the wider Cheshire area, provide easy access to the motorway network, and could provide faster east-west links to the Airport, helping create the Northern Powerhouse.

Connecting to the WCML

56. The Government consulted on the route for HS2 to connect to the WCML north of Manchester at Golborne. Some concerns were expressed about the Golborne proposal in response to consultation. There are significant constraints on the existing line between Crewe and Wigan, and we believe a connection north of Crewe, from HS2 to the WCML is necessary. Our current view is that the Golborne link remains the best option for achieving this although we need to consider this in more detail before a decision is taken. We intend to take a decision on the location of connection back onto to the WCML in autumn 2016.

Golborne Depot

57. A rolling stock depot will be required on the Western Leg for HS2 trains. In the 2013 consultation, a location at Golborne was proposed. A significant number of concerns about this location were raised in consultation responses. Sir David Higgins in his 2014 report "Rebalancing Britain" noted these concerns and recommended that further work should be undertaken on other possible locations for the depot. That work continues. We intend to take a decision on the location of the depot in autumn 2016.

HS2 and the existing rail network

58. HS2 will not be a separate, standalone railway. It will be an integral part of our country's rail network and wider transport infrastructure.
59. The Government is already taking steps to improve the existing rail network. Network Rail has embarked on the most ambitious programme of rail modernisation since the Victorians, helping to transform the busiest parts of Britain's rail network, to deliver more and better journeys. The Government's strategy for investment in rail infrastructure is built around a rolling programme of electrification, making best use of new Intercity Express trains and continued use of modern electric rolling stock. Once works in the North are complete, the whole route from Liverpool to Newcastle (via Manchester, Leeds and York) will be fully electrified and journey times will be significantly reduced compared to today's railway. This investment will develop the network in such a way that will enable it to shoulder demand until HS2 becomes operational.
60. We are also ensuring that plans for the future development of the existing rail network and plans for HS2 are developed with regard to each other, so that our whole rail network integrates seamlessly when HS2 opens.
61. It is for this reason that HS2 is not only about the stations on the High Speed line, but also about its wider connections to places across the North, the Midlands and beyond.

Released capacity

62. A key benefit of HS2 is the capacity it will release on our existing railways. This will improve passenger experience by reducing overcrowding on peak time trains. The released capacity also provides options for possible services to towns which currently do not have a direct connection to London, such as Bolton, Blackburn, Rochdale, Barrow in Furness and Dumfries, and options for more services to towns which have infrequent services, such as Telford, Shrewsbury and Blackpool. There may also be options for cross-country, commuter and freight services as well.

63. At this stage, no decisions have been taken on the introduction of new services; such decisions will be taken ahead of the introduction of a new timetable when HS2 opens.

Connections with Scotland

64. HS2 is a clear demonstration of the Government's commitment to the United Kingdom. As designed, it will significantly improve connections with Edinburgh and Glasgow. For example, when HS2 first opens with Phase One in 2026, Glasgow will benefit from a reduction in journey times to London. Phase One will deliver a journey of 3 hours 56 minutes and Phase 2a will deliver 3 hours 43 minutes, compared with a typical journey time of 4 hours 31 minutes at present.
65. When the full "Y" network opens it is expected to further reduce the journey times from London to Edinburgh and Glasgow. For example, the journey time from Glasgow to London will be 3 hours 38 minutes. This will benefit the Scottish economy by around £3 billion⁷. We continue to work closely with the Scottish Government to consider options for further investment that could deliver yet further reductions in journey time, recognising their aspiration for a 3 hour journey time to London. We expect to publish an update on this in early 2016.

Stations and junctions

66. HS2 will connect with the wider network through key interchange stations including Old Oak Common, Crewe and an East Midlands Hub. It will form a key part of the Northern Powerhouse, with stations in Manchester, South Yorkshire and Leeds and improved connections for people travelling east-west or north-south.
67. The Phase One junction at Handsacre and the links to the West and East Coast Mainlines from Phase Two would allow HS2 services to run on to destinations across the North of England and on to Scotland.
68. Over the coming years we will be looking at the opportunities set out here to deliver the optimal service across the network. We will ensure that towns and cities like Liverpool, Stoke-on-Trent, Macclesfield, Newcastle-upon-Tyne, York, Derby and Nottingham, as well as the stations directly served by the line, benefit from HS2.
69. More widely, the 2013 Strategic Case for HS2 included an option to link the HS2 network to the classic network in the West Midlands area. This would allow services from Bristol to travel towards Manchester or Leeds on the HS2 network. Having examined the case for such a rail link we are not further developing options along the Phase One route.

HS2 and the Northern Powerhouse

70. Over many years, our economy has become unbalanced and more reliant on our capital city. The relative economic decline of the north of England is not inevitable. We can reverse it. Delivering this ambition is not about pulling London down but it is about increasing growth in the rest of our country. That is why we are creating a Northern Powerhouse that will bring cities together, connect Liverpool to Hull, the North-West to Yorkshire and the North-East, and make the whole greater than the parts.

⁷ This is taken from the 2015 Economic Outline Business Case published alongside this document and available at <https://www.gov.uk/government/collections/hs2-phase-two-from-the-west-midlands-to-leeds-and-manchester>

71. Delivering this shift across the North requires significant improvements to transport connectivity across the North. In March 2015, the Government and Transport for the North published a joint Northern Transport Strategy that set out clear plans to deliver these improvements including improvements to the rail network. We call this vision the Northern Powerhouse Rail network. We are already taking action to improve today's services with improvements like the TransPennine electrification and the opening of new stations. Today, we are publishing an update on our progress against this strategy which is available at <http://www.transportforthenorth.com>
72. HS2 is a crucial part of these plans to transform transport in the North. It will dramatically improve connectivity from north to south, whilst Northern Powerhouse Rail will do the same from east to west. There may be opportunities to use part of the HS2 infrastructure to also improve east-west connectivity. Interchange opportunities between HS2, Northern Powerhouse Rail, and local services should also allow passengers to make their journeys as efficiently as possible, regardless of their start and end points.

Connecting to High Speed 1

73. It was originally proposed that a rail link be provided between Euston and St. Pancras stations in London to enable limited direct services to the Continent. However, this would have had a significant impact on residents in Camden and on both freight and passenger services.
74. We have looked at alternative options and found that it was not possible to identify a viable rail option capable of meeting the strategic aspirations whilst successfully addressing stakeholder concerns. This was because the options were complex and expensive to construct and would have delivered less attractive, less frequent train services for HS2 passengers travelling to European destinations.
75. Instead, we have concluded that enhanced pedestrian links will enable passengers to have the choice and flexibility to access the full range of international services that operate from St. Pancras. Given the access to London Underground already included as part of HS2, which will provide convenient step-free access for passengers travelling between the two stations, the Government is not pursuing the construction of a rail link between HS2 and HS1. Instead, we are focussing on plans to develop even better pedestrian links between Euston and St. Pancras stations.

Conclusion

76. The Government wants to see the benefits of HS2 in terms of more capacity for passengers and freight, better journey times, jobs, regeneration and economic growth as soon as possible. This will help to unlock the economic potential of both the Northern Powerhouse and the Midlands Engine. It will also build stronger links between Scotland and England. Accelerating Phase 2a – and taking forward our plans for the full “Y” network – will deliver this.
77. We must ensure that we deliver this programme on budget and both affordability and value for money will be key to our decisions. We intend to announce decisions on the route for the rest of Phase Two in autumn 2016. This will also set out our response to the 2013 consultation on the rest of the Phase Two route.



Section 1: Our plans for HS2

This Command Paper has three sections. In this section, we set out the progress we are already making in delivering HS2 and provide an update to the strategic case for the project.



1. Delivering HS2

- 1.1 We have already made the case for HS2. Our focus is now on delivering an affordable railway that delivers value for the taxpayer. We are on track to open the first part of HS2, from London Euston to Birmingham, in 2026. Today, we have announced plans to open the section of route from the West Midlands to Crewe in 2027. This is six years earlier than planned. The rest of the “Y” network, to Manchester in the west and Leeds in the east, will, subject to Parliamentary approval of the route and expenditure, open as planned in 2033.
- 1.2 By the end of 2033 we will have a High Speed network that is over 350 miles long, directly connecting eight out of our ten largest cities. It will be the new backbone of the nation’s rail network, allowing a step change in services and a transformation of the passenger experience.
- 1.3 Since the railways were privatised, rail travel has more than doubled, freight has grown by 70 per cent, and that growth is expected to continue. HS2 is essential to relieve capacity constraints and overcrowding on existing services; allow new local and regional services; and improve connectivity. It gives us an unique opportunity to develop services and routes that meet the changing needs of our country – not only on the new high speed network itself, but for towns and communities more widely.
- 1.4 HS2 is a key part of our plans to ensure growth, rebalance the country’s economy and create both the Northern Powerhouse and the Midlands Engine. At a local level, cities are already thinking about how they can use HS2 as a catalyst for growth and regeneration in their area.
- 1.5 HS2 will stand alongside the railways built by the Victorians and the motorway network built after the Second World War as transformative infrastructure that shapes Britain for generations to come. We will deliver the programme on time and, as demonstrated by our plans to accelerate the route to Crewe, earlier where possible.

Our ambition for passengers

- 1.6 HS2 will be at the heart of our rail network, and ensuring a great passenger experience is central to our vision. HS2 will relieve the congestion on our current railways. HS2 will mean that key intercity services run on a separate line, freeing up capacity on the rest of the network for new and different services, including freight. Over the coming years

we will work with Network Rail, Transport for the North (TfN), Midlands Connect local authorities, train operators, communities and passenger groups to ensure that our railways meet and exceed passenger expectations.

- 1.7 Passenger experience is not just about a fast and reliable service to the places you want to travel to. We are designing a world class transport solution that will be seamless and easy to use for all passengers, an integral part of our rail network and well integrated into wider transport systems. We aim to set new standards of service excellence, including train and station presentation, passenger information and retail facilities. We plan to use innovative technical solutions to ensure that HS2 trains and stations are attractive and accessible to all with individualised, door-to-door journey planning and real time support.
- 1.8 Our railway has already shown it can do world class design, for example at St. Pancras and Kings Cross. We are working closely with passenger representatives and technical experts to ensure that HS2 designs are driven by passenger expectations. Views on stations, trains, technology, fit with environment, and inclusivity, have provided a rich vein of insight that is informing and re-forming thinking about the design of HS2 and its place in our rail network. These views show the need for ambition, so that HS2 will add to our rail network in a way which is not just good but great.



Figure 1.1: The renovated Kings Cross railway station

Our progress so far

Phase One

- 1.9 The first part of HS2, from London Euston to Birmingham, is on course to open in 2026 as planned. The hybrid Bill, which gives powers to build the line, is progressing

well in Parliament; businesses are preparing to bid for major construction contracts; and cities have developed their growth plans for how HS2 stations will create an economic step change in their areas.

Securing the powers we need to build the line

- 1.10 The High Speed Rail (London – West Midlands) Bill will, subject to Parliamentary approval, provide the powers we need to build Phase One. It was deposited in Parliament in November 2013. At Second Reading in April 2014, it was passed in the House of Commons by an overwhelming majority of 452 to 41, showing the widespread parliamentary support for the scheme.
- 1.11 The hybrid Bill has since been considered by a Select Committee of MPs who hear petitions from those directly and specially affected by the scheme, and can recommend potential changes. We are actively responding to these petitions and addressing issues raised. Over 60 per cent of petitioners have either had their issues addressed by a change to the scheme agreed directly with HS2 Limited, or have appeared before the Committee.
- 1.12 Changes are taken forward through “Additional Provisions” (APs) to the Bill. To date, we have brought forward four APs with a fifth imminent. These include over 200, mainly minor, changes to reduce the impact of the scheme on individuals along the line of route. Where bigger issues have been raised, we have also developed revised proposals, for example at Euston Station and the Chilterns Tunnel, detailed below.
- 1.13 When the Select Committee has finished hearing petitions, Parliament will vote on the Bill again. It will then go through a similar process in the House of Lords. The Bill remains on target to potentially achieve Royal Assent by the end of 2016, so that construction work can begin in 2017.

Euston

- 1.14 We have developed a revised proposal for the HS2 terminus at Euston, having listened to concerns raised by the local community and the rail industry about the impact the original scheme would have had locally and on passengers. We have reviewed every aspect of the station, and the latest plans were deposited with Parliament on 17th September this year.
- 1.15 Main works are forecast to start in 2018 with the station providing six new high speed platforms and significantly enhanced access to London Underground for Phase One, opening in 2026. The full eleven high speed platforms will be completed by 2033.

The Chilterns Tunnel

- 1.16 Residents from the Chilterns and other stakeholder groups raised concerns regarding the visual and noise impact of the new line on this Area of Outstanding Natural Beauty. We listened to those concerns and have brought forward proposals to increase the length of the tunnel through the Chilterns by over 25 per cent, meaning we will avoid 90 per cent of the ancient woodland that the original plans impacted.

- 1.17 In delivering the railway we are committed to listening to local concerns and minimising the environmental impact where we can. The Chilterns Tunnel is just one example of where we have made changes to that end without delaying the programme.

Property purchase and compensation

- 1.18 As the HS2 route has developed and become more certain, the Government has put in place schemes to ensure people are properly looked after where their homes or businesses are affected. We have gone over and above what is required by law to ensure that people are treated fairly.
- 1.19 In preparation for construction we have begun purchasing properties. By the end of October 2015, we had purchased a total of 337 properties along the route of Phase One and Phase Two, through both statutory measures and our extensive package of discretionary schemes. The total also includes a small number of commercial properties along Phase One that we have bought by negotiation, using funds made available under the High Speed Rail (Preparation) Act 2013. Those are subject to important value for money tests, and are cases where we need early possession of the site, or needed to reach early agreements with the owners (for example, to allow them to relocate their businesses). Where required, we will do the same for Phase Two.
- 1.20 One such example is the purchase of 70 flats near to Euston, to provide replacement homes for over half of the tenants who will be displaced by the work required to bring HS2 into the station. That minimises disruption for the people affected, enables them to remain in their community, and ensures we can start work on time.

Design

- 1.21 HS2 Limited recently launched its Design Vision⁸. This focuses on ensuring that HS2 is designed in such a way that: everyone can benefit from and enjoy the new railway; it gives a sense of space that celebrates the local within a national narrative; and that it will stand the test of time allowing future generations scope for adaptation and placing a premium on the personal time of customers.

⁸ <https://www.gov.uk/government/publications/hs2-design-vision>



Figure 1.2: The 2009 Liège-Guillemins railway station in Belgium that has High Speed services

- 1.22 HS2 Limited have recently appointed 46 members to a Design Panel⁹ to deliver this vision. This panel is chaired by Sadie Morgan, the co-founding Director of the award-winning practice dRMM Architects. The panel also includes a range of experts in design fields including: urban; landscape; EDI (Equality, Diversity and Inclusion); digital; brand and product who will work alongside internationally-renowned architects; sustainability experts and engineering specialists to help guide HS2's development.
- 1.23 Further details on the Design Panel members is available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/475721/HS2_Design_Panel_member_biographies_u.pdf
- 1.24 This will be supported by regional design panels that will focus on the design of stations and other major and potentially iconic sections of the route such as viaducts or bridges. HS2 Limited are in the process of appointing members of these panels, which will include regional representatives.

Working with business to prepare for construction

- 1.25 The construction of HS2 represents a huge opportunity for UK based businesses. Ground inspections and environmental surveys have already begun along the line of route to ensure we understand the detail of the work ahead of us. In September 2015, the Chancellor announced the start of the procurement for seven engineering contracts for Phase One, with a combined value of £11.8 billion. These are for the Main Works Civils Contracts – meaning the surface route and tunnels for Phase One. By starting the process now, we are putting ourselves in the best possible place to deliver the scheme on time. There is already considerable interest from industry, with consortia beginning to form.

⁹ <https://www.gov.uk/government/news/hs2-independent-design-panel-announced>

- 1.26 To ensure that UK based businesses are well placed to compete for HS2 opportunities, HS2 Limited has made it a priority to engage with industry and has been running an ongoing programme of engagement to involve the UK supply chain in the procurement process. This has included London, Birmingham and Manchester Supply Chain Conferences, seminars with Local Enterprise Partnerships (LEPs), and events in Wales, Northern Ireland, and Scotland.
- 1.27 HS2 Limited, the Department for Business, Innovation and Skills (BIS) and the Department for Transport (DfT) are also working with Growth Hubs across England to help local partners understand how they can help businesses in their areas in getting ready to bid for HS2-related contracts.

Developing skills for HS2 and beyond

- 1.28 A scheme of this scale offers an enormous opportunity for businesses and individuals across the country. Construction and engineering are essential and too often scarce skills, needed to deliver the infrastructure we all use every day. HS2 will create thousands of new construction and engineering jobs and apprenticeships in towns and cities from north to south.
- 1.29 The Government is committed to developing a new generation of skilled workers and engineers. HS2 Limited's contracts require successful bidders to provide apprenticeships and other training opportunities. In September 2014, we announced plans for a new National College for High Speed Rail based in Birmingham and Doncaster. The college will open in 2017 and will provide specialist vocational training to the next generation of engineers for the HS2 project and beyond. It will build our capacity to deliver major infrastructure projects at home, and help win contracts to build them abroad. Crucially, it will mean we have the skills we need to deliver HS2 when we need them.
- 1.30 HS2 Limited is also running an education programme to help inspire young people's interest in Science, Technology, Engineering and Mathematics (STEM) subjects and related careers. We want to raise aspiration and interest particularly for groups traditionally under-represented in engineering, construction and the built environment.

Delivering High Speed Rail to the North

- 1.31 In 2010, extending HS2 to the North was a mere possibility, and proposals lacked detail; now we have a clear proposal and are working to refine the route. Sir David Higgins, as the HS2 Limited Chairman, has reviewed the Phase Two proposals and made recommendations to the Government on maximising the benefits of HS2.
- 1.32 Since his reports, we have been further developing proposals to ensure that the route works both for the country as a whole and local areas. Where we can, we are taking decisions and delivering the route early. As set out in this Command Paper we intend to deliver the route from the West Midlands to Crewe 6 years earlier than planned through a separate hybrid Bill.
- 1.33 Plans for the rest of the Phase Two route to Leeds and Manchester are progressing well and later in this Command Paper we set out our current thinking on the route and stations and how HS2 will contribute to creating the Northern Powerhouse. We particularly welcome Sir David Higgins' report on Leeds station, and the progress that has been made on Toton in the East Midlands which have helped significantly develop our plans.

1. Delivering HS2

- 1.34 We intend to make a route decision for the rest of Phase Two in the autumn of 2016, with a view to introducing a third hybrid Bill before the end of the Parliament. This will enable the full network to open on time in 2033.

Seizing the opportunity HS2 offers to rebalance our economy

- 1.35 HS2 will not only support national growth, and help reshape and rebalance our economy, it will have a transformative impact for areas around the stations. In March 2014 the Growth Taskforce chaired by Lord Deighton advised the Government on how to maximise the economic growth opportunities of HS2. The Government responded in July 2014 with a comprehensive call to action, uniting with local areas in the common goal of maximising the jobs, housing and economic growth HS2 will enable.
- 1.36 We are working with the local authorities and LEPs for each of the Phase One station sites (Old Oak Common, Euston, Birmingham Interchange and Curzon Street) to support them with the development of their HS2 Growth Strategies. Areas and regions are coming together to produce plans which seek to link the North and the Midlands, as well as deliver growth in key cities.
- 1.37 Beyond Phase One, Manchester, Leeds, Sheffield, the East Midlands and Crewe, Stoke-on-Trent and the surrounding area have made huge progress in working together to decide what works best for their area. TfN and Midlands Connect have been formed and are developing long-term plans to transform connectivity and growth. Sir David Higgins and the city of Leeds have worked together to develop a revised station proposal which works for the city and the railway. The East Midlands has united behind Toton as the option that works for them. Local areas are supporting and driving solutions to drive forward regeneration and development.

The Northern Powerhouse

- 1.38 TfN have continued to develop their proposals for improved transport across the north of England, including increased connectivity and greater capacity on the rail network. A summary of the latest progress has just been published in a new report “The Northern Transport Strategy: Autumn Report”. This report can be accessed at <http://www.transportforthenorth.com/>. We also provide further detail on our plans for the Northern Powerhouse in Chapter 11.

Old Oak Common

- 1.39 The Mayor of London has established a Mayoral Development Corporation for Old Oak Common – the largest remaining brownfield site in central London, and the regeneration plans will be transformative. The Development Corporation has plans for 55,000 jobs and 24,000 new homes and is already being approached by businesses about the possibility of locating in the area.

Midlands Connect

- 1.40 In October 2015, Midlands Local Authorities and Local Enterprise Partnerships started work on a comprehensive transport strategy to power the Midlands Engine for Growth. The programme was announced at the launch of the newly strengthened Midlands Connect Partnership. Working with Government they will develop a long-term transport strategy aimed at unlocking economic growth in the region. Regional connectivity to HS2 will be a crucial element in the strategy. As well as developing a

plan to maximise economic growth from HS2, the programme will also seek to address East-West Midlands connections and address the interaction of national, regional, and local movements across the region.

1.41 In support of this work, the Chancellor announced £5 million of funding for Midlands Connect in his Summer Budget this year. Furthermore, the Midland Mainline Electrification Programme, a key ask for the Midlands, is now confirmed.

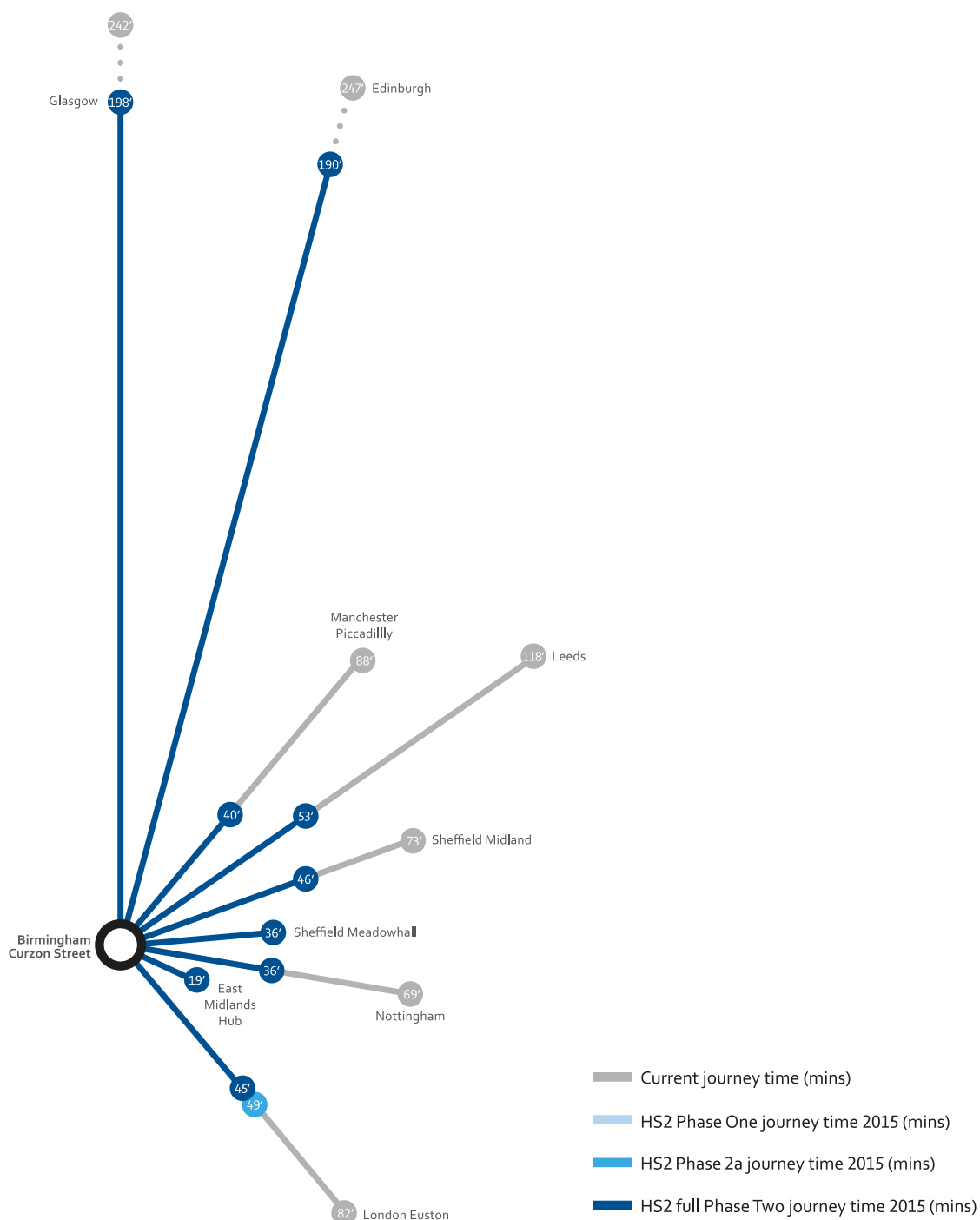


Figure 1.3: Journey times from Birmingham Curzon Street station¹⁰

¹⁰ Fastest typical HS2 times and current rail times are shown in the image. Five minute interchange times are assumed at East Midlands Hub station and Sheffield Meadowhall. This represent the quickest possible interchange time, allowing a walk time between platforms but no wait time at the connecting service platform. Edinburgh times are to Edinburgh Haymarket.

Birmingham

- 1.42 Birmingham City has launched the Curzon Urban Regeneration Company which will lead redevelopment around the station, with plans for 36,000 jobs and 4,000 homes. HSBC has already moved its headquarters to Birmingham and cites HS2 as a key part of its decision. HS2 Limited itself is also relocating its headquarters to Birmingham, with up to 1,500 engineers, designers, planners and support staff working in the new office.
- 1.43 Solihull Metropolitan Borough Council has plans to create a ‘modern Garden City’ at Birmingham Interchange, building on existing assets such as the National Exhibition Centre, Birmingham Airport and Jaguar Land Rover. Their plans are to create 16,500 jobs and 1,900 homes.

Northern Gateway Partnership

- 1.44 Crewe and the wider sub region, including North Staffordshire and Stoke-on-Trent, have come together in the landmark Northern Gateway partnership, to spearhead economic growth in the region. Using its position as a gateway from the Midlands to the North and capitalising on the economic potential of HS2, the partnership aims to unlock major new growth and investment opportunities, which could deliver more than 100,000 new homes and 120,000 new jobs by 2040.

Greater Manchester, Sheffield and Leeds

- 1.45 Transport for Greater Manchester has recently published its “Vision for 2040” Strategy (2015). This Strategy document predicts that with increased business productivity and connectivity, Greater Manchester will benefit from the creation of an additional 180,000 jobs by 2040¹¹.
- 1.46 HS2 could lead to a significant amount of development in Leeds including the potential to support an estimated 13,200 – 19,700 jobs around Leeds station¹². Similarly, HS2 could support an estimated 4,000 – 5,400 around Sheffield Meadowhall station¹³.

