



Department
for Transport

*High Speed Two:
From Crewe to Manchester, the
West Midlands to Leeds and beyond*

Moving Britain Ahead



*High Speed Two:
From Crewe to Manchester, the West
Midlands to Leeds and beyond*

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

November 2016



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Foreword



One of my first steps as the new Secretary of State for Transport was to confirm our plans for High Speed Two (HS2). I am pleased to say that we are making excellent progress through Parliament, and are on track to start construction of the first part of the route next year.

Britain pioneered the railway in the 19th century. By the 1850s the West Coast Main Line became essentially the line we know today. In that decade, the UK population was 15 million people. Today we have a population of 65 million yet we haven't built a new rail line north of London in over a century, while demand continues to grow. It is a testament to the vision of the Victorian innovators who went before us that we still use the network they established today. But we cannot rest on their legacy when our railways are ageing and, as passengers will know, face overcrowding and capacity problems.

Poor connectivity between the cities and regions of the Midlands and the North is restraining economic growth. High quality transport allows businesses to grow, work together and access a wide range of customers, suppliers and skilled labour markets.

HS2 will become the backbone of our national rail network. It will increase capacity on our congested railways, improve connections between our biggest cities and regions, and generate jobs, skills and economic growth, helping us build an economy that works for all. This Government is investing in world class infrastructure to ensure that the UK can seize opportunities and compete on the global stage.

Completing Phase Two will unlock the full benefits of HS2. It will not only provide fast and reliable journeys to and from London, but also between the Midlands, the North and beyond, radically slashing journey times between these cities and regions.

By providing new fast lines for intercity services, HS2 will free up space on our existing railways for new commuter, regional and freight services. This will create better connections and more seats for passengers and allow more goods to be moved by rail. And even if you never travel by train, you stand to benefit from fewer lorries on the roads, and the thousands of local jobs and apprenticeships created by HS2.

HS2 is already having an impact. Local authorities and local enterprise partnerships are gearing up for HS2 and developing growth strategies, supported by UK Government Growth Strategy funding, to maximise the benefits of HS2 in their areas. I'm pleased to announce further funding today for Manchester, the Northern Gateway Partnership, Leeds and the East Midlands, and the first tranche of funding for Sheffield to support this important work.

HS2 is working with businesses across the UK, including many small and medium-sized firms, to ensure they are well prepared to bid for contracts and reap its benefits. Already, several contracts have been let and major contracts for up to £11.8 billion worth for the civil engineering work between London and Crewe will start to be let in 2017.

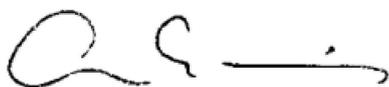
The National College for High Speed Rail, based in Doncaster and Birmingham, will open its doors next year. The College will train young people to build HS2 and other world-leading rail projects.

Last year, the Government confirmed that it would accelerate the section of the route from the West Midlands to Crewe, now known as Phase 2a, so that it opens in 2027, six years earlier than planned. This means that passengers, communities and cities across the North West and Scotland will realise more of the benefits of HS2 sooner.

Today I am confirming the majority of the Government's preferred route from Crewe to Manchester in the west, and from the West Midlands to Leeds in the east, with junctions onto the existing network (Phase 2b). Since the Government consulted on the scheme in 2013-2014 there have been some changes to the route, and in a number of areas where these changes are substantial I am seeking the views of affected communities and other interested parties to inform a decision next year.

I recognise that there are communities along the line of route who are concerned about the impact of HS2, and so today I am opening up further assistance schemes to help people deal with this impact.

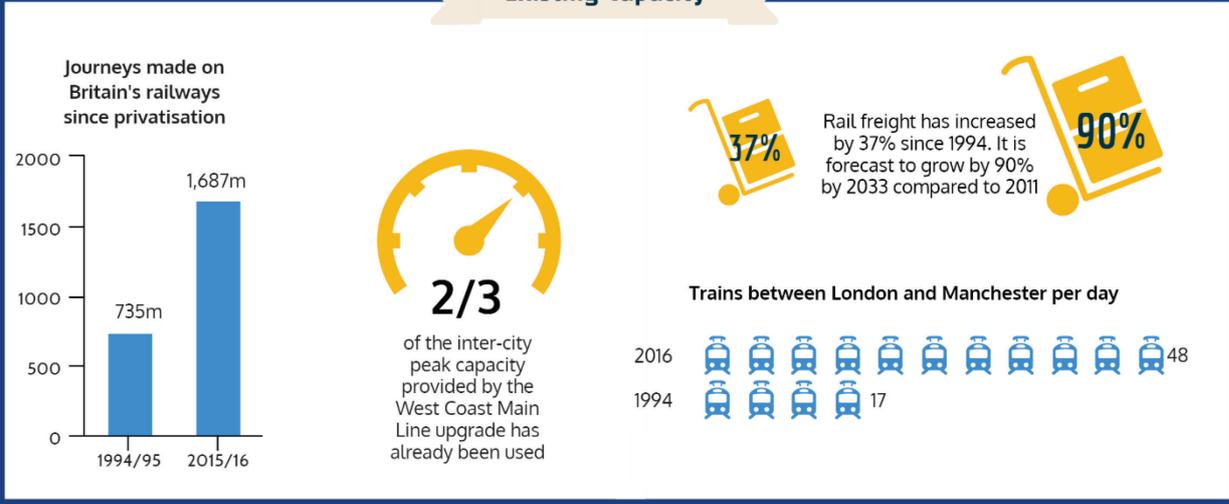
HS2 is an investment for the future, so we will have a network able to deliver everything we expect of a 21st century transport system.



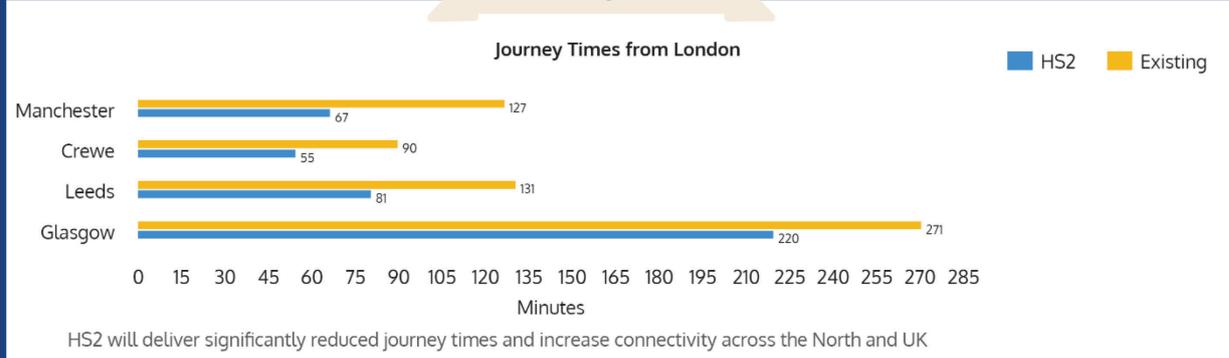
The Rt Hon Chris Grayling MP
Secretary of State for Transport

HS2: The Case for Action

Existing Capacity



Journey Times



Jobs