Phase Two Growth Strategy Funding

- 1.47 Areas can start to benefit from HS2 even before it is built by starting work on long term plans for regeneration and development, bringing in investment and businesses. As plans advance for the Phase Two route, we will fund local growth strategies at other stations. As a first step, we are releasing funding for both Crewe and the East Midlands this financial year. We anticipate providing further funding next year.

¹¹ <http://www.tfgm.com/2040/Documents/14-1882%20GM%20Transport%20Vision%202040.pdf>

¹² https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/381971/HS2_Phase_Two_Leeds_New_Lane_station_factsheet.pdf

¹³ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/381967/HS2_Phase_Two_Sheffield_Meadowhall_station_factsheet.pdf



Conclusion

- 1.48 HS2 has passenger experience at its heart. It is designed to improve journeys across the whole network, and we are making good progress towards delivering that. We have the building blocks in place for Phase One and we are on schedule to deliver on time. Local areas are making sure they are ready to deliver on the growth potential HS2 offers, and Government is supporting this work. HS2 is set to deliver a step change in our country's rail network on time.



2. The Government's strategy for High Speed Rail

Introduction

- 2.1 The Government recognises the important role that our railways play in creating a strong, balanced economy. HS2 is an ambitious programme that will provide additional capacity for some of our most congested sections of railway, significantly reducing journey times for passengers, and creating more space for freight. It has the potential to transform the economic landscape of Great Britain and help unlock growth across the country. It will bring friends, families, colleagues and businesses closer together – opening up opportunities for new journeys, new connections and creating a new concept for travel in the UK. HS2 is vital to the long term success of our railways and will underpin the Northern Powerhouse.

HS2 is a vital component of the Northern Powerhouse

- 2.2 The Government recognises that our economy has become unbalanced and our capital city has grown more quickly than other parts of the economy. The relative economic decline of the North of England is not, however, inevitable.
- 2.3 This is why we are creating a Northern Powerhouse that capitalises on the fundamental strengths of our Northern cities and allows the North to be more than the sum of its parts. The Northern Powerhouse will unleash the full economic power of the North and ensure it is capable of complementing, and acting as a balance, to the economic weight of London.
- 2.4 HS2 is a vital part of creating the Northern Powerhouse both because of the better connections it gives with the Midlands and London, and because it could provide the foundation for faster services East to West. Leaders in the North and Midlands are strongly supportive of HS2. Over 70 per cent of the estimated 100,000 jobs around stations supported by HS2 are expected to be outside London.¹⁴

¹⁴ 2013 Strategic Case [1] HS2 Limited (2013), HS2 Environmental Statement volume 3: Route Wide Effects, page 170 <https://www.gov.uk/government/publications/hs2-phase-one-environmental-statement-volume-3-route-wide-effects>, page 170 Temple ERM, (2013), Sustainability Statement, http://assets.hs2.org.uk/sites/default/files/consultation_library/pdf/PC205_Vol_1_Sustainability_Statement_180713.pdf

- 2.5 We are working in partnership with Transport for the North (TfN) who, with HS2 Limited and the other national transport agencies, are developing multi-modal transport proposals to support the creation of the Northern Powerhouse. The scope of this work was set out in March 2015 in our Northern Transport Strategy¹⁵. Our shared vision for rail services across the North is radically to improve journey times and frequencies between the major cities to support a single economy.
- 2.6 Plans for a Northern Powerhouse Rail network will investigate potential synergies with the HS2 Phase Two route. We are looking at how the HS2 network could be future proofed, so that it fits with Northern Powerhouse Rail plans, and it could be used by regional high speed services (like the ‘Javelins’ that run on HS1) where that makes sense. Further information can be found in Chapter 11.

The business case for HS2 is strong

- 2.7 HS2 is important not just for the North of England but for the country as a whole. In “The Strategic Case for HS2”, published in October 2013, we explained why the case for HS2 is clear and robust. The Strategic Case showed how HS2 will free up space on our crowded rail network, promote regeneration, boost local skills, generate tens of thousands of jobs and will help secure the UK’s future prosperity. HS2 will have a transformational effect, supporting growth and increasing productivity across the country – particularly in the North. It will transform the way people travel – providing fast, reliable and comfortable rail connections right into the heart of our city centres.
- 2.8 Since the Strategic Case was published, we have looked in closer detail at two important aspects of the case – capacity constraints on the existing network, which HS2 can relieve, and the role of HS2 in supporting the UK economy. We are publishing this analysis alongside this Command Paper. It is available at <https://www.gov.uk/government/collections/hs2-phase-two-from-the-west-midlands-to-leeds-and-manchester>

Update to HS2 Strategic Case: capacity on the existing rail network

- 2.9 The case for HS2 starts with the levels of demand and capacity on the West Coast Mainline (WCML), which links four of our biggest cities and serves a complex mix of rail markets – inter-city, commuter and regional – and is used by 43 per cent of all freight on rail.
- 2.10 Demand for WCML services has grown steadily over the last twenty years, with 50 per cent higher inter-city growth than the wider network. A massive programme of work to upgrade the existing line finished in 2008, involving 100 million person hours of work and £9 billion of investment. In 1994, there were 17 trains a day operating between Manchester and London. By 2013, this new investment allowed 47 trains to operate each day. Over the same period, Birmingham to London trains increased from 31 per day to 49 in 2013.
- 2.11 This additional capacity has allowed city centre journeys between London and Birmingham and London and Manchester to treble in the last twenty years – which illustrates the level of demand. Network Rail’s Operational Planning team produced

¹⁵ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/427739/the-northern-powerhouse-tagged.pdf

2. The Government's strategy for High Speed Rail

a report in October 2013 which concluded that with the mix of traffic and stopping patterns, there was little spare capacity for additional fast line paths.

2.12 It is also the case that the WCML is now very heavily utilised, particularly in the morning and evening peaks. The fast lines carry up to 16 trains per hour, at the busiest peak periods, which is a higher intensity of operation than major fast lines in other European countries. This intensive level of operation impacts reliability and performance because there is little time and space to recover from incidents. There are also limited opportunities to offer new services to passengers, even when the demand is there. Despite the 2008 upgrade work, significant 'bottlenecks' remain, such as at Colwich Junction and between Stafford and Crewe. Network Rail are undertaking work to address some of these 'bottlenecks', such as the major works around Norton Bridge Junction. This improvement will create extra capacity and shorten journey times. It will also reduce, but not eliminate, congestion and delays in the Stafford area. However, these works are not the real long-term solution to the 'bottlenecks'.

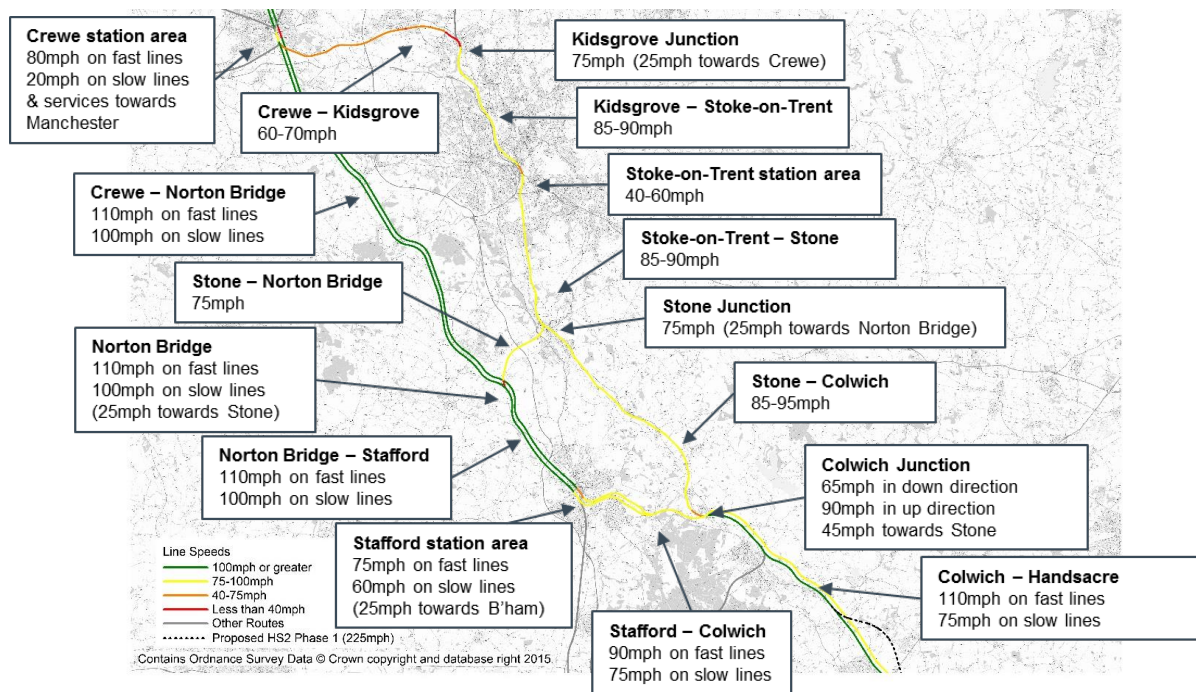


Figure 2.1: Existing rail network line speeds between Handsacre and Crewe

Source: "Rail Alternatives to HS2 Phase 2a" by Atkins

2.13 Rail capacity has two components. The first is route capacity – the number of train services that can operate on the network whilst still meeting acceptable standards of performance reliability. The second is train capacity – how many passengers each train can take without becoming overcrowded.

2.14 In terms of route capacity, we are reaching the limits of capacity during peak hours on the WCML. Although there are still some limited options available including different approaches to timetabling, increasing train capacity by lengthening trains or increasing the proportion of standard class accommodation, this can only provide a temporary solution given the high levels of growth in demand (8.3 per cent for Virgin Trains¹⁶ in

¹⁶ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/466412/rail-passengers-crowding-2014.pdf

2014 alone). To support long term economic prosperity we need more track capacity for additional trains.

Inter-city capacity and demand on the WCML

- 2.15 In total, intercity passenger journeys on the WCML have grown from 13.2 million in 1996/97 to 34.5 million in 2014/15. Even after many of the current trains have been lengthened to eleven carriages, there is already significant crowding. From Monday to Friday between 7pm and 8pm, three quarters of trains leave London over 80 per cent full in standard class¹⁷. Average loadings are as high as 100 per cent on Friday evenings and there are also peaks in demand on Sunday afternoons.
- 2.16 From a passenger's point of view, given factors such as luggage and the unequal distribution of people along a train, intercity services loaded at 80 per cent and above may feel very overcrowded. Behavioural research shows long distance passengers begin to experience negative effects from crowding at between 60 per cent and 70 per cent loading¹⁸.
- 2.17 Further analysis beyond that presented in the 2013 Strategic Case has shown that even if further short term steps were taken to increase capacity, such as extending more trains to eleven cars and converting a first class coach to standard class, overcrowding in the peaks would be a material issue by 2033/34. Assuming a growth rate of 2.0 per cent (compared with the average 5.5 per cent growth achieved by Virgin West Coast since 1996/7) an average of 9 per cent of passengers would be standing on departure from Euston in the Friday afternoon peak. If there were to be higher growth of 3.7 per cent, this would rise to 23 per cent, which would mean 5,900 passengers standing on trains leaving Euston. Of these, 3,500 people would be on trains with a first stop 59 minutes or more outside London. And 1,300 people would be standing for 90 minutes or more, to stations such as Crewe and Warrington.

HS2 will deliver a step change in intercity capacity on the WCML

- 2.18 In contrast to the alternatives we have considered, which all involve high levels of compromise and disruption, HS2 delivers a step change in capacity on the WCML corridor as well as facilitating better connectivity. The high speed line itself will be capable of carrying 14 trains per hour in each direction, rising to 18 trains when the network is complete.
- 2.19 The WCML fast lines can currently carry 15 trains per hour rising to 16 at limited times in the peak. When operations on HS2 begin, the transfer of long distance services currently using the fast lines will release capacity. This released capacity offers opportunities including:
- Targeting capacity on stops between London and the West Midlands to better meet demand there
 - Improving inter-connectivity for passengers travelling between intermediate stations on the route
 - Running long distance services for key towns and cities not served by HS2- particularly direct connections to London

¹⁷ "House of Lords Economic Affairs Committee: The Economics of HS2 Government Response" – DfT July 2015 (information from Virgin Trains)

¹⁸ Passenger Demand Forecasting Handbook

2. The Government's strategy for High Speed Rail

- Enabling additional rail freight services
- Improving reliability and punctuality by rationalising train speeds, pathing and stopping patterns

2.20 Network Rail are currently leading a strategic rail study ("Capacity Plus") with the objective of identifying strategic options for rail services to operate after the implementation of HS2 Phase One. This will include options for train services made possible through the released capacity on the WCML.

2.21 At this stage, no decisions have been taken on the introduction of these new services. Well established statutory, regulatory and administrative processes will be used to build an open and shared evidence base, consult passengers, communities and freight users, establish options and take decisions ahead of the introduction of a new timetable in 2026.

HS2 is also the only future-proof way to meet long-term commuter demand on the WCML

2.22 Historically, London Midland has been one of the most crowded London commuter routes, exceeding the London and South East average in each of the last 7 years. In autumn 2014, the number of passengers in excess of capacity ("PiXC" – the standard measure of crowding which includes an allowance for standing) was 6.5 per cent in the morning and afternoon peaks, compared to 4.1 per cent across the wider London commuter network. On services leaving Euston during the final hour of the evening peak, there were on average 120 passengers for every 100 seats. This means that one in six passengers was standing – and the situation on certain trains is even worse.

2.23 We have recently undertaken further analysis to illustrate what could happen to these services looking out to 2033/34. This analysis has looked at the impact of a 1.8 per cent growth rate¹⁹ as well as a higher rate of 3 per cent²⁰ – although in fact, both these tests are significantly lower than the recent actual annual growth experienced on these services. With today's capacity, by 2033/34 services would be overwhelmed, with PiXC levels of 18 per cent and 30 per cent respectively.

2.24 Even if all London Midland trains were lengthened to the current maximum of twelve carriages, which would require further infrastructure investment, by 2033/34, crowding levels would exceed those experienced today, with PiXC levels of between 11 per cent and 19 per cent.

2.25 In contrast to short-term alternatives involving train lengthening and squeezing in limited new services, HS2 can facilitate a step change in peak capacity for West Midland services, by releasing substantial existing WCML route capacity for commuter services. It allows existing and future crowding problems to be addressed even in a high growth scenario.

¹⁹ The growth rate used in the Department for Transport's Planet Framework Model

²⁰ The 'high sensitivity' growth rate from the Department for Transport's Network Modelling Framework

HS2 also provides for rail freight growth

- 2.26 Demand for rail freight services is also predicted to rise. In 2011, around 42 freight trains per day used the WCML with 43 per cent of all freight journeys using it at some point. Network Rail's forecasts suggest that demand could nearly double by 2033 from 42 to 80 freight trains per day²¹, with the majority of the growth being in intermodal freight including to and from an expanded port of Liverpool. This level of demand could not be supported with the current infrastructure, given that utilisation of intermodal freight paths is currently around 85 per cent. Given the daily, weekly and even seasonal variations in freight demand, in practice this represents a line near full capacity for freight path utilisation.
- 2.27 Our Train Service Specification (TSS) presented to the hybrid Bill Committee in January 2015 suggests that at least one extra train per hour, in each direction, could operate between London and Handsacre once Phase One has been built and that a second might be possible as well. This is possible because of the space available on the WCML. One option for Capacity Plus is to make use of released capacity on the fast lines by transferring a number of commuter services serving Milton Keynes to the fast lines. This option would provide capacity for freight growth on the slow lines.
- 2.28 Without extending HS2 beyond Phase One, the WCML to Crewe and further north remains short of capacity. As set out previously, this is because there are a number of infrastructure constraints between West Midlands and Crewe that currently impact on the capacity and performance of the WCML. Network Rail have a programme of major works to address these. These improvements will create extra capacity, allowing capability to deliver more trains on the route and shortening journey times. It will also reduce congestion and delays in the Stafford area. However, these will not provide a lasting long-term solution. HS2 needs to be extended beyond Phase One.
- 2.29 Building Phase 2a would also deliver significant benefits for freight around Crewe as it allows fast passenger trains to bypass these bottlenecks thus opening up more paths in these areas.

Reliability

- 2.30 Operating the existing WCML at today's high level of intensity has a negative impact on the reliability of train services.
- 2.31 Both the intercity operator, Virgin Trains, and the commuter operator, London Midland, operate below industry reliability targets. Punctuality of Virgin West Coast services has plateaued over the last four years at 85 per cent – well below the 87.6 per cent average for long distance services. This means that around 5 million WCML intercity passengers arrive at their destinations more than 10 minutes late each year.
- 2.32 London Midland's performance on its London services has worsened in the last four years and punctuality has averaged 84.4 per cent over that period, which is over 5 percentage points below the sector average for London and South East commuter operators. Notably, performance has deteriorated since December 2014 when extra commuter services were run on the route to meet demand.

²¹ "Demand and Capacity Pressures on the West Coast Main Lines" (DfT 2015).

2. The Government's strategy for High Speed Rail

- 2.33 Across the rail network, congestion means that recovery from incidents is difficult and the knock-on effect from such incidents is more serious. The proportion of knock-on delays has been increasing over the past five years on long distance services, even though the delay caused by the original incident is falling. In other words, even though the industry has got better at sorting out what is holding a train up in the first place, the sheer number of trains on the network mean that many more are being affected by a delay than in the past.
- 2.34 There is consensus that the overcrowded nature of the network impacts on reliability. Since 2011, the Office of Rail and Road (ORR) has rejected several, but not all, applications for intercity train paths – with concerns around the impact on performance being a factor in some of these decisions.
- 2.35 Once the network is complete, the significant increase in capacity that HS2 will deliver will release pressure on the existing rail network, enabling reliability and resilience to improve. Reliability will also be central to the operation of HS2 services themselves. The expectation is that, as an annual average, trains on the high speed network will arrive within 30 seconds of their scheduled arrival time.

Capacity and demand on the East Coast Main Line

- 2.36 The main focus of the new analysis carried out since publication of the 2013 Strategic Case has been on the route and train capacity issues on the WCML. However, the East Coast Main Line (ECML) intercity service currently has higher levels of crowding than the WCML. This is about to change, due to a combination of investment in infrastructure and the delivery of new rolling stock under the Intercity Express Programme (IEP).
- 2.37 However, by the time the Eastern Leg of the HS2 “Y” network is scheduled to open in 2033, there will be a requirement for further additional capacity on the ECML. Whilst the lengthening of the IEP fleet could be considered, the benefit of HS2 is that it not only provides the capacity needed but also transforms connectivity between Yorkshire and the North-East, and the East and West Midlands.

Update to HS2 Strategic Case: benefits for the economy

- 2.38 Since the publication of “The Strategic Case for HS2” (2013), which demonstrated the importance of good connectivity between people and businesses for the UK economy, we have looked more closely at how improved rail connections can support the modern, knowledge-based economy on which the competitive future of our country depends. We have also examined the opportunities for better services using the released capacity provided by HS2.

The importance of city regions

- 2.39 City regions are the engine rooms of the UK economy. The ten English city regions account for 35 per cent of the UK population and 38 per cent of UK employment – and of these, nine will be served by HS2.
- 2.40 City regions have been key to job creation in the UK in recent years. Against the backdrop of a significant fall and subsequent recovery in total employment, our latest

analysis establishes that 700,000 net jobs were created in City regions between 2008 and 2013.

The importance of knowledge-based sectors

- 2.41 In common with many other economies, there has been a marked shift in the UK away from manufacturing towards service based industries, of which knowledge based industries are a large – and growing – proportion. Over the last 30 years, employment in the knowledge-based sectors has grown from 3.1 million jobs to 4.8 million – an average growth rate of 1.5 per cent a year compared with an average of 0.6 per cent in other sectors. This growth is set to continue. The Department for Business, Innovation and Skills forecast that 1.8 million jobs are projected to be created between 2012 and 2022²², and that 40 per cent of these are anticipated to be in knowledge-based sectors.
- 2.42 Knowledge-based industries contribute disproportionately to the success of the UK economy – providing 18 per cent of all jobs, but delivering 23 per cent of national output and 34 per cent of exports²³. Knowledge-based jobs tend to be located in city regions and city centres, where there is good access to specialised labour and good opportunities for creative interactions between businesses.
- 2.43 Good transport connections are particularly important for knowledge-based industries. Strong relationships with extended networks of other businesses are vital, because £400 billion of their total output is sold to other businesses which are often within the knowledge-based sector themselves. Research has shown that face to face interaction is particularly important where complex information has to be communicated – key to this type of enterprise.²⁴
- 2.44 Travel data has shown that knowledge-based industries employ a high proportion of people who tend to travel more by rail for business, commuting and leisure purposes. The managerial, technical and professional people that these businesses employ heavily, travel twice the national average distance by rail a year.

²² Working Futures report, Department for Business, Innovation and Skills

²³ ONS Business Registration and Employment Survey, UK National Accounts

²⁴ Supplement to the October 2013 Strategic Case

HS2 will support the knowledge economy

- 2.45 HS2 will be a key support to UK business, connecting our major cities, bringing them closer together and supporting growth. In 2013/14, the top six intercity rail business flows in Great Britain were between stations that will be served by HS2. HS2 will also serve three of the top ten non-London business flows. The new railway will make these journeys quicker, more reliable and better for business.
- 2.46 Business travel accounts for a high proportion of all journeys currently made on the intercity rail flows that will be served by HS2. The proportion of business passengers travelling along the rail corridors between city centres where knowledge-based sectors are concentrated is much higher than the average for the national rail network.
- 2.47 The connectivity enhancements that HS2 brings may lead to further growth in knowledge-based sectors by improving the functioning of the labour market, business productivity and competitiveness. We have examined how HS2 could improve:
- business to business connectivity, which is a measure of businesses' willingness to trade with each other given the quality of transport links between places; and
 - business to labour market connectivity, which is a measure of the effective pool of labour available to businesses given the quality of transport links between places.
- 2.48 The study showed that the major city regions in the North and the Midlands will experience a bigger proportional gain in these metrics than London.
- 2.49 Constructing HS2 will also generate nearly 25,000 private sector jobs together with a further 3,000 employed in its operation. We also estimate that HS2 will support up to 100,000 further jobs around HS2 stations. The Core Cities Group suggest this figure could be as high as 400,000 jobs. HS2 Limited has announced its ambition to create over 2,000 apprenticeship opportunities – more than the Olympics and Crossrail combined. We expect that the National College for High Speed Rail, when it opens in 2017, will train over 1000 people each year in high-level construction and engineering skills.

The economic case for HS2

- 2.50 The economic case for HS2 is also clear. The central case benefit cost ratio (BCR) for the full "Y" network has been recalculated as part of our consideration of Phase 2a. On a comparable basis to the 2013 Economic Case the BCR would have increased. However, construction inflation since 2011 has been higher than background inflation and may continue. This was recognised in the Spending Review and will have a slight negative impact on the BCR, bringing it back to a BCR of 2.2, compared to the 2013 BCR of 2.3. As set out in the Economic Case, we believe this is conservative. The BCR will be updated to take account of this and other changes in methodology in the Strategic Outline Business Case for the rest of the "Y" network next year, and the Outline Business Case for Phase 2a in 2017.



Conclusion

- 2.51 It is for the reasons set out above that this Government is determined to deliver the privately operated full “Y” network of HS2. The economic geography of the country will be transformed by HS2. HS2 will bring the country closer together, through improved connectivity and reduced journey times. HS2 will unlock economic growth by increasing capacity and reducing journey times. HS2 will create jobs both immediately on the construction of the line and through the regeneration and development of local areas.





Section 2: Accelerating to Crewe

In this section of the Command Paper, we provide the Government's response to the 2013 consultation on the Phase Two route between the West Midlands and Crewe; we set out the Secretary of State's decision to accelerate construction of Phase 2a so that services will operate from 2027; we set out the Secretary of State's route decision for Phase 2a and we provide an update on our work looking at options for a Crewe Hub station.



3. The 2013 Phase Two route consultation

- 3.1 In the previous chapter, we demonstrated the strong case for HS2. Only HS2 can deliver the step-change in passenger experiences across our railways, deliver extra capacity, improve connectivity and unlock growth and regeneration.
- 3.2 Phase One will resolve some of the most pressing capacity challenges south of Birmingham, but it will not deliver the level of change in connectivity needed to meet our objective of supporting economic growth in the north of England and Scotland. Phase Two is required to achieve this. The sooner we build it, the sooner we can improve the service on our railway across the north of England and Scotland.
- 3.3 In 2013, the Government consulted on the proposed Phase Two route. Since the consultation closed, we have been considering the responses and assessing the evidence base and options for accelerating construction of Phase Two.
- 3.4 During 2014, Sir David Higgins, the incoming Chair of HS2 Limited, published two reports advising Government on the best way of taking forward HS2: “HS2 Plus” (March 2014)²⁵ and “Rebalancing Britain” (October 2014)²⁶.

The Phase Two Route Consultation

Development of route proposals

- 3.5 As part of its early route development work, HS2 Limited generated several possible route options for Phase Two following the consideration of numerous alternatives. The results of this work were delivered to Government in the report “Options for Phase Two of the High Speed Rail Network (2012)”²⁷

²⁵ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/374695/HS2_Plus_-_A_report_by_David_Higgins.pdf

²⁶ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/374709/Rebalancing_Britain_-_From_HS2_towards_a_national_transport_strategy.pdf

²⁷ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/68965/options-for-phase-two-of-the-high-speed-rail-network.pdf



3. The 2013 Phase Two route consultation

- 3.6 Options were developed and appraised against four main criteria: engineering and construction feasibility; environmental sustainability; demand considerations (including journey times) and cost.
- 3.7 HS2 Limited tried to reduce the impact of the proposed railway by following certain criteria such as aligning the route close to existing transport corridors, avoiding large communities, and avoiding sensitive environmental features.
- 3.8 Alternative sections of potential routes were then compared using the criteria above and a shortlist was developed. A proposed route was then selected by Government and taken forward to public consultation in July 2013.



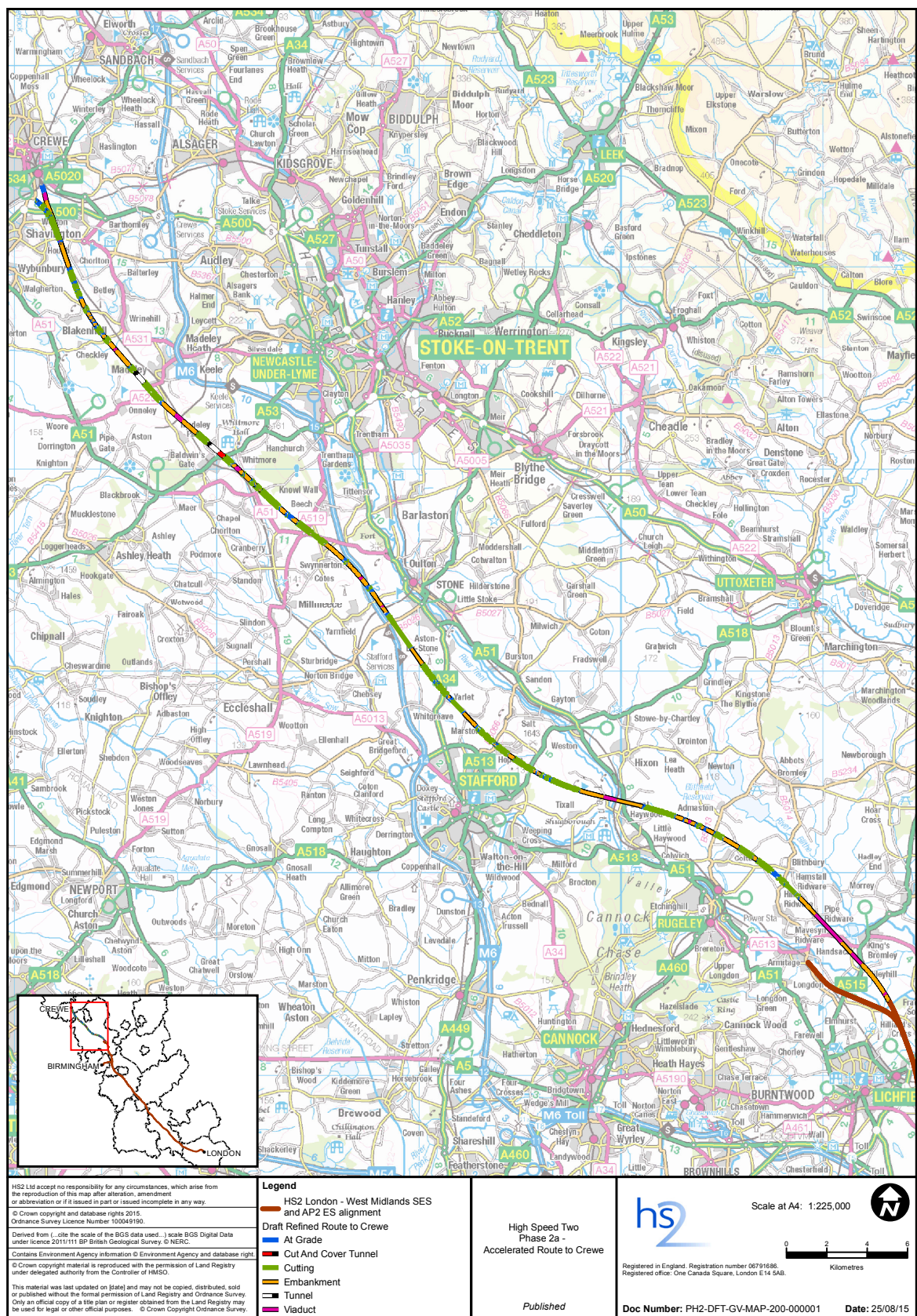


Figure 3.1: Phase 2a preferred route

The consultation

- 3.9 The public consultation on the Phase Two route and stations was launched on 17 July 2013 with a closing date for responses of 31 January 2014. During the consultation public events were held at locations along the proposed Phase Two route.
- 3.10 These events were designed to promote understanding of the proposed Phase Two scheme, and give people the opportunity to raise questions or concerns with technical specialists, representatives of HS2 Limited and Government. Members of the public were able to respond to the consultation by post or online.
- 3.11 Just over 10,000 responses to consultation were received. An independent report of the consultation process and a summary of the issues raised as part of the consultation on the full Phase Two route has been prepared by Ipsos MORI. This report is published alongside this Command Paper and can be found at <https://www.gov.uk/government/collections/hs2-phase-two-from-the-west-midlands-to-leeds-and-manchester>

Response to the consultation

Delivering the benefits of HS2 sooner

- 3.12 Some consultees asked the Government to consider whether it could deliver Phase Two (at least in part) sooner than the planned opening date of 2033.
- 3.13 Equally, in some areas, the issues raised about the consultation route are complex and there is no clear consensus locally about the best answer.
- 3.14 Recognising this, Sir David Higgins recommended in his report “Rebalancing Britain” (2014) that the Government accelerate a section of the route between Fradley and Crewe, now known as Phase 2a. He also recommended further work on other sections of the route, for example at Leeds.
- 3.15 Given the economic value of HS2, the Government is keen to deliver the scheme sooner where that can sensibly be done, so that more of the benefits are seen in the north of England and Scotland sooner than originally planned. We set out how the Government intends to achieve this in Chapter 4.

Western Leg

- 3.16 There were over 2,800 individual respondents who commented on the proposed route between the West Midlands and Manchester. In addition, there were 18 organised campaigns and four petitions received which made reference to the Western Leg.
- 3.17 469 respondents said they agreed with the proposals, and 1,377 respondents said that they disagreed.
- 3.18 Positive comments about the Western Leg highlighted the economic benefits to the West Midlands and the North-West, as well as the connectivity and capacity advantages the route would bring, particularly to Manchester.
- 3.19 Negative comments tended to focus on particular sections of route, most notably those passing through the Cheshire and Staffordshire countryside where the line would

be raised, such as the point of the grade-separated junction with the West Coast Main Line (WCML) south of Crewe.

Fradley to Crewe

- 3.20 A number of concerns were expressed about the impact of the route on local communities and the countryside, with noise, visual impacts, economic impacts, impacts on property, businesses and jobs, pollution, and disruption caused by construction all raised.
- 3.21 There were also concerns that the proposals did not include high speed connections or high speed stations at Crewe, Stoke-on-Trent, or Stafford. A wide range of alternatives to the proposed route were put forward.
- 3.22 Between Lichfield and Crewe, these included:
- re-routing the line to avoid multiple crossings and viaducts
 - lengthening the viaduct over the River Trent
 - an alternative alignment, lowering the height of the line
 - removing the vertical curve and the line passing by Marston
 - mitigating the impacts of the route by tunnelling from Ingestre to Marston and around Swynnerton
 - increasing the length of the tunnel between Whitmore Heath and Whitmore village
 - removing the curve in the route in this area
 - removing the viaduct over the Meece Brook floodplain
- 3.23 A number of alternatives were proposed in relation to Crewe, including building a new HS2 station, terminating the line at Crewe, or following the existing Crewe to Manchester line. There were also wide range of suggestions about enhancing Crewe's connectivity.
- 3.24 There were also suggestions to realign the route to avoid particular local communities. In addition, some respondents proposed the line should be completely re-routed to pass nearer to or through Stoke-on-Trent.
- 3.25 We have considered all comments and suggestions. We also ran a process to review the design standards, which also considered lessons learned and the application of more developed design standards arising from the more advanced Phase One.
- 3.26 Following this process, the Secretary of State has concluded that the alignment of the route, overall, strikes the right balance of delivering HS2's objectives and minimising the impact on communities and the environment.
- 3.27 For this section of the route, the Secretary of State has decided to make a number of refinements to the route. These are discussed in more detail in Chapter 5.

Crewe to Manchester and a link to the WCML at Golborne

- 3.28 The Secretary of State has not yet made a route decision on the proposed section of HS2 from Crewe to Manchester and the proposed junction back to the WCML at Golborne. This route decision is expected to be taken in autumn 2016. When a route decision is taken, we will set out the Government's response to the consultation.
- 3.29 The Government recognises the uncertainty that this creates for people along the line of the route but we want to ensure that we have taken time to consider a range of issues and identify the most appropriate solutions. Where possible, we have sought to give an update on our thinking and intentions in Chapter 9.

The Eastern Leg

- 3.30 There were over 3,400 respondents who commented on the proposed route between the West Midlands and Leeds. In addition, there were also 14 organised campaigns and two petitions received which made reference to the Eastern Leg.
- 3.31 There were 500 respondents who said they agreed with the proposals, and 1,425 respondents said that they disagreed.
- 3.32 Positive comments about the Eastern Leg highlighted the economic benefits to areas along the route, as well as the connectivity advantages the route would bring, particularly to Leeds and Sheffield, but also to nearby towns and cities.
- 3.33 Negative comments often focused on sections of the proposed route where the line would pass through towns and villages. Many of these were in areas where the line would be on a viaduct, such as in Church Fenton and Long Eaton. There were also concerns about the impact of the route on canals, such as the Chesterfield Canal and the Dearne and Dove Canal, and motorways, such as the M42 and M1.
- 3.34 As with the section of route between Crewe and Manchester, the Government is not yet taking a route decision on the Eastern Leg. We expect to take a route decision in autumn 2016, and will respond to the consultation as regards that section of the route at that time.
- 3.35 The Government recognises the uncertainty that this creates for people along the line of the route but we want to ensure that we have taken time to consider a range of issues. Where possible, we have sought to give an update on our thinking and intentions in Chapter 8.

Cross-cutting issues raised in the consultation

- 3.36 There were some cross-cutting issues raised in the consultation including the introduction of utilities alongside the route and the use of freed capacity on the existing rail network. Our response is set out in Annex A.

Conclusion

- 3.37 In the next chapter we set out the Secretary of State's decision to accelerate Phase 2a so that the route opens in 2027, six years earlier than planned. In making this decision, and in deciding on the route, the Secretary of State considered the consultation responses we received.

4. Delivering the benefits of HS2 sooner

- 4.1 HS2 will provide significant benefits to the country as a whole. It will bring our cities closer together through reduced journey times and by connecting with local and regional services. It will release capacity on our existing railway that we can use to provide new services. It will also transform the experiences of rail users across the country by improving services and reliability across the whole of our rail network.
- 4.2 We recognise that delivering the benefits of HS2 sooner is therefore in the interests of our nation. In addition, we have heard in consultation responses, from subsequent stakeholder requests, and from Sir David Higgins in his report “Rebalancing Britain” (October 2014), that people want the Government to consider accelerating delivery of Phase Two.
- 4.3 Given this, we have considered a range of options for accelerating Phase Two. Having done this, we believe that the Fradley to Crewe part of the consulted route (Phase 2a) is well placed for this because:
- it is a relatively straightforward section of line to construct from an engineering point of view with only 1.8 kilometres of tunnel and 6.5 kilometres of viaduct, not passing through any major urban area
 - it does not require the delivery of any new stations
 - it does not require additional rolling stock, as the Phase One service pattern will be maintained
 - it can be completed by 2027 (so meriting a separate hybrid bill)
 - it connects directly with Phase One, meaning that high speed trains could continue to run all the way to Crewe from London on a dedicated high speed network as soon as the line is built
 - it connects with the West Coast Main Line (WCML), bringing benefits to other locations in the North-West

4. Delivering the benefits of HS2 sooner

- it allows passengers travelling to or from a wide range of places to connect onto HS2 services given that Crewe is already a major hub on the rail network, with regional and long distance connections to the wider North West, East Midlands, North and South Wales

4.4 This section of the route can therefore be developed and built relatively quickly. It also offers value for money as a standalone scheme.

4.5 There are a number of other sections of the route which it has been suggested could bring benefits if delivered earlier than the rest of Phase Two in 2033. These include the section between Sheffield and Leeds, building HS2 from the north down, accelerating delivery of the Western Leg all the way to Manchester, or accelerating the section of route between Birmingham and the East Midlands. However, none offer the same advantages as Phase 2a, and we still have to finalise the scope of work needed to deliver them. That said if, in the future, we identify ways that we can sensibly accelerate construction of other sections of the route, we will.

4.6 Having assessed all of the available options, the Secretary of State has concluded that accelerating construction of the route between Fradley and Crewe is the best option. None of the alternatives to Phase 2a meet the strategic objectives set and facilitate construction of the full “Y” network. In summary, it:

- offers journey time savings of up to 13 minutes between London and Crewe, benefitting Manchester, Liverpool, Preston, Warrington, Wigan and Glasgow as well as Crewe. The North-West and Scotland will see more of the benefits of HS2 more quickly
- would relieve pressure on bottlenecks on the existing WCML at Colwich Junction and around Stafford. This should improve the reliability and performance on the existing main line, and it could also open up more capacity – most likely for freight
- more than covers the costs of acceleration through additional revenue and inflation savings, compared to construction in 2033 as originally planned
- offers value for money as standalone scheme, with a Benefit Cost Ratio (BCR) of 1.3 while maintaining the high value for money of the whole HS2 network (BCR of 2.2)
- offers potential further efficiency savings for the Government and a smoother work profile for the supply chain by continuing construction from Phase One, with opportunities for integrated procurement

4.7 In the sections below, we explain in more detail why the Secretary of State has taken this decision.

- 4.8 This acceleration can be completed without further work at Crewe station on the basis of the train service set out in the 2013 Strategic Case. However, we recognise that there could be benefits from a new Crewe Hub station that allowed more HS2 services to call, and from aligning any construction work on this with Phase 2a. Cheshire East Local Enterprise Partnership, Stoke City Council and Stafford Borough Council have set out their visions for regenerating the area, suggesting that stopping more HS2 trains at Crewe (and/or Stoke-on-Trent) would bring more benefits, and support their plans to build 70,000 more houses and generate 75,000 more jobs. Our own analysis shows stopping more trains at Crewe could offer more benefits, and we are working with Network Rail and HS2 Limited to consider options for a Crewe Hub station that could allow that. We are also continuing to work on developing the best HS2 service pattern for Crewe and the wider North-West, whilst towns and cities with no direct access to HS2 also gain the maximum benefit.

Bringing the benefits of HS2 to the north of England and Scotland sooner

Journey times

- 4.9 Phase 2a will give a journey time saving of up to 13 minutes between London and Crewe, on top of what is delivered by Phase One. As a result, there are connectivity benefits from faster journeys between cities, and accelerating the delivery of this section of Phase Two will mean that people will benefit from this much sooner than planned. This will support our plans for the Northern Powerhouse. The diagram below sets out the journey time savings that are possible.

4. Delivering the benefits of HS2 sooner

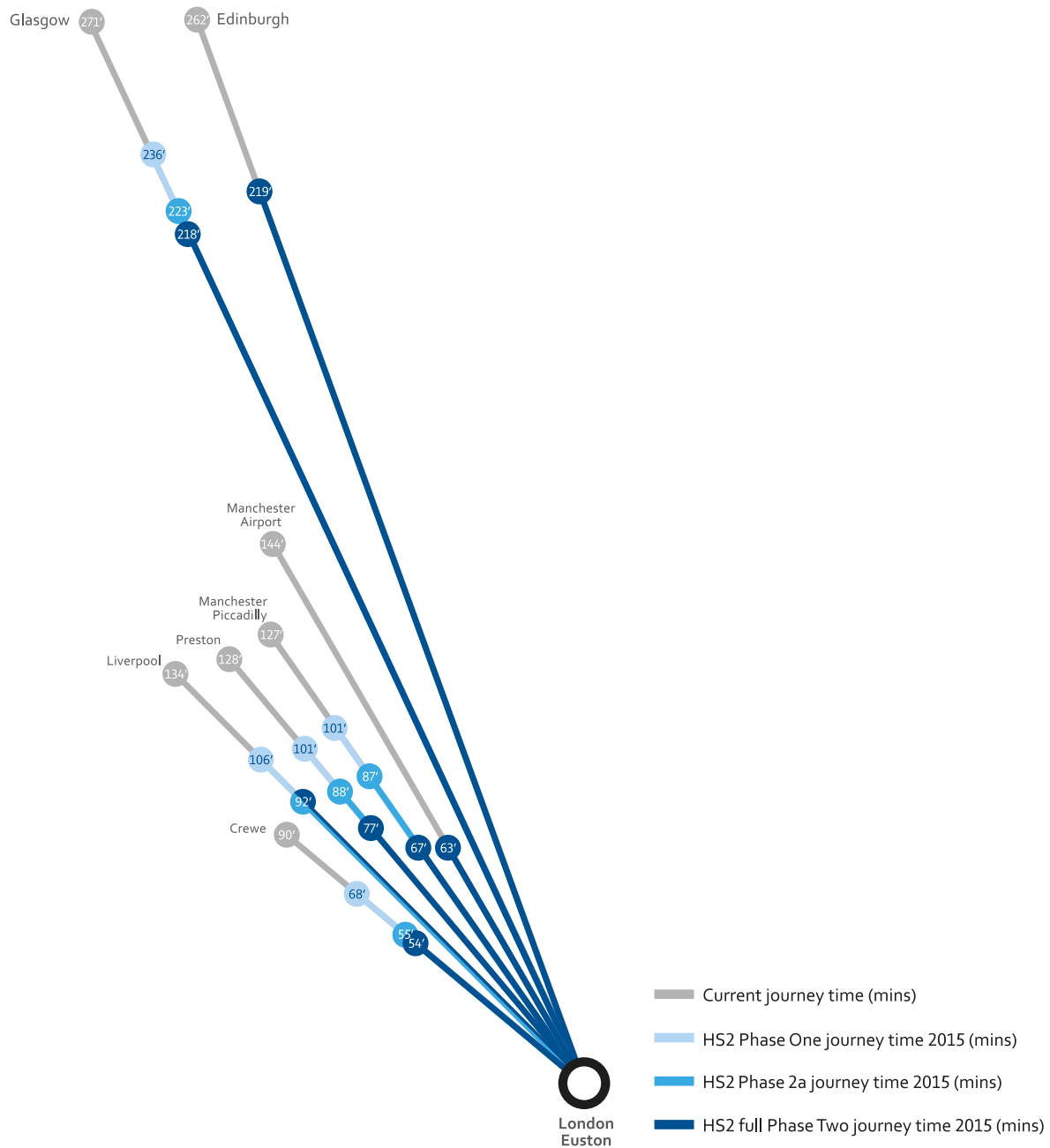


Figure 4.1: Journey times between London Euston and Scotland²⁸

Reliability

4.10 There are currently a number of bottlenecks between the West Midlands and Crewe that impact on the capacity of the WCML. Improving these has been the focus of a number of Network Rail projects, including major works currently being undertaken around the Norton Bridge Junction and at Stafford. These improvements will create extra capacity, allowing capability to deliver more trains on the route and shortening journey times. They will also reduce congestion and delays in the Stafford area.

4.11 Even after these major investments, a number of constraints remain, particularly at Colwich Junction, where the WCML reduces from four tracks to two, and the at-grade junction adds further constraints. These restrictions limit the timetable that can be run, and are responsible for significant amounts of delay on the current network.

²⁸ Fastest typical HS2 times for Phase One, Phase 2a and the full “Y” network and current rail times are shown in the image. Edinburgh times are to Edinburgh Haymarket.

- 4.12 By accelerating delivery of Phase 2a, these remaining constraints will be bypassed, and a number of services removed from the existing rail network onto the new high speed lines. In particular, that could reduce the number of trains per hour that pass through Colwich Junction.
- 4.13 This will improve the reliability and performance on the existing WCML.

Capacity and Freight

- 4.14 Phase 2a therefore creates extra capacity on the WCML and stations between Handsacre and immediately south of Crewe – including Rugeley, Trent Valley and Stafford.
- 4.15 This could allow new local stopping services to be introduced for passengers (subject to future decisions on capacity allocation). However, the more likely use of released capacity from Phase 2a is the potential to run additional freight services to Basford Hall yard, a major freight interchange immediately south of Crewe. This would unlock some of the substantial freight benefits from HS2 earlier, contributing to economic growth.



Figure 4.2: Freight train

Building to Crewe by 2027 offers value for money

- 4.16 We have considered Phase 2a in three ways: as an acceleration; as a stepping stone to the full “Y” network; and as a stand-alone scheme.
- 4.17 Our analysis makes the case for investment in the project as a continuation of the track from the end of Phase One near Birmingham. Viewed as an acceleration, Phase 2a is financially positive – meaning that (in Net Present Value (NPV) terms²⁹) the additional costs of building it sooner, including a separate hybrid bill, are outweighed by the additional revenue and construction cost savings.
- 4.18 The economic case for the full “Y” network remains strong and is enhanced by accelerating the construction of Phase 2a. On a comparable basis to the 2013

²⁹ NPV is defined as the sum of the present values (PVs) of incoming and outgoing cash flows over a period of time. Incoming and outgoing cash flows can also be described as benefit and cost cash flows, respectively.

4. Delivering the benefits of HS2 sooner

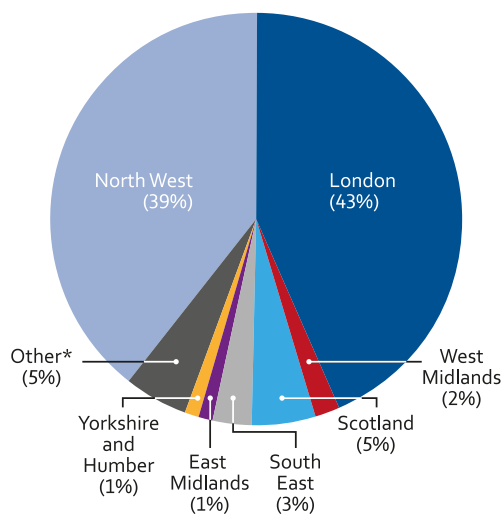
Economic Case the BCR would have increased. However, construction inflation since 2011 has been higher than background inflation and may continue. This was recognised in the Spending Review and will have a slight negative impact on the BCR, bringing it back to a BCR of 2.2, compared to the 2013 BCR of 2.3.

4.19 Considered as a standalone scheme (in a hypothetical scenario where the rest of the “Y” is not built), Phase 2a offers value for money, with a BCR of 1.3 and generates over £2 billion in net benefits. Our Phase 2a Economic Case shows that this BCR is higher when calculated on a comparable basis to the 2013 Economic Case³⁰. As set out elsewhere in this Command Paper, it remains the Government’s firm intention to deliver the full “Y” network.

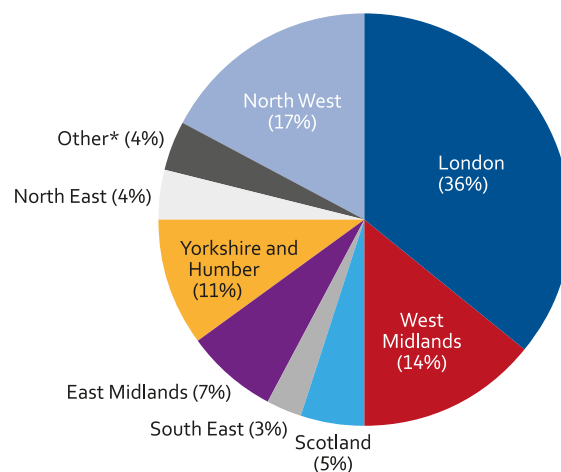
4.20 By continuing construction from Phase One, we expect there will be opportunities to make cost and efficiency savings. There will be no additional costs for new rolling stock as the trains purchased for Phase One will also run on this section of the route.

4.21 The economic benefits of HS2 are assessed over 60 years in line with normal practice. Forecasting travel patterns such a long way into the future is challenging. To better understand the robustness of the Economic Case, we assessed it using a range of different scenarios and found that the Economic Case remains strong. These scenarios included a range of different assumptions about economic growth, growth in demand for rail travel and the valuation of time savings. The value for money of the full “Y” network remained robust to this scenario testing. The chart below shows the distribution of BCRs across different scenarios.

Regional distributional benefits of Phase 2a (2037)



Regional distributional benefits of full HS2 network (2037)



*Other = East England, South West England and Wales

Figure 4.3: Regional distributional benefits of HS2³¹

30 The Reference Case of the Phase 2a Economic Case is comparable to the methodology applied to the 2013 HS2 Economic Case. As noted in Chapter 2 of this Command Paper construction inflation since 2011 has been higher than background inflation and may continue. The quoted BCR of 1.3 reflects this higher rate of inflation.

31 Pie charts do not sum to 100 per cent as the individual components are rounded to the nearest decimal point.

4.22 We believe this economic analysis is, if anything, conservative. The demand growth assumed is far lower than recent trends, and is capped at 2037 although there is no specific evidence to suggest that growth will stop at that time. Land use is assumed fixed, so we do not assume that the construction of HS2 itself leads to more jobs or houses in particular places. As a standalone scheme, the potential train service remains as in Phase One and has not been further optimised.

More trains routing through or stopping at Crewe

4.23 The reference case of our economic analysis assumes the Phase One service pattern. A number of responses to the Phase Two consultation asked for more trains to stop at Crewe, and if the right infrastructure was put in place, or adjustments made to train service specifications, there is potential for this to give higher benefits. We have therefore explored the benefits of stopping four trains per hour at Crewe rather than two as in the Phase One service specification. This scenario generated an additional £278 million in benefits and £251 million in revenue, although costs are yet to be considered.

4.24 The possible benefits from stopping more trains at Crewe are clear. This is why there is the important next step to fully explore options for a Crewe Hub which is discussed in more detail in Chapter 6.

4.25 In the 2013 Phase One train service specification, two of the three HS2 London-Manchester services each hour were routed through (but did not stop at) Crewe, and one was routed through (but did not stop at) Stoke-on-Trent. That means that in the reference case analysis for Phase 2a, two of these services are 13 minutes faster, but the third is unchanged. We have also looked, as a sensitivity test, at the potential benefits of routing all three London to Manchester services via Crewe so that they all benefit from the journey time improvements offered by Phase 2a.

4.26 When the third service is re-routed via Crewe there is an increased chance of possible congestion on the line between Crewe and Manchester, and more detailed work is required to fully understand the impacts. On a conservative basis, we have therefore assumed that:

- all three services to Manchester would have a journey time saving of nine minutes (instead of 13)
- additional infrastructure costs of up to £200 million (in 2011 prices) would be required to facilitate this routing

Even on this basis, such a change of routing would add £148 million net transport benefits and £114 million in revenue to Phase 2a, increasing the BCR by 0.1.

4.27 However, it is too early to take detailed decisions about how the rail network will operate once Phase 2a opens in 2027. Service design, re-design and timetabling are normal processes of the railway and there are well established procedures in place to ensure that capacity allocation and timetabling decisions are fair and taken in line with statutory and regulatory duties. The train service to operate after the opening of HS2 will be developed iteratively, following these processes, over the next decade and beyond in consultation with key partners including local authorities.

Long term demand

- 4.28 The rate of demand growth, and the ultimate level of demand assumed for the new railway has a significant impact on the economic case. Our approach to forecasting demand remains as set out in the 2013 Economic Case. This caps demand at a particular level, preventing benefits and revenue from increasing as a result of additional passenger demand after this point.
- 4.29 In our modelling for Phase 2a, this level of demand is reached in 2037, four years after the opening of the full Phase Two. However, if the predicted level of demand was increased and capped in 2044 (eleven years after the full Phase Two opening), the standalone BCR for Phase 2a increases by around 0.2, while the BCR for the “Y” network improves by around 1.3.

Values of time

- 4.30 Our assessment of the benefits of HS2 places a value on the time savings that people get from travelling on HS2. The best approach to this has been debated over a long period of time. To inform the October 2013 Economic Case, we commissioned a study reviewing the evidence on the business value of time. It showed that the values used in the appraisal closely corresponded to the available evidence.
- 4.31 To ensure that the values we use continue to reflect the most up-to-date evidence, we have recently published the outputs from a major research project into how people value a range of benefits such as quicker journey times, improved reliability and reduced crowding.³²
- 4.32 While further work and consultation needs to be done before fully implementing the findings into our economic analysis, our initial estimates suggest that adopting the key recommendations of the study would have a positive impact on the BCR of HS2, with the BCR of the full “Y” network increasing by approximately 0.1.

Wider economic benefits

- 4.33 The connectivity improvements created by HS2 will generate wider economic impacts as businesses are more accessible to each other and gain access to wider labour markets. Phase 2a delivers wider economic impacts of £366 million, while the full “Y” network generates wider economic impacts of £14.2 billion.

Considered alternatives

- 4.34 In order to ensure that we meet our strategic objectives for Phase 2a we have considered rail alternatives to the Phase 2a scheme presented. We have not reconsidered alternatives that involve road, air or demand management for the reasons set out in the 2013 Strategic Case.
- 4.35 In particular, we have considered an option to accelerate a shorter section of Phase 2a and options to tackle congestion on the WCML through rail upgrades. The Strategic Outline Business Case published alongside this Command Paper, and available at <https://www.gov.uk/government/collections/hs2-phase-two-from-the-west-midlands-to-leeds-and-manchester>, sets out in more detail our analysis of these options.

³² <https://www.gov.uk/government/publications/values-of-travel-time-qualitative-research-on-business-travel>

- 4.36 To summarise, the conclusions of our analysis are that the alternative options:
- do not provide the same level of connectivity benefits for the major cities of the Midlands and the North due to lower journey time improvements
 - do not provide as much additional, or released, capacity to meet the long term needs for the north-south railway as Phase 2a
 - offer a less robust solution to the problem of resilience and performance, particularly on the WCML which experiences relatively high levels of unreliability
 - could have a greater impact on services on existing lines as construction work is carried out (medium and low cost options only)
- 4.37 We have found no alternative that could deliver the journey time benefits of Phase 2a or which would provide a better step towards completing the full “Y” network. As a result we have concluded that proceeding with the acceleration of Phase 2a is the option which best meets our objectives.

Conclusion

- 4.38 The Secretary of State has decided to accelerate construction of Phase 2a so that it will be completed by 2027 instead of 2033. To do this, the Secretary of State has made a route decision on Phase 2a. The details of this are set out in the next Chapter.

5. Phase 2a route decision

Route Decision

- 5.1 The Secretary of State has taken a route decision for the Phase 2a route that runs from the West Midlands to Crewe, issued safeguarding directions in respect of this route to protect it from conflicting development, and launched a property consultation on a scheme to assist those living along the route.
- 5.2 This section of route will connect with the end of Phase One just north of Lichfield. It will end just south of Crewe with a junction onto the West Coast Main Line (WCML) and also go as far as the portal of the tunnel at Crewe envisaged in the 2013 consultation. This allows for the consulted tunnel under Crewe to be built in the future, subject to future decisions on the rest of Phase Two. The route also includes the infrastructure maintenance depot for HS2 to the west of the existing Basford Hall freight yard.
- 5.3 As set out in Chapter 6, work by Network Rail and HS2 Limited is ongoing to develop options for a Crewe Hub station. We believe that the Phase 2a route as decided would be compatible with a Crewe Hub scheme at any of the most likely locations, but recognise it may be necessary to review and refine the detailed design of the very north end of the Phase 2a route, including the connection with the WCML, in the light of future decisions on a Crewe Hub.
- 5.4 We consulted on this route in 2013. Since then we have taken into account what people have said in response, and reviewed learning from Phase One. The route decided on includes a number of refinements to apply updated design standards, address issues raised at consultation, and apply learning from Phase One such as the inclusion of maintenance loops.

Making the route decision

Evidence from the 2013 consultation

- 5.5 The 2013 consultation sought respondents' views on the question:

Do you agree or disagree with the Government's proposed route between the West Midlands and Manchester? This includes the proposed route alignment, the location of

tunnels, ventilation shafts, cuttings, viaducts and depots as well as how the high speed line will connect to the WCML.

- 5.6 The consultation therefore provided opportunity for further challenge and refinement of the proposed line.
- 5.7 Consultation responses suggesting changes to the proposed route largely focussed on having the high speed line connecting to Stoke-on-Trent and a new Hub station being built at Crewe. The Government asked HS2 Limited to provide advice on these issues. The latest progress on the work relating to Stoke-on-Trent is set out below. The latest progress on the work relating to a Crewe Hub station is set out in Chapter 6 of this document.
- 5.8 HS2 Limited also explored the benefits of a dedicated high speed station in Stafford, but after further evaluation found that the business case was not robust enough to take forward. Stafford is due to benefit from a classic compatible service via the Handsacre link when HS2 Phase One services are introduced in 2026.
- 5.9 Consultation responses also proposed alternative alignments for the proposed route and set out a number of refinements that could be made. HS2 Limited subsequently considered these responses and has undertaken a number of studies to test the case for making changes to the route.
- 5.10 Government has since considered the advice from HS2 Limited based on the issues raised in consultation, and where appropriate has decided to refine the route in certain places.
- 5.11 In addition, changes to the route have also arisen from applying updated design standards, addressing issues raised at consultation, and applying learning from Phase One such as the inclusion of maintenance loops.

Stoke-on-Trent

- 5.12 Stoke-on-Trent City Council proposed an alternative to the route via Crewe that was included in the Phase Two route consultation. This would connect HS2 to existing classic routes, to enable classic compatible services to serve Stoke-on-Trent and Manchester from 2026. The scheme proposed by Stoke-on-Trent City Council would reconnect to the consultation route north of Crewe, when the rest of Phase Two is completed in 2033, to provide a faster route to Manchester. This would not deliver the same level of journey time savings and benefits as the consultation route via Crewe, and further assessment highlighted significant concerns over the operational feasibility of running new services on mixed traffic lines, with a potential impact on the reliability of HS2.
- 5.13 In order to ensure that the Government gave full consideration to Stoke-on-Trent City Council's proposal, HS2 Limited also reviewed additional evidence provided by the Council for a continuous high speed alignment through Stoke-on-Trent. Following the approach to route optioneering that has been used throughout the route development process, HS2 Limited developed this into a route that accorded with its technical

5. Phase 2a route decision

requirements and could be compared against the consultation alignment through Crewe using its sifting methodology. This is referred to below as the 'Stoke route'.

- 5.14 The Phase Two consultation route via Crewe includes a connection to the WCML south of Crewe, and assumes that services joining the WCML will run through the existing Crewe station. The 'Stoke route' follows the Phase Two consultation route through Staffordshire until north of the A34, near Stone. At this point it bears east towards Stoke-on-Trent, following the existing railway corridor through Stoke-on-Trent, before re-joining the consultation route north of Crewe and connecting to the WCML in order to serve Liverpool. The 'Stoke route' includes a new station in Stoke-on-Trent, for both high speed and classic services.
- 5.15 Based on these route options, HS2 Limited modelled a number of scenarios for services via Crewe or Stoke-on-Trent to compare their performance. This modelling shows a significant reduction in the benefits and revenues generated by the 'Stoke route' in comparison with the consultation route via Crewe. This is driven by a number of factors, including longer journey times to the key markets of Manchester and the North, and loss of the wider regional connectivity delivered by the proposed connection at Crewe.
- 5.16 The wider results of HS2 Limited's work indicate that the 'Stoke route' also performs less well in sustainability terms than the consultation route via Crewe, as well as entailing some significant engineering challenges. The Secretary of State therefore concludes that this route is less effective than the consultation route via Crewe in delivering the desired benefits, and should not be taken forward.
- 5.17 As mentioned, Staffordshire will see the benefit of HS2, with classic-compatible trains scheduled to stop in Stafford under Phase One. We do however recognise the important role Stoke-on-Trent plays in the wider economic sub-region and welcome the way Stoke-on-Trent City Council, Cheshire East Council and other partners are working together to ensure that the benefits of HS2 are maximised. We want to see whether Stoke-on-Trent and Macclesfield could receive HS2 services as part of Phase Two and therefore the Secretary of State has asked HS2 Limited to explore how we might best serve Stoke-on-Trent and Macclesfield, including through classic-compatible trains via the Handsacre Junction. Initial modelling suggests this could give journey times from Stoke to London of a little over an hour – a significant improvement on the current 84 minutes journey time. Any HS2 services would also likely be supplemented by continued classic rail services.
- 5.18 Respondents to the consultation also suggested that a new transport hub be built at Crewe. This is covered in more detail in Chapter 6.

Route Refinements

- 5.19 The Government asked HS2 Limited to review issues raised in consultation and respond to those issues. The company subsequently developed a programme of studies to look at options for refining the line of route based on responses to consultation.
- 5.20 As part of these studies HS2 Limited considered engineering issues, environmental impacts, costs and benefits. The findings of these individual studies are discussed in greater detail in the HS2 Limited documents published alongside this Command

Paper: “West Midlands to Crewe: Summary of Route Refinements”, the “Phase Two Post-Consultation Update: West Midlands to Crewe Report”, the “Response to HS2 Phase Two Consultation: Appraisal of Sustainability (Question 7)” and the “West Midlands to Crewe Engineering Report” which can be found at <https://www.gov.uk/government/collections/hs2-phase-two-from-the-west-midlands-to-leeds-and-manchester>

Refinements in Response to Consultation

5.21 HS2 Limited have recommended making several refinements to the consulted route, to reflect feedback received in consultation, which the Secretary of State has accepted. These changes:

- extend the Whitmore Heath tunnel to south of the A53, to respond to concerns raised in the consultation
- introduce a partially retained cutting through Whitmore Wood ancient woodland reducing the footprint and potential impact to the woodland, to respond to concerns raised in the consultation
- change the configuration of the junction with the WCML to the south of Crewe, by staggering the connections to the WCML, moving one viaduct further north. This reduces the junction from three tiers to two, decreasing the maximum viaduct height from 16 metres to 10 metres and so reduces the visual impacts at Chorlton and Hough. This responds to some concerns raised in consultation on the height of these viaducts and allows for a simpler engineering solution

Design Development

5.22 Other changes made as a result of further design development by HS2 Limited are:

- move the start point of the route to reflect changes to the Phase One route proposed by HS2 Limited to the Phase One hybrid Bill Select Committee. This results in a shift of up to 30 metres eastwards in the southern 1.2 miles (2 kilometres) of the route
- based on the indicative location shown in consultation, introduce maintenance loops at Pipe Ridware resulting in an increased width of the railway (to c.30 metres) over a 1.4 kilometre stretch. In order to avoid deep cuttings in this area, and to reflect the raise in the alignment to the south, the maintenance loops are on embankment up to 13m high at the southern end, descending into shallow cutting at their northern end
- extend the viaduct over the Trent and Mersey Canal at Great Haywood by approximately 100 metres so that it now starts to the east of the existing railway and replaces the embankment proposed in the consultation route. This results in a reduction in the footprint of the railway adjacent to Great Haywood Marina and improves access to the east side of the canal

Lessons Learned from Phase One

5.23 Following further analysis, and applying the lessons learned from Phase One, HS2 Limited have also recommended making the following refinements, which have been accepted:

- raise the viaduct over Bourne Brook (near King’s Bromley) from a maximum height of 10 metres to 13 metres, and the viaduct through the Trent Valley by 7 metres to a maximum height of 14 metres. These increases have been driven by a number

5. Phase 2a route decision

of factors, including track and clearance requirements and the incorporation of the maintenance loops at Pipe Ridware

- lower the route to the south of Ingestre Park resulting in a deeper cutting (maximum depth increases from 12 metres to 17 metres) to comply with updated track design standards
- increase the height of the viaduct over the M6 crossing by 4 metres to a maximum height of 15 metres, in order to improve clearance over the motorway. This has resulted in the height of the route increasing to a maximum height of 17 metres to the south-east of Swynnerton
- lower the Meece Brook viaduct by 2 metres (from a maximum height of 12 metres to 10 metres) as a consequence of the change made at Whitmore Heath (set out in paragraph 5.21)
- raise the viaduct over the WCML and River Lea (from a maximum height of 11 metres to a maximum height of 16 metres) to achieve increased clearance over the WCML and comply with updated structural and track design standards. This has enabled us to optimise the WCML crossing at the current level of design
- reduce the depth of the cutting between the River Lea and Den Lane from a maximum depth of 13 metres to a maximum depth of 9 metres to better meet updated design requirements for track gradient and watercourse clearance and also to allow for the proposed changes associated with the Crewe junction. Due to the undulating topography, sections of the route in this area are on embankment up to 5 metres high

5.24 In addition, as a result of this work, the height of the route past Hopton has been increased by approximately 4 metres to increase clearance over the Kingston Brook. This would reduce both detrimental impacts on the watercourse, and the risk of blockages.

5.25 HS2 Limited undertook further work on the proposed green tunnel at Hopton, taking into account this increased elevation. A green tunnel in this area would require a substantial footprint both for landscaping and provision of associated tunnel infrastructure, including portals and provision for parking and access. There are also likely to be significant additional construction impacts associated with a green tunnel.

5.26 The green tunnel on the consultation route south of Hopton has therefore been replaced with a false cutting. This false cutting would effectively be a retaining wall on the north side of the route and would subsequently be designed to integrate with the landscape, so helping to mitigate visual impacts as well as noise impacts for Hopton. When compared to the green tunnel, the proposed false cutting would bring a substantial reduction in the footprint required to construct and operate HS2, as well as a reduction in the height of the associated structure.

Safeguarding

5.27 Between 4 November 2014 and 6 January 2015, the Government ran a consultation on its proposal to safeguard land needed for the Phase 2a route from Fradley to Crewe. HS2 Limited conducted the nine-week consultation on behalf of the Government. It sought views from all interested parties, including the relevant Local Planning Authorities (LPAs) who would have to operate under the requirements of a

safeguarding direction, other key stakeholders and those qualifying owner-occupiers who would fall within the areas identified in the draft safeguarding directions and maps. The consultation was also open to responses from the public more generally.

- 5.28 Having taken a route decision on this section of the Phase Two route from Fradley to Crewe, the Secretary of State has today issued safeguarding directions for a 120 metre wide corridor of land to protect this part of the route from conflicting development.
- 5.29 Safeguarding this part of the route will ensure that proposed new developments in this corridor do not affect the ability to build or operate HS2, or lead to excessive additional costs. This will have implications for LPAs, and also for those considering submitting planning applications in respect of land in the safeguarded area.
- 5.30 As well as protecting land that may be required for the route, safeguarding triggers Statutory Blight arrangements under the Town and Country Planning Act 1990. It gives property owners who meet the statutory criteria the right to serve a Blight Notice and request that the Government purchases their property. Owner-occupiers of residential properties within the safeguarded area who meet the statutory qualifying criteria and whose request is accepted can expect to receive the unblighted value of their home, a home-loss payment of 10 per cent of the value of their home (up to £53,000) and reasonable moving costs.
- 5.31 Information on the new safeguarding directions and Statutory Blight specifically aimed at those within areas safeguarded for HS2, including application forms, is available at <http://www.gov.uk/hs2> or by phoning the HS2 Limited enquiries line on 020 7944 4908. Lines are open Monday to Friday from 9am to 5pm.

Property Consultation

- 5.32 As with Phase One, the Government is committed to assisting people along the HS2 route from Fradley to Crewe. Therefore today the Government is launching a consultation on a proposal to implement the same long-term property schemes for Phase 2a as for Phase One.
- 5.33 On Phase One, the Government has gone above and beyond what is required by law by introducing a comprehensive package of discretionary measures to assistance more people which reflects the unique nature of the HS2 project. Overall our measures are available much more widely than for other infrastructure projects, and offer more choice. Further details of the assistance available for Phase One can be found at <https://www.gov.uk/claim-compensation-if-affected-by-hs2>
- 5.34 Within the consultation, we are also seeking views on a discretionary Express Purchase scheme in the safeguarded area. The discretionary express purchase scheme applies to qualifying owner-occupiers who now have the right serve a Blight Notice; it does not change the level of compensation they can receive but it relaxes two of the eligibility criteria. To avoid any unnecessary delay in getting assistance to those with a statutory entitlement to sell their property to the Government, the Express Purchase scheme has been put into operation, from 27 October 2015, on an interim measure basis. Its continued operation is still subject to the outcome of this consultation and views are

5. Phase 2a route decision

invited on whether it should remain open for those potentially eligible in Phase 2a going forwards.

- 5.35 Subject to the outcome of the Phase 2a property consultation, we propose to introduce discretionary arrangements in spring 2016 – providing certainty about the type of assistance that can be sought and helping owner occupiers along the Phase 2a route with minimum delay. We are seeking views on this proposal as we are keen to ensure it is the right approach for Phase 2a, before opening further discretionary schemes for this section of the route.
- 5.36 Further information on the consultation can be found at <https://www.gov.uk/government/collections/hs2-phase-two-from-the-west-midlands-to-leeds-and-manchester>

Sustainability – Phase 2a

- 5.37 The preferred Phase 2a route between Fradley and Crewe follows largely the same route that was presented at consultation and its effects remain broadly as they were described within the 2013 Sustainability Statement <https://www.gov.uk/government/collections/hs2-phase-two-from-the-west-midlands-to-leeds-and-manchester>. However, the details of some of the potential environmental and community impacts have changed as a result of the post-consultation refinements (as described in section 5.19). Further information is available in the Appraisal of Sustainability report which can be found at <https://www.gov.uk/government/collections/hs2-phase-two-from-the-west-midlands-to-leeds-and-manchester>
- 5.38 Our next step is to develop the design and mitigation supported by more detailed environmental analysis (in the form of an Environmental Impact Assessment). This will require further engagement with stakeholders. The findings will be presented in an Environmental Statement that will be included as part of the hybrid Bill.
- 5.39 Question 7 of the 2013 public consultation on the whole of Phase Two also asked for comments on the Appraisal of Sustainability (as reported in the Sustainability Statement) of the Government's proposed Phase Two route, including the alternatives. Further information on this question can be found in Annex A.

Summary of Phase 2a decisions

- 5.40 The previous Chapter explains how the Secretary of State has decided to accelerate construction of part of the Phase Two route between Fradley and Crewe. This accelerated Phase 2a section of the route will open in 2027, six years earlier than planned.
- 5.41 The Secretary of State has also taken a route decision on the section of the Phase Two route from Fradley to Crewe (Phase 2a). The confirmed route follows the consultation route but includes a number of refinements to reflect consultation responses and learning from the development of Phase One engineering.
- 5.42 Following this route decision, we are safeguarding the route between Fradley and Crewe from future conflicting development. The safeguarded route begins at the connection with the Phase One route, to the north-west of Fradley Wood and the Trent and Mersey Canal, and finishes at Crewe South railway junction, approximately

200 metres south of Crewe station. The safeguarded area also includes the tunnel portal south of Crewe, as envisaged in the 2013 consultation, and the infrastructure maintenance depot for HS2 to the west of the existing Basford Hall freight yard.

- 5.43 We have also launched a consultation on further property assistance to alleviate the effects of generalised blight.

Next steps

- 5.44 We will now begin the development of a hybrid bill to secure powers from Parliament for the construction of Phase 2a. As we develop the Bill, we will work with communities and stakeholders along the route to ensure that they are ready for this section of the route to be delivered six years earlier than planned.
- 5.45 Our approach will also be similar to that adopted in the development of the Phase One hybrid Bill, building on the lessons that we have learned in this process to inform our approach.
- 5.46 We expect the hybrid Bill to be deposited in 2017 and we are aiming for Royal Assent in 2019.
- 5.47 HS2 Limited have already procured Professional Services Consultants (PSCs), for the purposes of supporting the hybrid Bill process and continuing to develop the design. These PSCs are also essential to the development of the Environmental Statement for the hybrid Bill.
- 5.48 We are also committed to working with surrounding cities, including Stoke-on-Trent to explore their proposals to increase the positive impact of HS2 on their area, whilst ensuring that any city with a direct link to London continues to enjoy at least broadly comparable services to today.
- 5.49 We have already looked at the possible benefits if more trains could be stopped at Crewe than originally planned in our 2013 work, and we are looking at how we could create a Crewe Hub station, allowing more HS2 services to stop. Our latest thinking on this is set out in the next Chapter.

6. Developing plans for a Crewe Hub station

Crewe: A North West Hub

- 6.1 As set out earlier in this Command Paper, a key part of our vision for HS2 is to improve connectivity across our railways. That is why we have chosen to deliver the route from the West Midlands to Crewe earlier than planned. Crewe is already a significant hub station on our network and we asked Network Rail to examine options to further develop the area's connectivity.

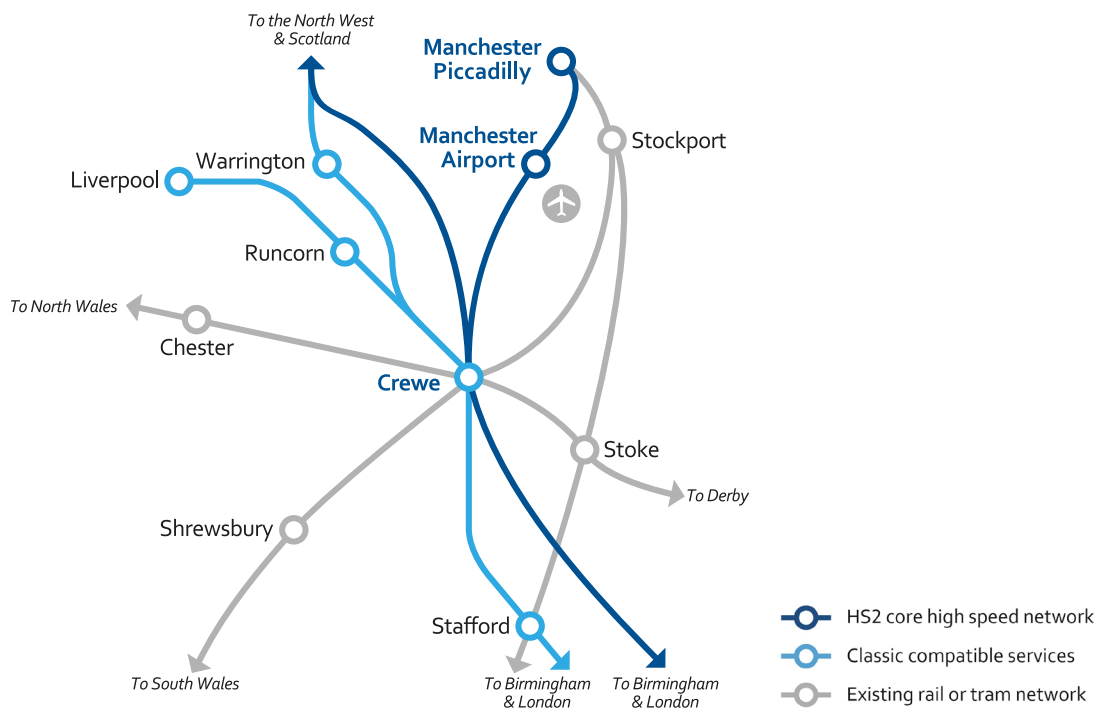


Figure 6.1: Crewe connectivity

- 6.2 In 2013, Network Rail published its report “Better Connections: Options for the integration of High Speed 2 (2013)”. That report identified an opportunity to provide better integration of HS2 and conventional rail; with HS2 serving long distance markets between major cities, and conventional rail providing feeder services to HS2 hub stations. Hub-and-spoke stations served by HS2 and conventional rail could make

efficient use of the capacity that HS2 will release on the existing network, and improve connectivity for large markets within easy reach of HS2 stations.

- 6.3 Sir David Higgins shared his vision for Crewe and the North-West in his reports “HS2 Plus (March 2014)” and “Rebalancing Britain (October 2014)”. He recommended a North West hub station at Crewe. This would build on the way that Crewe station already functions as a regional hub, and optimise connections to the new high speed line for the areas Crewe serves, by both rail and road. He said an improved Crewe Hub would “act as a real agent for change in that region”.
- 6.4 HS2 will be part of a national network, and as part of our commitment to serve the UK more widely and realise regeneration opportunities, we are looking at options to optimise Crewe hub which are both affordable and offer value for money for the tax payer. We are particularly interested in understanding how options could be delivered in distinct stages which could offer affordable improvements to the station environment and its functionality and capacity to meet the needs of the railway and passengers, and to facilitate growth in the region.
- 6.5 A hub station would enable passengers travelling from within the wider region and beyond to take advantage of Crewe’s existing rail and road connectivity to access HS2 services for long distance journeys. Once Phase 2a is built, journey times between Crewe and London would be just 55 minutes, compared with 90 minutes today.

Crewe today

- 6.6 Crewe station first opened in 1837 and has undergone significant changes since, with the most recent change in 1985. Today, it is a significant rail hub where the main trunk of the West Coast Main Line (WCML) and four regional rail lines converge, giving Crewe 360 degree rail connectivity to major destinations and regions including Liverpool and Scotland; Manchester; Stoke and Derby; Stafford, Birmingham and London; Shrewsbury and South Wales; and Chester and North Wales. This makes Crewe a strategically important location on the rail network, for both passenger services and freight.
- 6.7 Over the past decade, the number of passengers using Crewe station has grown, with 3.8 million passengers using the station in 2013/14 compared to 2.7 million in 2004/05. In 2013/14, a third of passengers were interchanging between rail services³³. Passenger numbers at Crewe are forecast to continue to grow, and HS2 Limited forecast that with Phase Two of HS2 as consulted, 6.3 million passengers could be using Crewe station in 2036.
- 6.8 Crewe is a strategically important rail freight hub. Basford Hall freight yard, located just south of Crewe station, houses a range of operational and maintenance facilities for freight companies and Network Rail. Much of the freight traffic using the WCML goes through Basford Hall yard. It serves as an important point on the network for splitting and joining freight trains travelling between ports and distribution centres across the UK. Across the rail network, freight is forecast to grow at an average of 2.9 per cent per annum, more than doubling by 2043.

³³ Source: ORR, <http://orr.gov.uk/statistics/published-stats/station-usage-estimates>

6. Developing plans for a Crewe Hub station

- 6.9 Although Phase 2a works with the existing Crewe station, the scope for the station to accommodate future growth beyond this is inhibited by the current track layout, which was not designed for today's operational demands nor those of the future. The complex crossing moves over other rail lines that some services have to make, limits capacity on the WCML, introduces risks for reliability, and constrains further growth. It is only with careful management of the timetable and signalling that the station is capable of delivering current outputs. In addition, there are significant levels of congestion on the local road network leading to the station.
- 6.10 Crewe's role as a major rail hub presents a significant opportunity for the North West and wider regions. To realise this opportunity in full, we are looking at what infrastructure improvements in the Crewe area will be needed to accommodate increasing demand.

Consultation proposals

- 6.11 Under Phase One (and Phase 2a), it is proposed that seven HS2 trains per hour would continue north of Birmingham. In the 2013 Economic Case assumptions, six of these pass through the existing Crewe station, but only two stop.
- 6.12 The 2013 economic case assumptions for Phase Two (the full "Y" network) had three HS2 trains per hour through the existing Crewe station, and again only two stopping. All other services were routed in a tunnel at Crewe.
- 6.13 Consultation responses recognised the important role that Crewe plays as a railway hub, with some expressing support for making use of Crewe's connectivity to enable passengers from Cheshire, North Wales, North Staffordshire and North Shropshire to have access to the new services to London. However, some felt that the proposal, with the main HS2 route bypassing Crewe station, would not make best use of Crewe's existing connectivity and that there should be a HS2 station at Crewe offering greater regional and national connectivity. Some respondents to the consultation put forward suggestions that the existing station should be redeveloped to enhance its connectivity, while others have suggested a new station at Basford Hall, just south of Crewe. Concerns were also raised about the impact of proposals for a new station on services at the existing station, as well as the economic impact on The Potteries.

Options for a Crewe Hub station

- 6.14 Work by Network Rail and HS2 Limited, with local input from Cheshire East Council, is ongoing to consider the costs and benefits of different options at Crewe. These would give the flexibility to stop significantly more HS2 services. We are working towards reaching a preferred approach in autumn 2016, and any station development will need to be affordable and offer value for money.
- 6.15 After considering a long list of possible options, work is now focussed on options: within the area of, or close to, the existing station site, or at Basford, two kilometres south of the existing station. These locations offer different challenges and opportunities in terms of transport connectivity (both rail interchange and road access), ease of construction and disruption during build, environment and sustainability impacts, and support for wider development and regeneration.

6.16 Crewe’s position as a hub with the integration of HS2 services will spread the benefits of HS2 across the North West. Many more towns, will be able to take advantage of the improved connectivity and reduced journey times that HS2 will deliver. We want passengers to experience seamless integration of transport modes, travelling to Crewe by high speed rail to interchange with ease to conventional rail, car, local public transport, and cycle, for onward travel within the region and beyond. Cheshire East have been actively involved in the existing programme of work, and are key to ensuring the potential benefits are realised for the wider area.

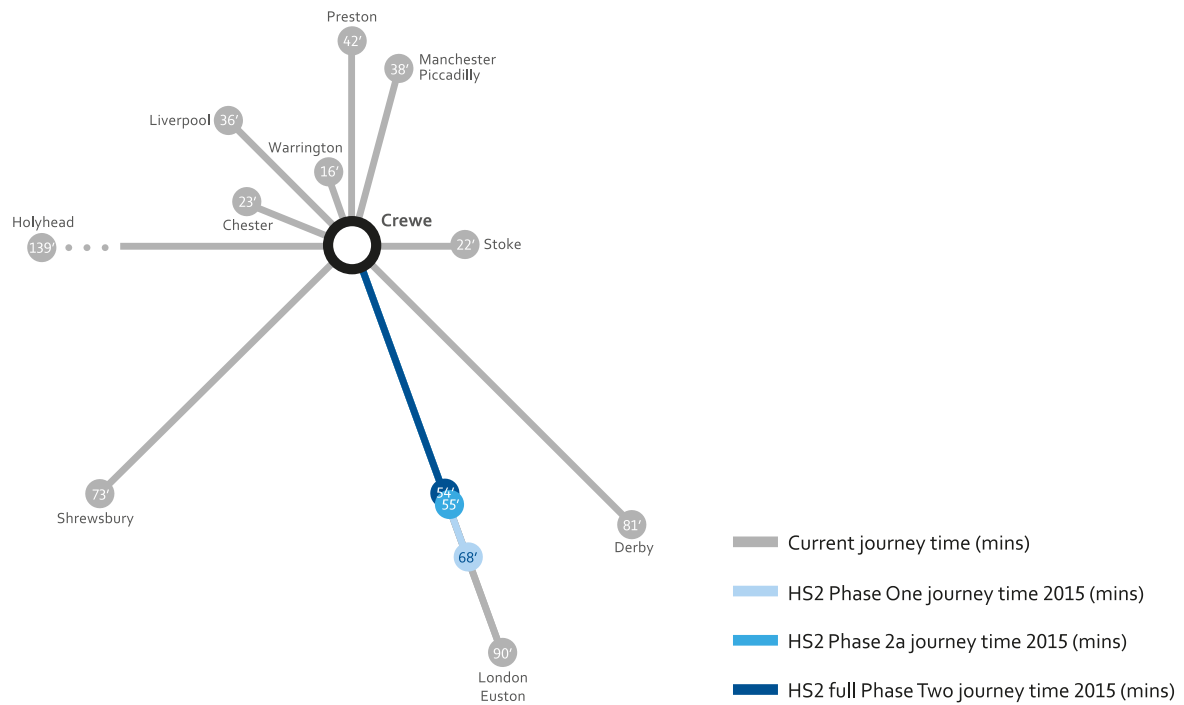


Figure 6.2: Crewe journey times³⁴

6.17 The Northern Gateway Partnership – a collaboration between seven local authorities and two Local Enterprise Partnerships (LEPs) – positions Crewe, with its excellent connectivity to local and national destinations, at the heart of a locally driven programme of investment to bring jobs, housing, growth and regeneration to Cheshire and North Staffordshire. They estimate that the Northern Gateway Development Zone can deliver 100,000 homes and 120,000 jobs. It is this kind of collaboration that we are already seeing in Cheshire and Staffordshire, that will be fundamental in spreading the benefits of HS2 and transforming the region.

6.18 To support this important work, the Government will provide initial funding of £0.6 million for the development of an HS2 Growth Strategy for the Northern Gateway. This funding will enable the region, led by the two local LEPs, to develop their strategy for maximising the benefits that HS2 will bring to the region.

³⁴ Fastest typical HS2 times and current rail times are shown in the image.



6. Developing plans for a Crewe Hub station

Conclusion

- 6.19 While further work, including on costs and funding, must be completed before decisions can be taken on whether to proceed, the Government supports the vision for a Crewe Hub. The Government intends to make further announcements on the scheme in 2016, and any proposal to take any Crewe Hub scheme forward will be subject to public consultation. Such a proposal will need to be affordable, offer value for money, and bring benefits to Crewe town and the entire region including Cheshire, Warrington, Stoke-on-Trent and Staffordshire.





Section 3: Completing the full “Y” network

In this section of the Command Paper we set out our plans for completing the full “Y” network by 2033 including providing an update on the Eastern and Western Legs of Phase Two. We also set out how HS2 will be an integral part of our existing rail network and how it will help create the Northern Powerhouse.



7. Our plans for the full “Y” network

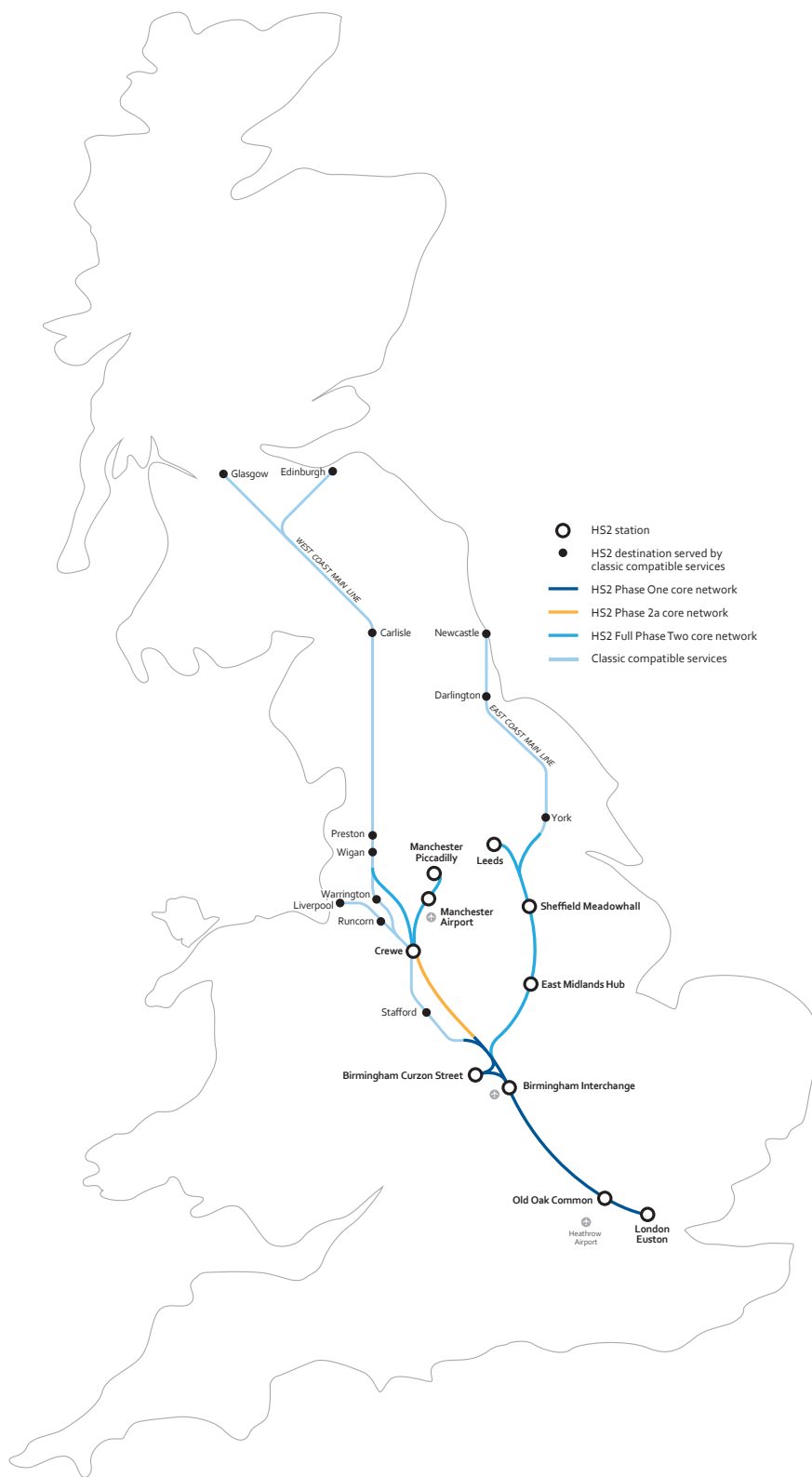


Figure 7.1: Map of the HS2 network including destinations for classic compatible services

- 7.1 In this document, we have set out the Government's updated assessment of the case for HS2. The business case is strong. We have shown that only HS2 can deliver the extra capacity, improved connectivity and growth that is so badly needed. It will deliver a step change in our nation's railways, delivering an improved experience for passengers.
- 7.2 Phase One will resolve some of the most pressing challenges around capacity south of Birmingham, but it will not deliver the transformation in connectivity that is required to meet our objective of supporting economic growth in the North. To do this we need to continue with Phase Two.
- 7.3 The full "Y" network, which we are committed to delivering by 2033, will not only improve connections to London, but also bring northern cities closer together. Passenger experience and choice will be enhanced by the provision of new high speed routes and improved station facilities, with travel on comfortable, reliable and accessible trains. Alongside the route, we are also working to ensure that the services are frequent and regular, not only on the high speed line itself, but also on the wider network.
- 7.4 As well as the direct impact of these new lines and services, passengers will benefit from the step change in capacity that the "Y" network will deliver to the wider rail network in the Midlands and the North. This will reduce congestion and allow improved services on the existing network. It will also create opportunities for new routes to take advantage of this released capacity, based on local demand. The "Y" network will make a significant contribution to labour and business connectivity in the North, alongside wider rail infrastructure enhancements, helping to build a Northern Powerhouse. Completing the full "Y" network has a robust business case which is combined with a strong economic rationale.

Managing costs and ensuring delivery of the full "Y" network

- 7.5 The Spending Review has confirmed the Government's commitment to taking forward the whole of HS2 by setting a total budget of £55.7 billion in 2015 prices. The cost of HS2 has not changed since the 2013 Spending Review. Instead the prices have been updated to take account of inflation.
- 7.6 Delivering any programme of this scale is inevitably challenging. HS2 is an ambitious engineering project which will take many years to complete, and like any programme of this scale, controlling costs over time will be challenging. Like all Government programmes, it is important that we keep cost under review to maximise the opportunities for efficiency, minimise the risk of cost overrun and deliver value for money for the tax payer.
- 7.7 Our understanding of costs will develop over time. Once expert engineers and surveyors are on the ground we will develop a better understanding of where the key challenges are and where we can find savings. However, in order to manage this risk, HS2 Limited is already looking at possible efficiency savings options. These include work looking at international best practice to learn lessons from high speed rail projects around the world and using the experience of Phase One to ensure the scheme is engineered to an affordable standard. There is further work to be done in areas like procurement to help drive down costs, something we started when launching the main civil engineering procurement for Phase One by including options for Phase 2a in the event of a route decision being made. The National Infrastructure Commission will also look at international comparators for large scale infrastructure programmes as part of its role and we expect them to publish findings in due course.



7. Our plans for the full “Y” network

- 7.8 Where appropriate we will work with new and existing programmes, for example work on Transport for the North as set out in Chapter 11, to ensure that we exploit synergies and maximise overall transport return. We remain committed to delivering HS2 within the existing budget given the Government’s wider commitment to manage public finances more effectively, but do not expect to be able to extend the scope of the programme further within the agreed funding envelope.
- 7.9 We plan to make a decision on the rest of the “Y” in autumn next year. In doing so, we will take the necessary steps to manage costs and ensure the final scheme is both affordable and delivers good value for money for the taxpayer.
- 7.10 As set out in previous chapters, the Government has confirmed a section of the Phase Two route between West Midlands and Crewe, taking account of the 2013 consultation responses relating to this section of the route. The Secretary of State has decided to accelerate construction of this section of Phase Two, so that it is ready by 2027. These decisions will have wide reaching benefits for North West England and Scotland. In addition, Network Rail is also developing options that could ensure Crewe acts as a hub for both regional and high-speed services.
- 7.11 This progress only reinforces the Government’s commitment to completing the full “Y” network, reflected in the plans set out in the Spending Review. For it is the route beyond Crewe, to Manchester, Leeds and Sheffield that will have the truly transformative impact on the north of England and that will be a vital component of the Northern Powerhouse.
- 7.12 The Secretary of State has not yet taken decisions on the route for the rest of the “Y” network. We need to examine all the available evidence before this can occur but we anticipate that a route decision will be taken in autumn 2016. However, we are able to provide an update on the Government’s thinking and intentions for the rest of the “Y” network. These are set out in the following sections. We are also able to provide an update on plans for Northern Powerhouse Rail where our long-term strategic intention is to seek to future-proof the design for HS2 so that it can be used to provide new high speed services between northern cities (like the ‘javelins’ on HS1) where this makes sense.



8. Our vision for the Eastern Leg

Introduction

8.1 The 2013 proposals for the Eastern Leg of Phase Two were for a route from the West Midlands to Leeds through stations in the East Midlands and South Yorkshire, with a connection on to the East Coast Main Line (ECML). The ECML connection will ensure that HS2 is fully integrated within our wider rail network and allows HS2 services to continue to York, Darlington, Durham and Newcastle.

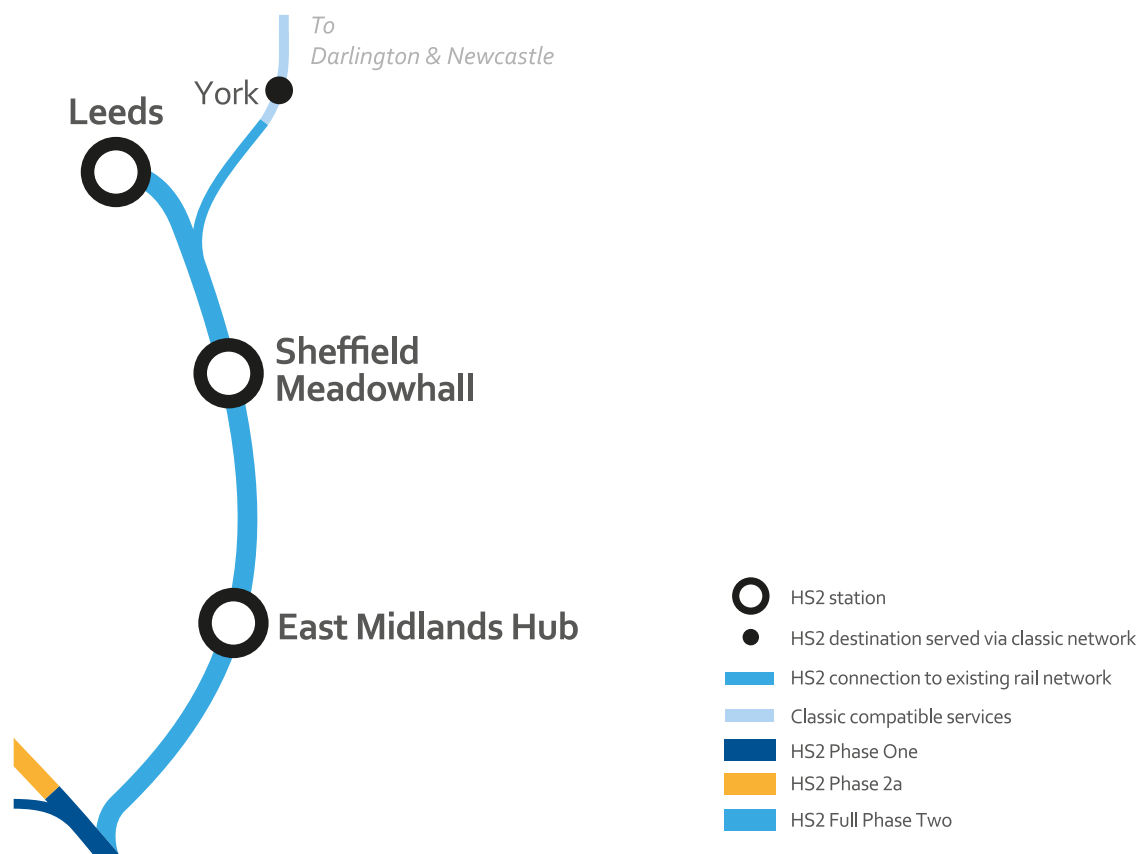


Figure 8.1: Eastern Leg of HS2

8. Our vision for the Eastern Leg

- 8.2 As confirmed in the Spending Review, the Government recognises that this section of the route delivers some of the greatest benefits within the whole HS2 scheme. Passengers will directly benefit from improved connections to and between cities across the Midlands and the North of England. Importantly, the new line will also release capacity on the existing rail network (for example on the Midland Main Line), providing opportunities to further improve the passenger experience with quicker journeys and to offer new services based on local demand. This will give passengers a greater choice of services to regional locations across the North and the Midlands.
- 8.3 In June this year the Secretary of State reiterated the Government's backing for the full "Y" Network including the Eastern Leg of HS2. He described how this will help balance the economy, closing the gap between north and south as the North and Midlands would gain at least double the benefits of the South.
- 8.4 Beyond providing benefits to passengers, these improvements in connectivity within northern England and the Midlands will contribute to the ambition of creating a Northern Powerhouse. It will enable a larger supply of labour to access employers, while people from other regions will be able to make business trips more readily, and this will boost economic growth.
- 8.5 We welcome the strong local support for HS2 in areas served by the Eastern Leg, and the recognition of the wider economic growth and regeneration opportunities HS2 will bring. Through HS2 East, an initiative of town and cities along the Eastern Leg, local stakeholders have told us they want HS2 delivered as soon as possible.
- 8.6 Since the consultation closed in January 2014, the Department for Transport and HS2 Limited have been drawing together information, analysis and opinion from a number of sources:
- consideration of all the responses to the 2013 consultation
 - applying the lessons learned and more mature design standards arising from the more advanced Phase One
 - additional engineering analysis done by HS2 Limited
 - work to maximise the economic benefits of HS2
 - the findings of Sir David Higgins reports in 2014: "HS2 Plus" (March 2014) and "Rebalancing Britain" (October 2014)
 - plans to develop a Northern Powerhouse across the cities of Northern England

8.7 Taking all these inputs into account, we are continuing to develop plans for the Eastern Leg of HS2. We will continue regular engagement with local authorities, LEPs, and other relevant local stakeholders. We will also continue to work with Transport for the North to ensure HS2 plays its part in building the Northern Powerhouse by supporting better connectivity between the cities of the North. We will also contribute to the National Infrastructure Commission’s independent study of east-west connectivity and take account of its recommendations to ensure the best possible integration of HS2 into the wider transport infrastructure of the region. We expect to make a full announcement of the route and stations on the Eastern Leg in autumn 2016.

Leeds station

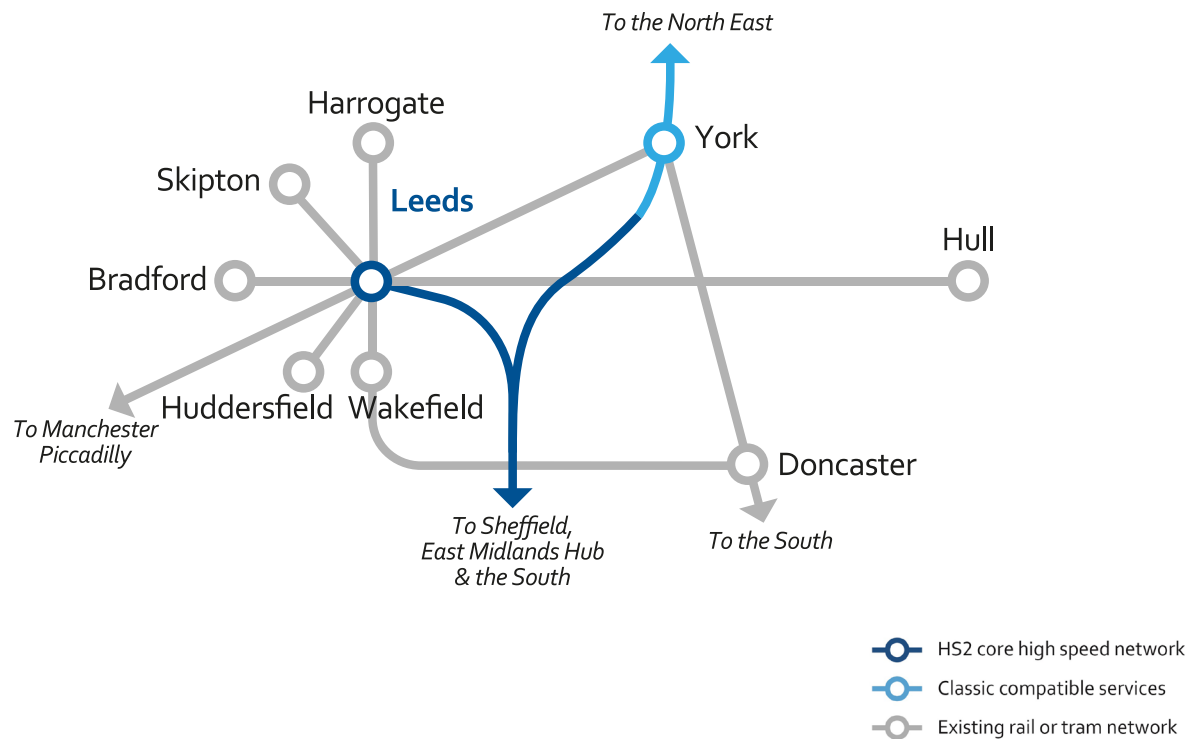


Figure 8.2: Leeds connectivity

8.8 The design for Leeds station set out in the 2013 consultation proposed a city centre site close to the existing Leeds station. The route to Leeds will provide a step change in connectivity, cutting passenger journey times to Birmingham by a full hour to just 53 minutes. Similar journey time improvements are expected to Sheffield and the East Midlands. Passenger journey times to London are expected to fall from 2 hours 11 minutes to 1 hour 21 minutes.

8. Our vision for the Eastern Leg

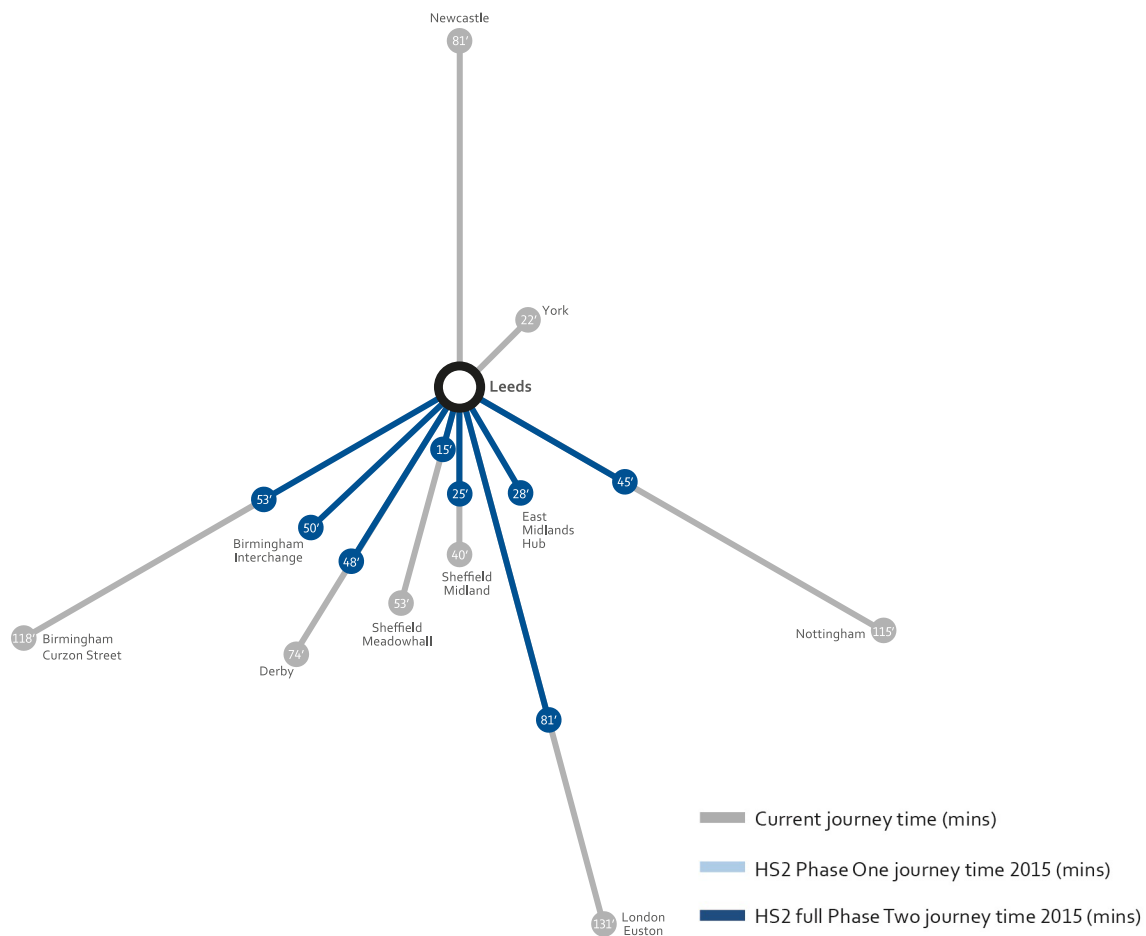


Figure 8.3: Journey times from Leeds station³⁵

- 8.9 Last year Sir David Higgins set out the challenge of how to ensure Leeds station can, over the coming years, cope with growth in passenger numbers on existing regional and local rail services, and to ensure that the HS2 proposal works not only for the city but also the wider region of West Yorkshire. He described further work to look at options that could provide better integration of the HS2 station with the wider rail network, and accommodate projected growth in passenger numbers on the existing network as well as potential new east-west services for the Northern Powerhouse.
- 8.10 Today Sir David Higgins is publishing his report on Leeds Station. This sets out the significant progress in this work and his recommendation on station location. It has been developed with input from Network Rail. It has also involved Leeds City Council and the West Yorkshire Combined Authority to ensure the proposed location not only delivers for passengers, but also provides Leeds City and the wider West Yorkshire region with regeneration and job growth opportunities.
- 8.11 Sir David recommends that a southern approach into Leeds remains the right answer, but that the HS2 station can be built abutting the existing station to provide passengers with an easy interchange. This choice would also minimise disruption to passengers using existing services during construction while offering integration with the existing local rail network and Northern Powerhouse services.

³⁵ Fastest typical HS2 times and current rail times are shown in the image. Five minute interchange times are assumed at East Midlands Hub station and Sheffield Meadowhall. This represent the quickest possible interchange time, allowing a walk time between platforms but no wait time at the connecting service platform.

- 8.12 We are minded to agree with Sir David, subject to completing the further work and decision-making needed. The final station location and design needs to stand the test of time, be an affordable option, and be right for the people of Leeds and the wider region.
- 8.13 HS2 Limited is also examining options that could allow regional services using HS2 from the south to travel via Leeds to York, Newcastle or Hull in order to help deliver Northern Powerhouse services.
- 8.14 The 2013 consulted route approached Leeds with a viaduct over the River Aire flood plain that passed round the village of Woodlesford. Responses to the consultation raised concerns around the potential impact on the residents of Woodlesford and nearby roads, and on users of the Aire and Calder Navigation. As part of continuing route development work we are looking at options to respond to these concerns.
- 8.15 The Government will take a decision on Leeds station and such route issues as part of the Phase Two route decision expected in autumn 2016.

South Yorkshire Hub station

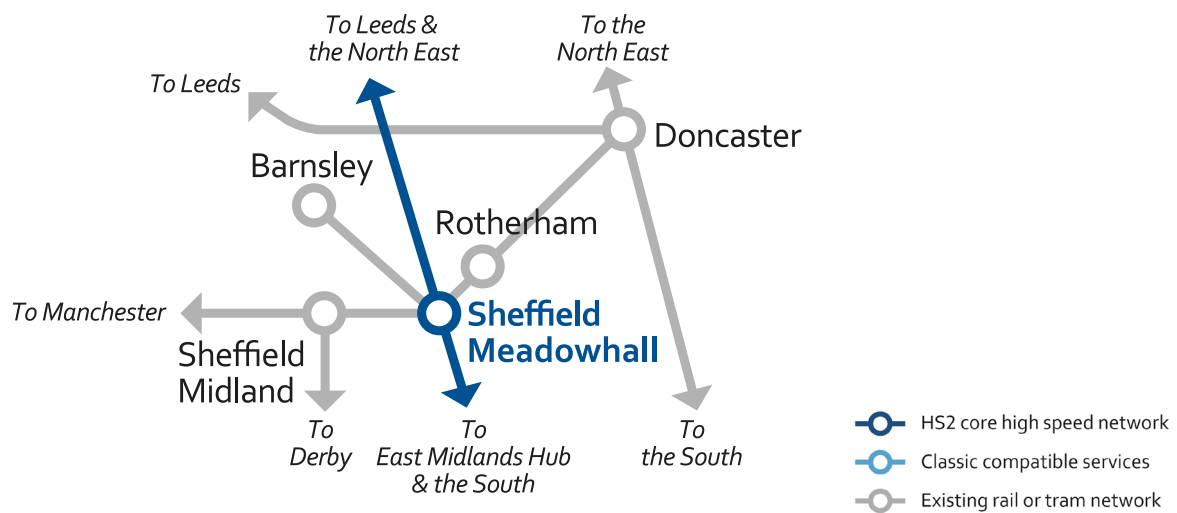


Figure 8.4: South Yorkshire connectivity

- 8.16 The Government's proposal, as consulted in 2013, has been to locate a South Yorkshire hub at Sheffield Meadowhall to the north-east of Sheffield, close to the Meadowhall retail complex, the existing rail and tram station and the M1 motorway. The Government proposed Meadowhall as part of the consulted Phase Two route as the best option for serving South Yorkshire and providing benefits across the region. The site is easily accessible from Sheffield city centre and nearby towns and cities, including Rotherham, Barnsley and Doncaster by a range of transport modes.

8. Our vision for the Eastern Leg

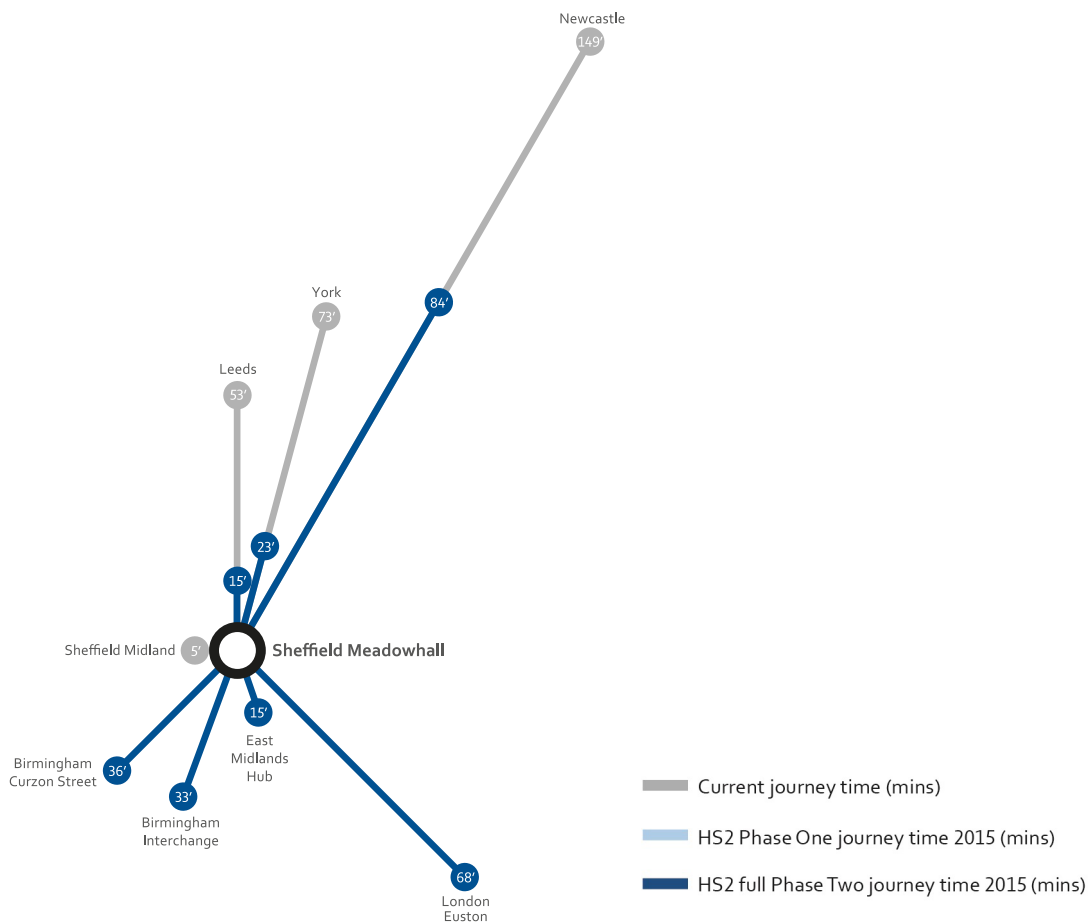


Figure 8.5: Journey times from Sheffield Meadowhall³⁶

- 8.17 Many responses to the Phase Two consultation recognised the good opportunities for onward connectivity to Sheffield city centre and the wider South Yorkshire region that a station at Meadowhall would provide. However some respondents gave a preference for locating the station in Sheffield city centre. One such site would be at Sheffield Victoria, a currently disused railway station on the north side of the inner ring road.
- 8.18 Sheffield Meadowhall remains the Government’s preferred station location. However, we recognise the arguments put forward for a city centre station in Sheffield and we continue to explore them. We are committed to ensuring that HS2 delivers the largest possible benefits and continue to work with local partners to ensure that Sheffield city centre will benefit from HS2.
- 8.19 The Government intends to make a decision on the location of the HS2 South Yorkshire Hub in autumn 2016.

³⁶ Fastest typical HS2 times and current rail times are shown in the image.

East Midlands Hub station

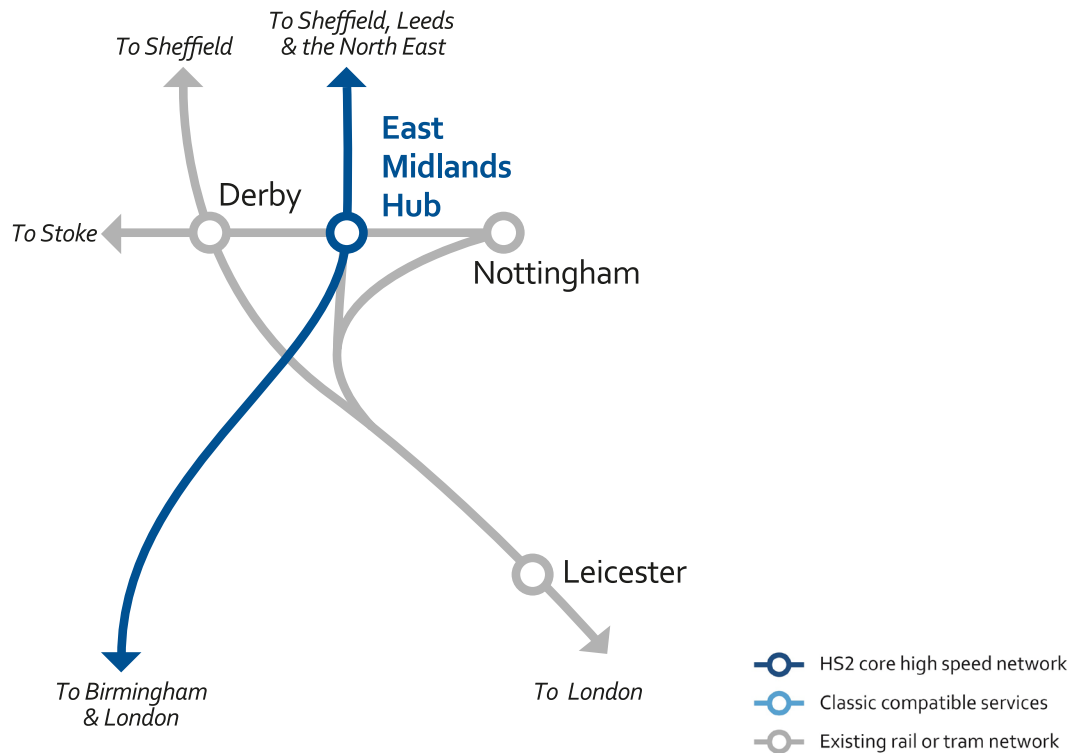


Figure 8.6: East Midlands connectivity

- 8.20 The Government's proposal as consulted in 2013 was for a new East Midlands Hub station located on existing railway land at Toton, between Nottingham and Derby. This site was chosen as it was considered the best option for serving the whole East Midlands region, readily accessible from the cities of both Nottingham and Derby by a range of transport modes, and because of the potential regeneration and job growth opportunities that a new station will present.
- 8.21 In his report "Rebalancing Britain" (October 2014), Sir David Higgins set out his view that the Government was right to propose an East Midlands hub station and that it would greatly improve north-south connectivity as well as east-west links across the Midlands.
- 8.22 Sir David Higgins also suggested exploring alternative sites for the East Midlands Hub. HS2 Limited therefore explored the option of an alternative site at Breaston. The work concluded that Breaston would deliver significantly lower benefits than a station at Toton due to a reduction in overall transport connectivity, and, that there would be difficulties in constructing a station there. HS2 Limited therefore continues to recommend Toton as the preferred site for the East Midlands Hub and no options for station sites other than Toton are being developed.

8. Our vision for the Eastern Leg

8.23 The image below shows the potential journey times when the full “Y” network opens in 2033.³⁷

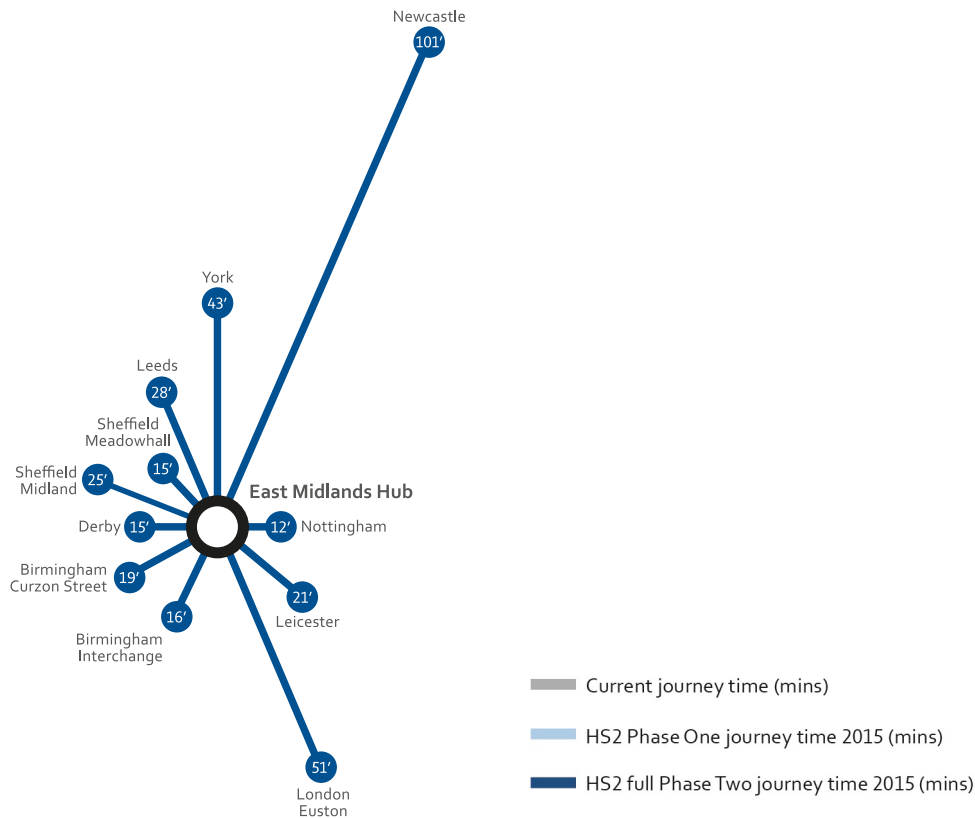


Figure 8.7: Journey times from the East Midlands Hub

8.24 A clear consensus has also emerged amongst local stakeholders across the region that Toton is the best location for the HS2 East Midlands hub, with a decision in January this year by the local authorities to support the site. Recently, Peter Richardson, Chairman of the D2N2 Local Enterprise Partnership said:

“An HS2 Hub station at Toton represents a huge economic opportunity for the D2N2 area. We now need to make sure we have plans and proposals in place that maximize job creation locally and across the wider surrounding area...”

8.25 The Government appreciates the effort made by local partners in drawing together the diverse interests across the region to reach this conclusion. The Government continues to support Toton as the location for the HS2 East Midlands Hub.

8.26 Today, the Government is announcing funding for the development of an HS2 Growth Strategy for the East Midlands Hub. This funding will enable the region, led by the local LEP, to develop their strategy for maximising the benefits that HS2 will bring to the East Midlands. The strategy will clearly identify the opportunities, plans and required support to deliver growth, building on the transformational benefits of HS2.

³⁷ Fastest typical HS2 times and current rail times are shown in the image. Five minute interchange times are assumed at Sheffield Meadowhall. This represent the quickest possible interchange time, allowing a walk time between platforms but no wait time at the connecting service platform.

- 8.27 There remains an ongoing need to ensure that the proposition at Toton, including connectivity, is right, and that the city centres of Nottingham, Derby and the wider region such as Leicester, are properly served. Toton needs to be easily accessible via a range of transport modes to make the Hub station work. Network Rail are working with local stakeholders on developing options for rail connectivity to Toton. Local authorities are also considering road, bus and tram access.
- 8.28 A number of stakeholders have called for the opening date of the route between Birmingham and the East Midlands to be brought forward to deliver the transformative benefits of HS2 as soon as possible. Although we have no plans for a further separate hybrid bill at this stage, we will continue to look for opportunities to accelerate construction in the coming years.

Connecting with the East Coast Main Line, Darlington, Durham, Newcastle, and York

- 8.29 The 2013 consultation included a link between the HS2 route to the east of Leeds, connecting onto the ECML via Church Fenton. We continue to believe that a link onto the ECML remains necessary to ensure HS2 is integrated into the wider rail network and compliments the Government's commitment in the Summer Budget to deliver better transport across the North East and Yorkshire. A link will allow these regions and their passengers to benefit from improved high-speed services and reduced journey times to key destinations such as Darlington, Durham, York and Newcastle from both London and Birmingham via direct connections on classic-compatible trains. The released capacity benefits that the new line will bring to the network as a whole means that there is potential to develop new services to meet the changing and growing demand as well. More information about this can be found in Chapter 10.

Conclusion

- 8.30 We will continue to develop plans for the Eastern Leg which will deliver connectivity and growth for communities along the line of the route and beyond. We will make a route decision in autumn 2016 with a view to depositing a Bill in this Parliament and beginning construction around 2026.

9. Our vision for the Western Leg

9.1 The 2013 proposals for the Western Leg of Phase Two were for a route from the West Midlands to Manchester via Crewe, with a connection on to the West Coast Main Line (WCML). The WCML connection will ensure that HS2 is fully integrated within our wider rail network and allows HS2 services to continue to places in the North-West and Scotland.



Figure 9.1: Map of the Western Leg of HS2

9.2 Building the Phase Two Western Leg will reduce journey times between Scotland and the cities of the North West and London. For example, passenger journeys from Glasgow will be reduced by a further 18 minutes compared to Phase One and more much needed capacity will be freed up on the WCML. This increased capacity will

bring travel benefits to passengers across the North West, as well as those cities directly served by the Western Leg route and freight users on the WCML.

- 9.3 Over the past 20 years, the number of train journeys between London and Manchester has trebled, and the WCML is the busiest mixed use railway in Europe. Even with recent modernisation, its infrastructure is heavily constrained and there remain a number of bottlenecks, including the constrained two-track section north of Crewe to Wigan. This congestion also has negative impacts on non-London services in the Midlands and the North, increasing journey times and limiting the options for additional routes.
- 9.4 In 2013/14 the Manchester-London intercity rail business corridor was ranked as the most used in Great Britain, with 1.84 million business trips in that year. In addition Manchester-Birmingham saw 145,000 business trips by rail in 2013/14. On an average weekday 31,000 passengers arrived into central Manchester in the morning peak in 2014, the second highest number for any city outside London. Across the day 93,000 passengers arrived on services into Manchester, an increase of 4,000 from 2013³⁸. At busiest points in the morning peak, 4.3 per cent of passengers coming into Manchester in 2014 were in excess of capacity and 15.7 per cent were standing in total.
- 9.5 The proposed HS2 stations at Manchester Piccadilly and Manchester Airport (subject to agreement of a suitable third party funding package) will connect the 2.7 million people of Greater Manchester and the surrounding area to the high speed network, whilst the WCML Link will allow HS2 trains to serve towns and cities such as Wigan, Preston, Carlisle, Glasgow and Edinburgh. Locations across the North West and the Midlands will therefore benefit from the increased capacity that HS2 will bring to the overall network, with opportunities for improved journey times and connectivity.
- 9.6 Since the consultation closed in January 2014, the Department for Transport and HS2 Limited have been drawing together information, analysis and opinion from a number of sources:
- consideration of all the responses to the 2013 consultation
 - applying the lessons learned and updated design standards arising from the more advanced Phase One
 - additional engineering analysis done by HS2 Limited
 - work to maximise the economic benefits of HS2
 - the findings of Sir David Higgins reports in 2014: “HS2 Plus” (March 2014) and “Rebalancing Britain” (October 2014)
 - plans to develop a Northern Powerhouse across the cities of Northern England
- 9.7 Taking all these inputs into account, we are continuing to develop plans for the Western Leg of HS2 north of Crewe. We will continue regular engagement with local authorities, LEPs, and other relevant local stakeholders, and continue to work with Transport for the North to ensure HS2 plays its part in building the Northern

³⁸ National Statistics publication: Rail passenger numbers and crowding on weekdays in major cities in England and Wales: 2014

Powerhouse by supporting better connectivity between the cities of the North. We will also contribute to the National Infrastructure Commission’s independent study of east-west connectivity and take account of its recommendations to ensure the best possible integration of HS2 into the wider transport infrastructure of the region. We expect to make a full announcement of the route and stations on the Western Leg in autumn 2016.

Manchester Piccadilly

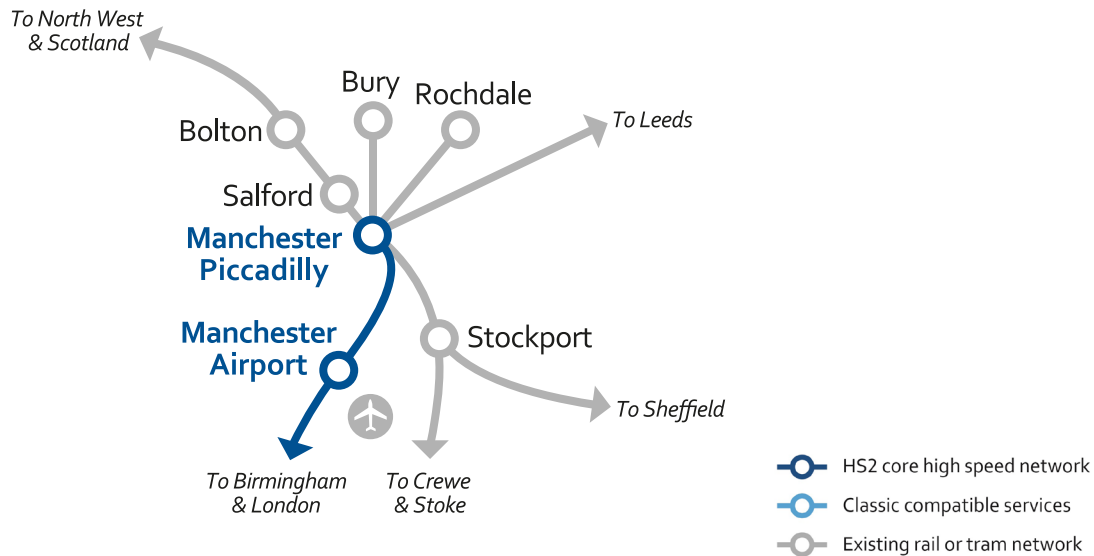


Figure 9.2: Manchester Piccadilly connectivity

- 9.8 The Government’s preference for a city centre station in Manchester remains Manchester Piccadilly. The Greater Manchester Combined Authority (consisting of the ten boroughs; Bury, Bolton, Manchester, Oldham, Rochdale, Salford, Stockport, Tameside, Trafford and Wigan) shares this vision of Piccadilly as the HS2 station for Manchester. The proposed new HS2 station would be constructed alongside the existing main line station. It will provide excellent links between HS2, existing rail services and the Metrolink. The proposed station includes improved road access.
- 9.9 An HS2 station at Manchester Piccadilly would also offer considerable opportunities for development and regeneration in and around the site, supporting jobs and housing. We will continue to work with Manchester City Council and other interested parties to ensure these opportunities are maximised.
- 9.10 Manchester Piccadilly station has significant local support. The Transport for Greater Manchester “Vision for 2040” strategy (2015) says: “The regional centre (Manchester city centre and adjacent parts of Salford and Trafford) is the economic engine of the city-region, employing around 160,000 people. Its role as the key hub for the Greater Manchester public transport network and the rail network for the North of England will be greatly strengthened by the arrival of HS2, with a new high quality station at Piccadilly.”

9.11 We are working with Transport for the North to consider how development of our plans for Manchester Piccadilly can work with the Northern Powerhouse Rail (NPR) agenda of improving connectivity between Manchester and cities across the North.

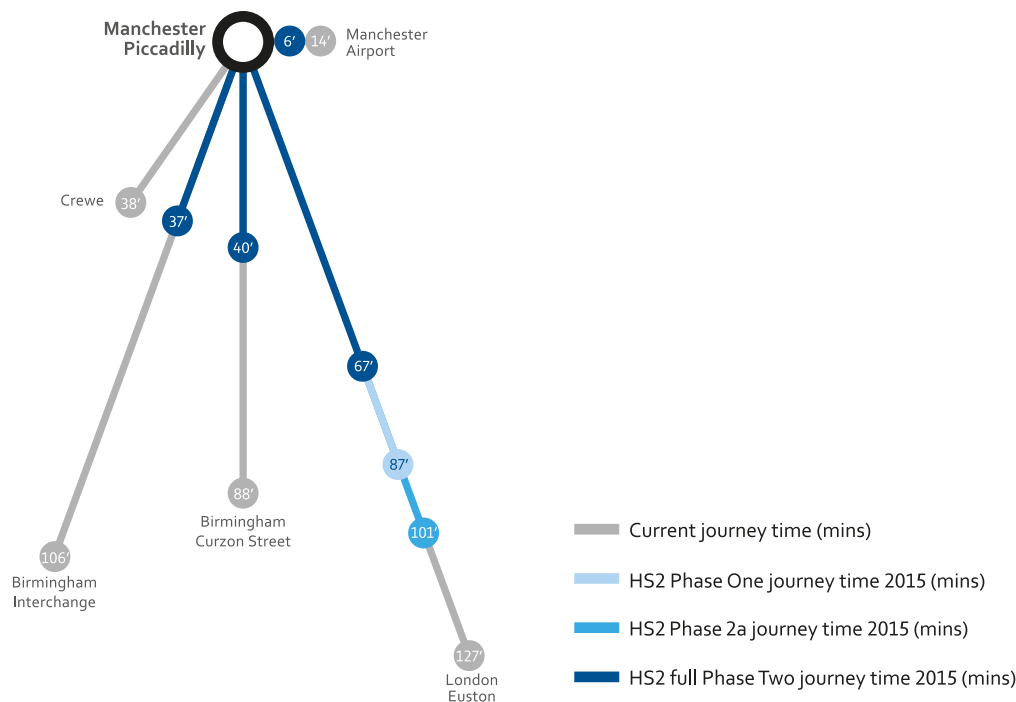


Figure 9.3: Journey times from Manchester Piccadilly³⁹

Manchester Airport

9.12 Having considered alternative route approaches to Manchester, the Government remains of the view, as set out in 2013, that a route via Manchester Airport is the best option subject to third party funding being obtained. A parkway style station would help to bring the benefits of high speed rail to south Manchester and north of Cheshire, as well as creating the potential for passengers to interchange directly between high speed rail services and the airport.

9.13 This station would be well located to provide direct access from the M56 motorway to HS2, without passengers having to make their way into central Manchester to join trains at Piccadilly. It would also serve a significant business development area around the airport in the Enterprise Zone.

9.14 This is supported by Transport for Greater Manchester who say in their “Vision for 2040” strategy (2015):

“The development of the HS2 station at Manchester Airport will increase its importance as an international gateway, attracting flights to more destinations and providing an alternative to congested airports in the south-east of England. It is also likely to increase the demand for the Enterprise Zone as a business location and boost demand at the airport itself.”

³⁹ Fastest typical HS2 times and current rail times are shown in the image.

9. Our vision for the Western Leg

9.15 The Government is minded to support the construction of a station at Manchester Airport. We will work positively with local partners, but it remains the case that the development of this station is dependent on agreement of a suitable third party funding package.

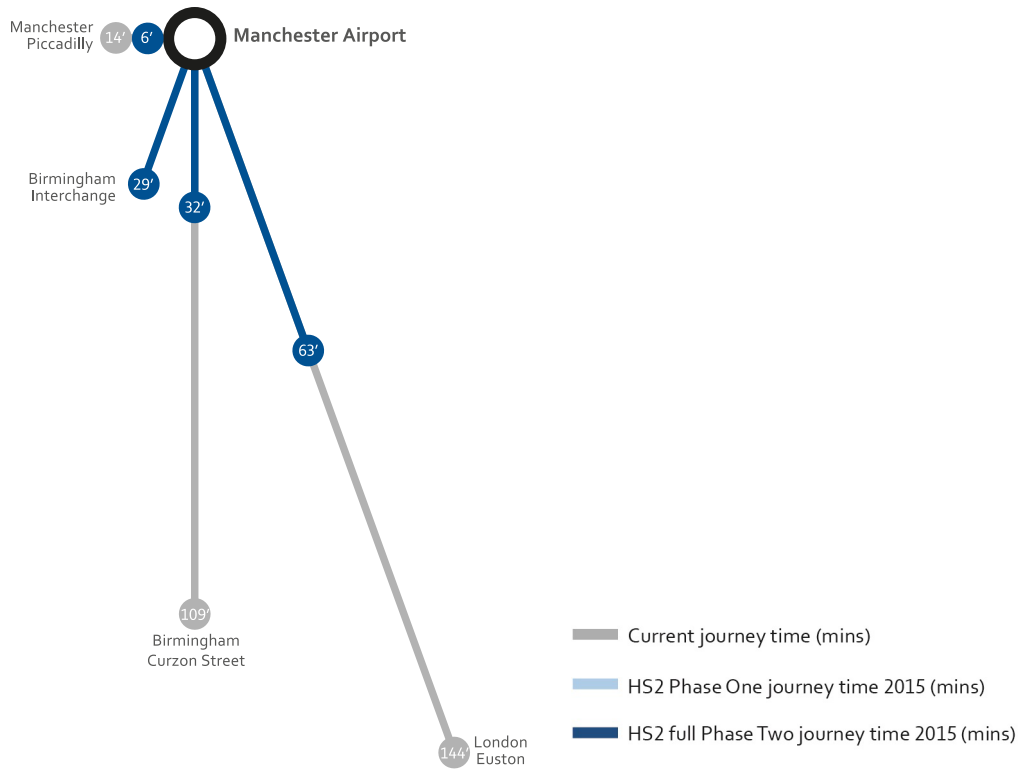


Figure 9.4: Journey times from Manchester Airport station⁴⁰

Connecting with the West Coast Main Line and North-Western towns and cities

9.16 The Government believes there remains a clear case for a connection to the WCML from the Western Leg of HS2. This connection will help ensure that the Western Leg is fully integrated into the wider rail network in North West England and that the benefits of HS2 will be felt across that network. On balance, we continue to believe Golborne is likely to be the best location for such a link, as it strikes the best balance between overall costs and benefits. As currently planned, the WCML link at Golborne will be used by services serving North West England and Scotland further increasing journey time benefits and bypassing the Crewe-Wigan constrained section of the WCML.

9.17 Concerns were raised at consultation about environmental and other impacts of both the Golborne link and the rolling stock depot there (see below), and we are continuing to carry out work taking account of these concerns, including possible adjustments to the route.

⁴⁰ Fastest typical HS2 times and current rail times are quoted. Five minute interchange times are assumed at East Midlands Interchange and Sheffield Meadowhall. This represents the quickest possible interchange time, including a walk time between platforms but no wait time at the connecting service platform.

Connecting with towns and cities

9.18 The benefits of HS2 in the Midlands and North West will not be limited to those cities directly on the Western Leg. Classic compatible trains will continue from the HS2 route onto conventional lines to provide reduced journey times to other destinations in the region. Further plans for additional services to be provided on classic compatible trains will be developed in due course, but we are clear that improved services will be provided to many stations beyond the Phase Two route.

Liverpool

9.19 The current plan will see Liverpool benefit from two classic compatible high speed trains per hour from the opening of Phase One. Current journey times of 2 hours 14 minutes will reduce to one hour 46 minutes with Phase One and will fall still further to 92 minutes once Phase 2a opens. Crewe Hub station could also play an important role connecting the wider Liverpool region.

9.20 HS2 will ensure that it maximises the synergies with the Northern Powerhouse, to make the most of the two networks. In this way opportunities may be created for Liverpool to benefit still further, as set out in more detail in Chapter 11.

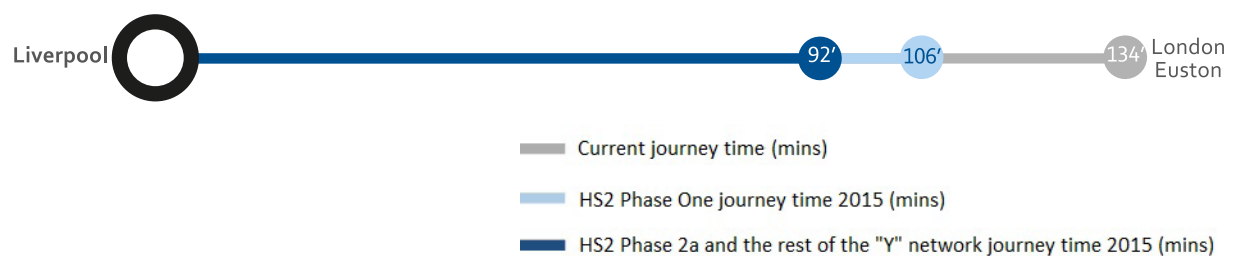


Figure 9.5: Journey times from Liverpool to London⁴¹

9.21 HS2 is part of the wider transport network and the improved capacity provided by this investment will have benefits for the network as a whole. There will be opportunities for improved journey times and new routes connecting locations other than those directly served by the planned Phase Two route or by classic compatible trains continuing from the Phase Two route.

9.22 As part of this, we are considering how HS2 can best link with Northern Powerhouse Rail to provide connectivity and capacity benefits across the North. This work is at an early stage but we are making rapid progress. A summary of the latest progress has just been published in a new report “The Northern Transport Strategy: Autumn Report”. This report can be accessed at <http://www.transportforthenorth.com/>.

⁴¹ Fastest typical HS2 times and current rail times are shown in the image.

Rolling stock depot

- 9.23 In the 2013 Phase Two consultation, we proposed that a HS2 rolling stock maintenance depot could be located to the north of Golborne, around two and a half miles south of Wigan.
- 9.24 This proposal generated considerable concern during the consultation process. We therefore asked Sir David Higgins to consider options for the location of the rolling stock depot. In his report, “Rebalancing Britain” (2014) Sir David Higgins recommended that further work be carried out on the location of the depot, including consideration of other sites. That work continues.
- 9.25 No decision has yet been made on the location of the depot but we will make a decision in autumn 2016.

Conclusion

- 9.26 We will continue to develop plans for the Western Leg which will release capacity, deliver connectivity and growth for communities along the line of the route and beyond. We intend to make a route decision in autumn 2016 with a view to depositing a hybrid Bill in this Parliament and beginning construction in 2026.

10. HS2 and the existing rail network

- 10.1 HS2 is not a separate, standalone railway; it is an integral part of our nation's future rail network and overall transport infrastructure.
- 10.2 The opportunity it presents is not only quicker journey times between key cities, but also more reliable, more frequent and more varied services across our network. From the moment it opens in 2026, HS2 will create a step change in the service rail passengers experience and this will improve further with the opening of Phase 2a and the rest of the "Y" network. HS2 will also provide flexibility to meet further growth in demand well into the future. It will not only allow private sector companies to compete to run HS2 services, but also allow train operators on the rest of the network to think more creatively about what they can deliver, growing their business.
- 10.3 However, we also need to invest in our rail network now so that we are able to seamlessly integrate our existing railway with HS2. That is why the Government is already taking steps to improve the existing rail network.
- 10.4 Network Rail has embarked on the most ambitious programme of rail modernisation since the Victorians, helping to transform the busiest parts of Britain's rail network, to deliver more and better journeys. Key components of the strategy include:
 - supporting the introduction of new faster trains through the Intercity Express Programme and in route improvements. Major new investment is focussed on the Great Western, East Coast and Midland Main Lines, complementing recent investment in routes such as the West Coast Main Line (WCML)
 - supporting commuter travel into major urban areas, helping to expand the effective labour market, and helping people to access a wider range of jobs. By boosting rail capacity and capability in west and south Yorkshire, enhancing North-Eastern connectivity and completing the Northern Hub, this investment is expected to unlock major economic benefits in the economies of the northern cities and conurbations
 - improved railway links to major ports and airports including to Southampton, London Gateway and Felixstowe ports and Heathrow airport
- 10.5 This investment will develop the network in such a way that will enable it to shoulder demand until HS2 becomes operational.

- 10.6 We are also ensuring that improvements to the existing rail network and the construction of HS2 are delivered in such a way that makes it easy for our transport network to integrate seamlessly when HS2 opens. It is too early to finalise what services HS2 will provide or facilitate now. Over the coming years we will work with train operators, local authorities, communities and passenger groups to develop services across the whole network which meet the needs of the key stages of HS2 until 2033 and then beyond. In developing both the route and initial operational plans we are focused on how HS2 can support our whole rail network.

HS2 and existing rail connectivity

- 10.7 HS2 links to the existing network through stations, where passengers can interchange to a huge number of towns and cities across the country, and junctions which will allow us to provide direct services to more places. We have started to consider the kinds of services we might offer in the development of our business case, and this is something we will build on. However, there are already some clear opportunities for places far beyond the HS2 line of route.

Examples of how HS2 will link to the existing network through stations:

- The Old Oak Common Interchange station will provide links to services operating on the Great Western Mainline. We expect a significant number of passengers to use this interchange station every day as it will connect to services to Heathrow Airport; local commuter services in the Thames Valley; longer distance services to the west of England and South Wales; and Crossrail services through central London, the City and to the east of London. Transport for London (TfL) also has aspirations to provide two new London Overground stations in close proximity to the Old Oak Common Interchange station which would facilitate connections to their network
- Birmingham Interchange station is expected to include provision for a “people mover” link to the existing Birmingham International station on the WCML, thereby facilitating connections to a wide range of stations and services in the West Midlands and along the route of the WCML
- Crewe is already a hub station with links to North and South Wales, Stoke, Stafford, Derby, Manchester, Scotland and beyond. Crewe offers huge potential for wider connectivity, and we will continue to look both at how we develop the station itself and the services that stop there to maximise the opportunity it presents
- Local stakeholders in the East Midlands have come behind Toton because it offers both excellent potential connectivity by road and also onward connections from Leeds, Birmingham and London to Derby, Nottingham and Leicester, helping to support growth plans across the Midlands

Examples of how HS2 will link into the Northern Powerhouse:

- We are working with Transport for the North (TfN) to develop plans to improve transport infrastructure in the North. These improvements will reduce journey times, provide much needed capacity on the northern transport network, and improve regional connectivity in the North. In developing plans for key stations in Manchester, South Yorkshire and Leeds we are looking to future proof design, so that people travelling across the North can access HS2 in a seamless way

- We are also keen to improve access from other parts of the UK to the North so that businesses and passengers can more easily travel up and down the country. HS2 will play a crucial role in delivering this improvement in north to south connectivity

Examples of how HS2 will link to the existing network through junctions:

- Handsacre Junction will allow classic compatible trains to run off the high-speed network and serve places along the WCML and beyond from 2026. We have already looked at how we might serve a number of places including Liverpool, Preston, Glasgow, Edinburgh and Stafford. This is something we will seek to build on. We want to see whether Stoke and Macclesfield could benefit from classic compatible services and the Secretary of State has asked HS2 Limited to look at how best we might do this
- Once the full “Y” network is built in 2033 the WCML Link will allow services to travel further north even more quickly, bringing greater benefits to Carlisle, Edinburgh and Glasgow
- From 2033, a link between the Eastern Leg and the East Coast Mainline (ECML) will allow services to run on to Darlington, Durham, Newcastle and York. Such a connection will lead to much faster services between the north east of England and the Midlands, as well as London
- More widely, ‘The Strategic Case for HS2’ (October 2013) noted an option to link the HS2 network to the classic network in the West Midlands area. This would allow services from Bristol to travel towards Manchester or Leeds on the HS2 network. Having examined the case for a link between the HS2 network and the existing rail network in the West Midlands area, we will not be further developing options for such a link alongside the Phase One route. Bristol, Gloucestershire and South Wales will still benefit from HS2 by a reduction in travel times for journeys to the north of England

Scotland

- 10.8 When HS2 first opens with Phase One in 2026, Glasgow will benefit from reduced journey times due to high speed services. Phase One will deliver journey times of 3 hours 56 minutes from London to Glasgow, compared with a journey time of 4 hours 31 minutes at present.
- 10.9 Accelerating delivery of Phase 2a between the West Midlands and Crewe will bring additional benefits, reducing the journey time from London to Glasgow to 3 hours 43 minutes.
- 10.10 The full “Y” network will provide faster services to both Glasgow and Edinburgh. Once Phase Two is complete, classic compatible trains will connect onto the West Coast Main Line near Golborne, travelling on to Edinburgh and Glasgow. The journey time from Edinburgh to London will be reduced from 4 hours 22 minutes to 3 hours 39 minutes. The journey time from Glasgow to London will be reduced from 4 hours 31 minutes to 3 hours 38 minutes.

10. HS2 and the existing rail network

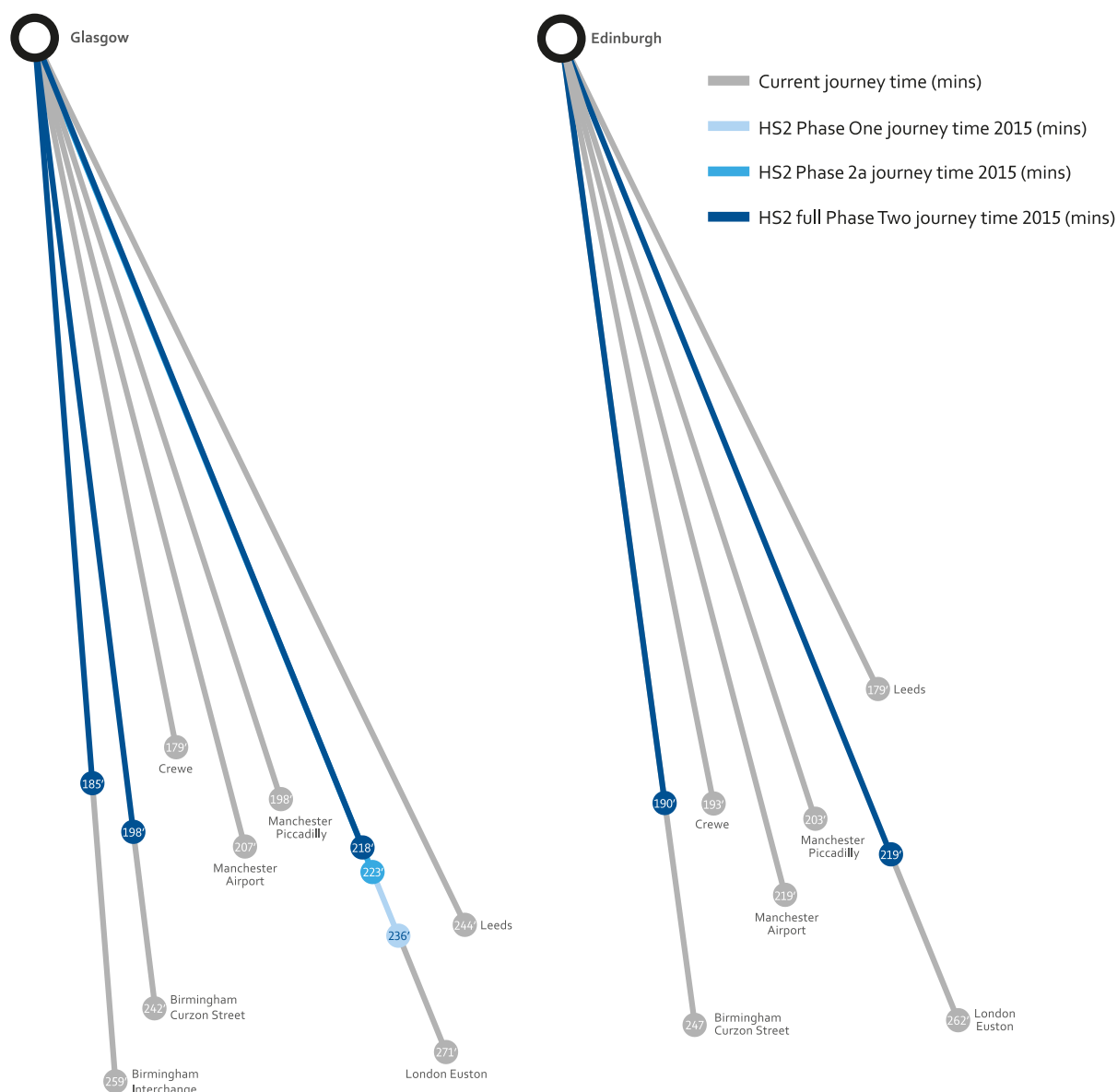


Figure 10.1: Journey times from Glasgow and Edinburgh⁴²

10.11 This will benefit the Scottish economy by around £3 billion and provide significant benefits to passengers travelling to and from Scotland. These benefits are an important part of the case for Phase Two of the HS2 network.

10.12 HS2 Limited produced a draft broad options study report, prepared in conjunction with the Department for Transport, Transport Scotland, and the Scotland Office last year. We continue to work closely with the Scottish Government to consider options for further investment that could deliver yet further reductions in journey time, recognising their aspiration for a 3 hour journey time to London. Supplementary work has been commissioned to explore the options for improving rail travel to Scotland. No decisions have yet been taken, we will make a statement on next steps in early 2016.

10.13 We hope to make a further statement on the next steps in early 2016.

⁴² Fastest typical HS2 times and current rail times are shown in the image. Edinburgh times are to Edinburgh Haymarket.

Released capacity

- 10.14 As set out in Chapter Two, a key benefit of HS2 is the capacity it will release on our existing railways. This will not only improve passenger experience by reducing overcrowding on peak time trains but will also allow train operators to run more varied and frequent services.
- 10.15 The released capacity provides options for possible services to towns which currently do not have a direct connection to London, such as Bolton, Blackburn, Rochdale, Barrow in Furness and Dumfries, and options for more services to towns which have infrequent services, such as Telford, Shrewsbury and Blackpool. There may also be options for more cross-country, commuter and freight services as well.
- 10.16 At this stage, no decisions have been taken on the introduction of these new services, but the Government will consider the possible options. Well established statutory, regulatory and administrative processes will be used to build an open and shared evidence base, consult passengers, communities and freight users, establish options and take decisions ahead of the introduction of a new timetable when HS2 opens.

Released capacity on the WCML

- 10.17 HS2 delivers a step change in capacity on the WCML corridor as well as facilitating better connectivity. The high speed line itself will be capable of running up to a maximum of 18 trains per hour in each direction when the network is complete.
- 10.18 The WCML fast lines can currently carry 15 trains per hour. When operations on HS2 begin, the transfer of long distance services currently using the fast lines will release capacity on the existing rail network. This released capacity offers opportunities including:
- targeting capacity on stops between London and the West Midlands to better meet demand there
 - improving inter-connectivity for passengers travelling between intermediate stations on the route
 - running long distance services for key towns and cities not served by HS2, particularly direct connections to London
 - additional rail freight paths
 - improving reliability and punctuality by harmonising train speeds and optimising stopping patterns
- 10.19 This capacity will give greater flexibility to develop services over time to meet the changing and growing demand which result from local growth, driven by the Northern Powerhouse and the Midlands Engine.
- 10.20 As set out above, no decisions have yet been taken on the introduction of these new services. This will take place ahead of a new timetable in 2026 when Phase One opens.

Released capacity on the East Coast Main Line

- 10.21 The main focus of the new analysis carried out since publication of the 2013 Strategic Case has been on the route and train capacity issues on the WCML. However, the ECML intercity service currently has higher levels of crowding than the WCML, because the ECML has not had an injection of capacity equivalent to the 2009 WCML upgrade and modernisation. This is about to change, due to a combination of investment in railway infrastructure and the delivery of new rolling stock under the Inter City Express Programme (IEP).
- 10.22 By the time the Eastern Leg of the HS2 “Y” network is scheduled to open in 2033, there will be a requirement for further additional capacity on the ECML. Whilst the lengthening of the IEP fleet could be considered, the benefit of HS2 is that it not only provides the capacity needed but also transforms connectivity between Yorkshire and the North-East, and the East and West Midlands.
- 10.23 This capacity will give greater flexibility to develop services over time to meet the changing and growing demand which results from local growth. Decisions on how to use this released capacity will be taken ahead of a new timetable in 2033.



11. HS2 and the Northern Powerhouse

- 11.1 Over many years, our economy has become unbalanced and more reliant on our capital city. The relative economic decline of the north of England is not inevitable. We can reverse it and in doing so create a balanced, healthier economy for working people across the United Kingdom. Delivering this ambition is not about pulling London down but it is about increasing growth in the rest of our country. That is why we are creating a Northern Powerhouse that will bring cities together, connect Liverpool to Hull, the North-West to Yorkshire and the North-East and make the whole greater than the parts.
- 11.2 Improving our transport infrastructure is crucial to achieving this. We need to improve our transport infrastructure now, to unleash economic growth as soon as possible. We also need to plan ahead and expand our transport infrastructure through projects such as HS2, so that our nation can capitalise on the economic opportunities of the future. To assist with this, we are working in partnership with Transport for the North (TfN), Network Rail and HS2 Limited, to improve the transport infrastructure in the North. We have also recently announced the creation of a new, independent, National Infrastructure Commission (NIC).

National Infrastructure Commission

The Chancellor recently announced the creation of an independent National Infrastructure Commission (NIC), led by Lord Adonis. The NIC will deliver a long-term plan and assessment of national infrastructure needs early in each parliament, setting out what a government is expected to do over the next five years.

It will be overseen by a board of seven Commissioners that comprises: Lord Adonis; former deputy prime minister Lord Heseltine; former member of the Bank of England's rate-setting Monetary Policy Committee Professor Tim Besley; former chair of the Olympic Delivery Authority Sir John Armit; neuroscientist Sadie Morgan; former chief economist to the Greater London Authority Bridget Roswell; and chairman of the Victoria & Albert Museum Sir Paul Ruddock. The board will be able to commission research and call for evidence from public sector bodies and private sector experts.

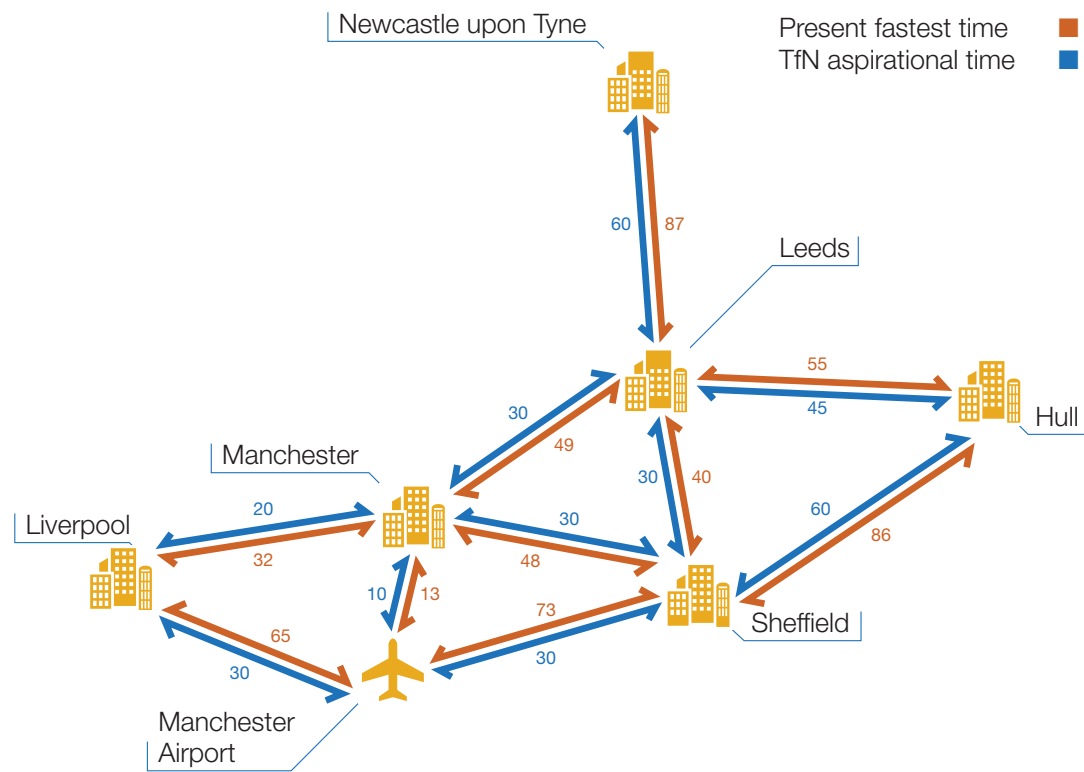
One of the immediate work priorities for the NIC, as set by the Government, is to focus on Northern connectivity, particularly identifying priorities for future investment in the North's strategic transport infrastructure to improve connectivity between cities, especially east-west across the Pennines.

The NIC will publish advice to the Government on this issue before next year's Budget. It will also begin work on a national infrastructure assessment, looking ahead to requirements for the next 30 years.

This work will be an important contribution to the development of the Northern Powerhouse and will complement the work, set out above, that is already underway. We will be working closely with the NIC to ensure that the synergies between HS2 and the Northern Connectivity work stream are maximised.

Our plans for Northern Powerhouse Rail

- 11.3 In March 2015, the Government and TfN (the representative body that speaks to Government on the transport priorities for the whole of the North and which consists of the North's combined and local authorities and LEP leaders), published a joint Northern Transport Strategy: "The Northern Powerhouse: One Agenda, One Economy, One North".
- 11.4 In this report, a clear vision is presented for transport in the North. Transport will be used to help deliver the goal of greater economic growth across the North. Instead of forecasting the future from current trends, the strategy aims to change that future.
- 11.5 Delivering this shift across the North requires significant improvements to transport connectivity across the North, spanning roads and railways, passenger transport and freight and logistics. The strategy sets out clear plans for developing the North's rail network in future years. We call this vision the Northern Powerhouse Rail network. It will build on existing major committed investments including the Northern Hub programme, electrification and improved rolling stock, capacity and speed on key routes. These plans include delivering the full HS2 "Y" network as soon as possible.



Journey times based on city A to city B fastest times only, therefore do not sum to make A-B-C journey times and routes

Image is diagrammatic only and not geographically representative

On completion of TransPennine electrification the journey time between Manchester and Leeds will come down to 40 minutes

The present journey time between Liverpool and Manchester is for the fast service between Lime Street and Victoria. In reality many passengers prefer to use Manchester Piccadilly, and they experience a significantly longer journey time to and from Liverpool than indicated above

The journey time between Sheffield and Leeds is the fastest journey time and not a frequent service

Figure 11.1: Transport for the North's aspirational journey times

Source: National Rail timetable correct at time of publication

Our progress since the Northern Transport Strategy

- 11.6 Since the publication of the strategy, the TfN Partnership Board, which includes the Government, Local Enterprise Partnerships, Highways England, HS2 Limited and Network Rail have been working together to develop options for building this transformational vision. The Government has also provided TfN with a total of £50 million over this parliament for their operations. This will help to further accelerate the pace of progress on the development of the Northern Transport Strategy.
- 11.7 As with HS2, it will take time to get these options right, to realise the greatest economic potential and secure the benefits we seek. We are in the early stages of this work but we are making rapid progress. A summary of this progress is set out in a new report "The Northern Transport Strategy: Autumn Report" which is available at <http://www.transportforthenorth.com/>. In this report, we provide a six-month update on the progress made against each element of the Northern Transport Strategy and we look ahead to the work we will complete by spring 2016 and how we can take them forward.
- 11.8 We are opening new stations like Kirkstall Forge and renovating major stations like Manchester Victoria. We are also delivering brand new Hitachi Intercity Express trains

on the East Coast Main Line (ECML) from 2018. These trains will be built in the North and will serve the North.

11.9 The Secretary of State has also recently announced that the work to electrify TransPennine railways will resume, as part of Sir Peter Hendy's work to reset Network Rail's upgrade programme.

11.10 Network Rail will be working with the Government and Rail North to develop a new plan for electrification of the TransPennine line between Stalybridge and Leeds and on to York and Selby, to focus on delivering key passenger benefits as quickly as possible. This is an improvement of the previous plan which only changed the power supply of the trains.

11.11 The new plan will deliver faster journey times and significantly more capacity between Manchester, Leeds and York. The upgrade is expected to provide capacity for six fast or semi-fast trains per hour, take up to 15 minutes off today's journey time between Manchester and York and be complete by 2022. When the work is finished, the whole route from Liverpool to Newcastle (via Manchester, Leeds and York) will be fully electrified and journey times will be significantly reduced compared to today.

11.12 New Northern and TransPennine rail franchise awards will also be announced before the end of the year. The new franchises will deliver new train carriages and remove out-dated Pacer trains; introduce free WiFi on trains; and offer a one-third increase in capacity with 200 additional services on weekdays and Saturdays and 300 more train services on Sundays.

11.13 These improvements will help to increase capacity on our rail network, improve connectivity between towns and cities in the North, and reduce journey times. Together, they will help rebalance the economy and fire up the Northern Powerhouse.

11.14 Yet there is more that we need to do. We need to expand our rail network so that it supports economic growth in the decade to come. To do this, we need to improve the transport connections between the North of England and our large towns and cities elsewhere in the country. Only HS2 can do this.

HS2 will help create the Northern Powerhouse

11.15 HS2 and Northern Powerhouse Rail will complement each other to enable new and dramatically improved journeys. In particular, we want to make the most of the potential synergies between the two networks, and the way that HS2 might be used, such as around Liverpool, Manchester, Sheffield and Leeds. There may be opportunities for fast regional services to use parts of the HS2 network. Interchange opportunities between HS2, Northern Powerhouse Rail, and local services should allow passengers to make their journeys as efficiently as possible, regardless of their start and end points. Most importantly, these services must work together to enable rail passenger and freight journeys that support the economy by bringing people, businesses, customers, and suppliers closer together.

- 11.16 In places, there may be engineering, operational, and other challenges. The announcements made here on HS2 are made with this in mind, keeping open Northern Powerhouse Rail options while allowing progress to be made on HS2.
- 11.17 HS2 will dramatically improve connectivity from north to south. Northern Powerhouse Rail will do the same from east to west. These two ambitious programmes, developed side-by-side, will help to rebalance the economy by transforming rail travel to, from, and within the North.

Conclusion

- 11.18 The creation of the Northern Powerhouse is crucial to the long term success of our country. We want to unleash the economic potential of our great northern towns and cities.
- 11.19 To do this, we need to improve transport both for current users and for future generations. We are already taking action to improve today's services with improvements like the TransPennine electrification and the opening of new stations. We also need to build for the future. That is why we are committed to delivering plans for the full HS2 "Y" network and developing the Northern Powerhouse Rail network.
- 11.20 Delivering our plans for now and the future, will fire up the Northern Powerhouse. It will transform the railways for passengers. It will also help to ensure that every part of the nation benefits from a growing economy.



12. Connecting to High Speed 1

- 12.1 The Government deposited a hybrid Bill with Parliament in November 2013 to secure the powers to construct and operate Phase One of HS2 between London and the West Midlands. The hybrid Bill originally included a link to HS1 (Channel Tunnel Rail Link) in London, allowing some services to continue directly to mainland Europe via the Channel Tunnel. The report “HS2 Plus” by Sir David Higgins in March 2014, concluded that the link to HS1 had operational limitations and a number of adverse impacts. The Secretary of State subsequently announced his decision to remove the link from the hybrid Bill on 17 March 2014. However, the Secretary of State requested that HS2 Limited explore alternative options to the link which would support improved connections to the continent.
- 12.2 HS2 Limited took forward a study⁴³ with the objective of identifying the most practicable and cost effective solution to connect HS2 and HS1, while seeking to minimise adverse effects on local communities and existing transport networks.
- 12.3 Following consideration of the outcomes of the study, which considered a range of rail and non-rail options, we have concluded that the provision of enhanced walking routes between Euston and St. Pancras would provide a positive solution for passengers connecting between HS2 and HS1 services.
- 12.4 In particular, the study found that an enhanced walking route would provide HS2 passengers arriving at Euston with access to the full range of international services that operate from St. Pancras, providing passengers with maximum flexibility. The enhanced walking route option would also complement the underground works already included as part of HS2, which will provide convenient step-free access for passengers travelling between Euston and St. Pancras via the Circle Line (one stop), as well as the availability of taxis.

⁴³ <https://www.gov.uk/government/publications/hs2-plus-a-report-by-david-higgins>



- 12.5 More widely, in addition to the benefits for HS2 travellers, the provision of an enhanced walking route would also offer benefits in terms of a more pleasant walking experience for others transiting between Euston and St. Pancras stations. Furthermore, this option would lay the foundations for further improvements to the pedestrian connections that could come in the future as part of the proposed Crossrail 2 scheme and the proposed wider redevelopment of Euston Station. In addition, the enhanced walking routes option could be supplemented by a shuttle bus or motorised buggy for passengers with luggage or restricted mobility.
- 12.6 For rail, we considered a range of direct link options. It was, however, not possible to identify a viable rail option capable of meeting the strategic aspirations whilst successfully addressing stakeholder concerns. This was because the options were complex and expensive to construct and would have delivered infrequent, less attractive train services for HS2 passenger travelling to European destinations. As a result we do not intend to take forward proposals for a direct rail between HS2 and HS1 or include active or passive provision to support the construction of such a link in the future.

Next Steps

- 12.7 The Secretary of State has asked HS2 Limited to work in partnership with Camden Council to take forward further analysis of the street level walking options between Euston and St Pancras, looking at cost, constructability and planning consent matters.

13. Next steps

13.1 The Government has a clear plan to deliver an affordable, value for money, innovative and high performing privately operated railway, fit for the long term future of this country. HS2 is at the heart of this plan to deliver better services for passengers. We are making good progress in delivering HS2 by 2033. For Phase One, the Government has confirmed the route and safeguarded it from further development. We have begun to acquire land where the track will be laid. We have introduced the HS2 hybrid Bill into Parliament where it is currently being scrutinised by the HS2 Select Committee. By taking these steps, the Government remains on course for construction of Phase One commencing in 2017.

13.2 We are also making good progress on Phase Two. We have:

- decided on the Phase 2a section of the route, from Fradley in the West Midlands, to Crewe, incorporating a number of refinements to the 2013 proposals
- decided to accelerate construction of Phase 2a so that services are operational by 2027
- launched a consultation on property assistance schemes for the Phase 2a route
- issued safeguarding directions to prevent conflicting development on the Phase 2a route
- provided further details on our plans for a Crewe Hub station
- provided further details on our plans for the rest of the “Y” network
- explained how we will be ensuring that HS2 is “future proofed” for High Speed rail services in the North of England

13.3 The next steps are to:

- provide an update on our consideration of further options for Scotland in early 2016
- provide an update on our plans for Northern Powerhouse Rail in March 2016
- commence enabling work for the redevelopment of Euston station
- further develop our plans for the Eastern and Western Legs of the “Y” network so that a decision can be taken in late 2016 on the rest of the route, and on next steps for Crewe Hub



High Speed Two: East and West. The next steps to Crewe and beyond

- take forward the design development and the environmental impact assessment for Phase 2a with the aim of depositing a hybrid Bill in Parliament in 2017
- 13.4 The Government is determined to move quickly so that we can ensure the country realises the benefits of HS2 as soon as possible. By taking action now, we can ensure that we create a long-lasting, secure and efficient legacy for future generations.



Annex A: Cross-cutting consultation issues

A.1 In the HS2 Phase Two consultation, published in July 2013, we asked for views on three cross-cutting issues:

- the Appraisal of Sustainability (AoS)
- the use of freed capacity on the existing network
- the introduction of utilities alongside the route

A.2 Below is a summary of the consultation questions, the responses received, and our response to the points made.

The Appraisal of Sustainability for the Phase Two route (question 7)

A.3 In the Phase Two consultation published in July 2013, we included the following question:

“Please let us know your comments on the Appraisal of Sustainability (AoS) (as reported in the Sustainability Statement) of the Government’s proposed Phase Two route, including the alternatives.”

A.4 The findings of the AoS for the Phase Two scheme were reported in detail in the Sustainability Statement – Volume 1: main report of the “Appraisal of Sustainability”, (2013) this can be viewed at <https://www.gov.uk/government/collections/hs2-phase-two-from-the-west-midlands-to-leeds-and-manchester>. The AoS process has been used to help HS2 Limited take account of sustainability issues at each stage of Phase Two’s development.

A.5 We received around 1,400 consultation responses from individuals and organisations in response to the AoS question. Whilst a number of responses were supportive of HS2 and our approach to sustainability, many of the responses raise concerns regarding Phase Two, and HS2 more widely, in regard to sustainability.

A.6 Many of the issues raised will be appropriately addressed during the Environmental Impact Assessment (EIA) at the next stage of the project, when a more detailed analysis of the potential environmental impacts of Phase Two would be made, together with further route design. The Environmental Statement (ES), will report the findings of the EIA and will accompany the Phase 2a hybrid Bill.

- A.7 HS2 Limited have produced the “Response to HS2 Phase Two Consultation: Appraisal of Sustainability (Question 7)” report which can be found at: <https://www.gov.uk/government/collections/hs2-phase-two-from-the-west-midlands-to-leeds-and-manchester>, which provides more detail on each of the 18 sustainability topics derived from Government sustainability priorities.

The use of freed capacity on the existing rail network (question 8)

- A.8 In the Phase Two consultation published in July 2013, we included the following question:

“Please let us know your comments on how the capacity that would be freed up on the existing rail network by the introduction of the proposed Phase Two route could be used as described in the chapter above.”

- A.9 The IPSOS Mori analysis of consultation responses found that 3,042 respondents provided comments in relation to the question of freed capacity. In addition, 15 campaign organisations commented on the issue.
- A.10 Positive comments related to the necessity of increasing capacity. Overcrowding, demand for rail services, encouraging more people to travel by rail and facilitating economic growth were the most common reasons given in support of this.
- A.11 Negative comments mainly argued that capacity could be increased in other ways, that capacity would not be freed up by HS2 and that capacity was sufficient.
- A.12 There were many different suggestions for improvements to existing services. More general points were that HS2 needs to be fully integrated into the existing network to maximise its benefits, and the need to continue improving and investing in existing rail.

Our response

- A.13 The October 2013 HS2 Strategic Case set out the principles that the Government expects to apply to the capacity released by HS2:

“The Government intends to ensure that the following high-level principles are applied to make best use of the released capacity that HS2 delivers:

- an aim that all places with a direct London service today retain a broadly comparable or better service after HS2 opens*
- to provide additional commuter capacity where it is most needed*
- to spread the benefits of long distance and inter-regional services to the many towns and cities that can be served by the capacity created on the existing rail network*
- to integrate HS2 services fully into the wider national rail network*
- to provide capacity for the growing rail freight sector, and to improve performance by making timetables more robust.”*

- A.14 We continue to examine opportunities for using freed capacity based on the principles above to maximise the benefits of HS2 to the existing rail network.

- A.15 Amongst the strategic choices to be made are:

- using released capacity to improve local and regional, as well as intercity services

- how to serve suburban commuter markets
- how far to use the released capacity for freight trains
- using the released capacity to provide direct services to new destinations and/or improving existing services

A.16 The construction of HS2 opens a huge range of opportunities for improved services on the conventional network, both for freight and passengers. The detailed work on the design of train services, including stopping patterns, frequency and connectivity requires comprehensive planning, and will need to reflect up-to-date assumptions on demand, priorities and network capability at the launch of Phase Two services in 2033.

A.17 This planning work will be taken forward in a way that maximises the benefits of HS2 in concert with the normal rail industry planning processes. Timetables and service patterns across all affected parts of the future rail network will be amended in light of real travel choices over time.

A.18 As with current work on capacity, joint working and discussions about future rail services with local authorities, passengers and businesses will continue in the run up to the start of HS2 operations. Understanding the priorities of users is vital to designing effective and well-balanced services that meet the evolving needs of different communities and markets.

The introduction of utilities alongside the route (question 9)

A.19 In the Phase Two Consultation document published in July 2013, we included the following question:

“Please let us know your comments on the introduction of other utilities along the proposed Phase Two line of route.”

A.20 There were 1,227 respondents (just over 12 per cent) who provided comments about the potential introduction of utilities along the route. In addition, nine campaigns commented on this question. Most of the comments were at a high level, with few specific proposals. The main positive comments were that it was sensible and practical to implement utilities where possible. The main negative comments were that: installing utilities is unnecessary as HS2 is not required; it would take a long time to implement utilities; it could cause disruption and stress for local communities; and there were concerns about potential environmental and visual impacts. Of the main utility companies, only one commented on the question, welcoming the opportunity to discuss the introduction of utilities along the line of route

Our response

A.21 The HS2 Phase One hybrid Bill, includes passive provision that allows for “electronic communications apparatus” to be installed along Phase One of HS2. This means that if in the future there are changes in demand or technology, a fibre optic cable (or equivalent) could be installed alongside Phase One of the HS2 track.

A.22 For Phase Two, options for introducing telecommunications, water, flood defences, electricity and gas were examined in detail. A number of practical difficulties in engineering a shared infrastructure corridor were identified (e.g. financial, timing,

- footprint, and administrative issues). Of the utilities, the inclusion of passive provision of Information Communications Technology (ICT) equipment, as has been done for Phase One (referred to as “electronic communications apparatus” in the Phase One hybrid Bill), was deemed the most viable.
- A.23 National bulk water transfer is generally too expensive for the direct economic benefit it could bring. It would widen the footprint of the network, and pumping water would make this an unattractive option in terms of related energy intensity and carbon emissions. Additionally, the water sector’s existing twenty-five year plans indicate that it would be unlikely to be required in the immediate future⁴⁴. The scale of the pipework that would be required, may present a risk of significant disruption to the HS2 service should there be a leak or disruption.
- A.24 Existing railway embankment designs are not adequate as flood defences^[2]⁴⁵, and flood damage to the body of the embankment could lead to settlement of the HS2 track, incurring high repair costs. Potential issues with utilising the railway embankments as flood defences include increased costs to strengthen them and protect them from scour; increased maintenance of the embankments; increased flood levels along the embankment, which may require raising the route; and increased flood risk to surrounding land-uses.
- A.25 As the scheme moves towards detailed design, flood risk assessments and modelling will be refined where required. The consenting process will give the Environment Agency, local authorities and internal drainage boards continued oversight of the impact on flood risk of HS2 Limited’s proposals. This will ensure that flood risk will not be increased.
- A.26 Undergrounding high voltage cables is deemed to be cost prohibitive, with numerous engineering and wayleave^[3]⁴⁶ agreement complexities as well as there being demanding safety rules as to what can be put in a railway tunnel. The energy infrastructure in the UK is also ageing, and by the time HS2 begins construction, new conductor technologies may be available for implementation. For these reasons, we are not intending to introduce underground high voltage cables as part of the HS2 scheme. High pressure gas lines were ruled out entirely as being too high a safety risk, as a gas explosion or leakage could be catastrophic for local communities along the route, or would likely result in suspension of, or damage to, the railway.
- A.27 For passive provision of ICT equipment, the engineering design of the railway corridor would require very little adaptation, no additional visual intrusion and no additional land take to accommodate any future communications network. This option would seek to allow additional space, at no extra cost, in the trenching for the railway data networks, to allow the inclusion of additional cabling at a later date and use of the planned periodic access points by service providers. As this has been done for the Phase One hybrid Bill, it would be simple to include a similar provision in the Phase Two legislative powers. We would be helping to “future proof” the UK communications networks, making it easier for more people to benefit from ultra-fast broadband, and rural areas would benefit from improved electronic communications.

⁴⁴ Review of Potential Infrastructure Interdependencies in Support of Proposed Route HS2 Phase Two Consultation, Dr Ges Rosenberg and Dr Neil Carhart, University of Bristol (2014)

⁴⁵ Morri, M., Dyer, M., & Smith, P. (2007). Management of flood embankments: A good practice review.

⁴⁶ A right of way granted by a landowner, generally in exchange for payment and typically for purposes such as the erection of telegraph wires or laying of pipes.

Annex B: List of supporting documents

- The Strategic Case for HS2 Phase 2a (November/December 2015)
This report sets out the case for accelerating the delivery of the section of Phase Two between Fradley and Crewe (Phase 2a). It forms part of the five part Strategic Outline Business Case (SOBC) for Phase 2a
- The Economic Case for HS2 Phase 2a (November/December 2015)
This case assesses the value for money of Phase 2a. It forms part of the five part Strategic Outline Business Case (SOBC) for Phase 2a. It sets out the assessment criteria, an assessment of the value for money of the Phase 2a route and considers a range of rail alternatives
- Supplement to the October 2013 Strategic Case for HS2
The Strategic Case for HS2 was published in October 2013. Since then we have updated the evidence base which supports the Strategic Case to ensure the evidence for HS2 remains as up to date as possible. The report has two annexes, which focus on capacity and demand on the West Coast Main Line (WCML) and the way in which HS2 will support a modern economy
- West Coast Main Line Demand and Capacity Annex
This annex sets out up to date analysis of route capacity and train capacity issues on the WCML
- HS2 and the Market for Business Travel: Technical Annex
This annex sets out the evidence for how HS2 will improve north-south connectivity and increase opportunities for people and businesses to connect and trade with each other, providing scope to increase efficiency and productivity, and support a modern UK economy
- Rail Alternatives to HS2 Phase 2a
A report by Atkins assessing rail alternatives to constructing Phase 2a
- West Midlands to Crewe: Route Engineering Report
A report by HS2 Limited detailing the engineering route descriptions
- West Midlands to Crewe: Summary of Route Refinements
This sets out the changes made to the Phase 2a route since the 2013 consultation

- Sustainability Report, Phase Two Post-Consultation Update: West Midlands to Crewe

This report sets out the potential impacts for the preferred scheme between the West Midlands and Crewe. It also highlights the changes from the 2013 consultation route and Sustainability Statement

- Plan and profile mapping

This set of maps provides a depiction of the HS2 Phase 2a preferred line of route

- Response to HS2 Phase Two Consultation: Appraisal of Sustainability

This report provides a response to the HS2 Phase Two Consultation's Appraisal of Sustainability. It provides more detail on each of the 18 sustainability topics derived from Government sustainability priorities. The Appraisal of Sustainability process has been used to help HS2 Limited take account of sustainability issues at each stage of Phase Two's development

- The Yorkshire Hub: An interim report on the redevelopment of Leeds station

This sets out the significant progress in this work and Sir David Higgins' recommendation on the station location. It has been developed with input from Network Rail. It has also involved Leeds City Council and the West Yorkshire Combined Authority to ensure the proposed location not only delivers for passengers, but also provides Leeds City and the wider West Yorkshire region with regeneration and job growth opportunities

- Ipsos MORI: High Speed Rail: Investing in Britain's Future – Consultation on the route from the West Midlands to Manchester, Leeds and Beyond

In 2013, the Government consulted on the proposed Phase Two route. Since the consultation closed, we have been considering the responses and assessing the evidence base and options for accelerating construction of Phase Two. This independent report by Ipsos MORI analyses the consultation process and provides a summary of the issues raised as part of the consultation on the full Phase Two route

- The Government Response to the Consultation on Safeguarding High Speed Two Phase Two (Fradley to Crewe)

This document details the Government's response to the consultation conducted between 4 November 2014 and 6 January 2015. The Government consulted on a proposal to safeguard land that may be needed for Phase 2a

- Economic Impact Assessment for Safeguarding

This impact assessment sets out evidence for the impact of implementing safeguarding directions for the HS2 line between the West Midlands and Crewe

- Property Consultation 2015 for Phase 2a

This consultation document provides an overview of the statutory compensation that will be available to owner-occupiers affected by HS2, as well as the proposed discretionary schemes including why we believe that the Phase One schemes are also the right approach for this first part of Phase Two

Annex C: Glossary

Appraisal of Sustainability (AoS): A phased appraisal of the extent to which HS2 options support objectives for sustainable development, including reducing greenhouse gas emissions and combating climate change; natural resource protection and environmental enhancement; creating sustainable communities; and sustainable consumption and production.

Area of Outstanding Natural Beauty (AONB): An area of countryside in England, Wales or Northern Ireland whose distinctive character and natural beauty are considered of sufficient value to be designated under the National Parks and Access to the Countryside Act 1949.

BIS: This is the acronym for a Government Department and stands for the Department for Business, Innovation and Skills.

Classic compatible: denotes HS2 rail services which are able to run on the existing railway infrastructure as well as the High Speed network.

East Coast Main Line (ECML): A major mixed-traffic railway route on the eastern side of Britain, linking London (King's Cross), the South East and East Anglia with Yorkshire, the North-East regions and Scotland.

Exceptional Hardship Scheme (EHS): A scheme to help owner-occupiers whose property value may be seriously affected by the 'preferred route option' of HS2 and who urgently need to sell.

High Speed One (HS1): The high speed railway line running from London St. Pancras through Kent to the Channel Tunnel (formerly Channel Tunnel Rail Link (CTRL)).

High Speed Two (HS2): The scheme for a national high speed rail network in Britain, serving London, Birmingham, Manchester and Leeds and a number of intermediate stations.

High Speed Two Limited (HS2 Ltd): The company tasked with providing advice to Government on the introduction of a national high speed rail network in Britain (<http://www.hs2.org.uk/>).

Hybrid Bill: A bill with characteristics of both a public bill and a private bill. The changes to the law proposed by a Hybrid Bill would affect the general public but would also have a significant impact for specific individuals or groups.

LEP: This stands for Local Enterprise Partnership, and is a voluntary partnership between local authorities and business.

Midlands Engine for Growth: This is a six point long term economic plan which focuses on jobs, skills, transport, science and quality of life. As part of these plans, the Government intends to deliver £5.2 billion of investment into new transport infrastructure in the Midlands.

Midland Main Line (MML): A major mixed-traffic railway route linking London and Sheffield via Luton, Bedford, Kettering, Leicester, Derby, Nottingham and Chesterfield.

Network Rail: The company that runs, maintains and develops Britain's tracks, signalling system, rail bridges, tunnels, level crossings, viaducts and 18 key stations (<http://www.networkrail.co.uk/>).

Northern Powerhouse: the Government's economic strategy which aims to boost growth in the North by improvements to transport links, investment in science and devolution of powers to cities in the North.

Phase One: The route from London to the West Midlands, including stations in central London (Euston), West London (Old Oak Common), outer Birmingham (Birmingham Interchange) and central Birmingham (Curzon Street).

Phase 2a: The route from the West Midlands to Crewe.

Phase Two: The consulted route from the West Midlands to Manchester and to Leeds, including stations in South Yorkshire and the East Midlands.

PiXC: Passengers in excess of capacity.

Released capacity: The train paths that could be released for other services on the existing railway network, due to the additional capacity created by HS2.

Transport for the North: Brings together local authorities and combined authorities across the North of England to represent the North to Government.

Value for Money (VfM): A broad-based assessment of all the costs and benefits associated with a potential investment. The costs include not only the financial cost of making the investment but also the 'non-monetised' impacts in relation, for example, to the environment and the economy. The benefits include a range of monetised transport benefits (for example, capacity, reliability and journey times) and also wider non-monetised benefits relating, for example, to economic growth. The value for money of a project is considered in light of these and all other aspects of its business case.

West Coast Main Line (WCML): The busiest mixed-traffic railway route in Britain, serving London (Euston), the West Midlands, the North-West, North Wales and the Central Belt of Scotland.

"Y" network: The name given to the national HS2 network serving London, Birmingham, Manchester and Leeds, developed in two phases.

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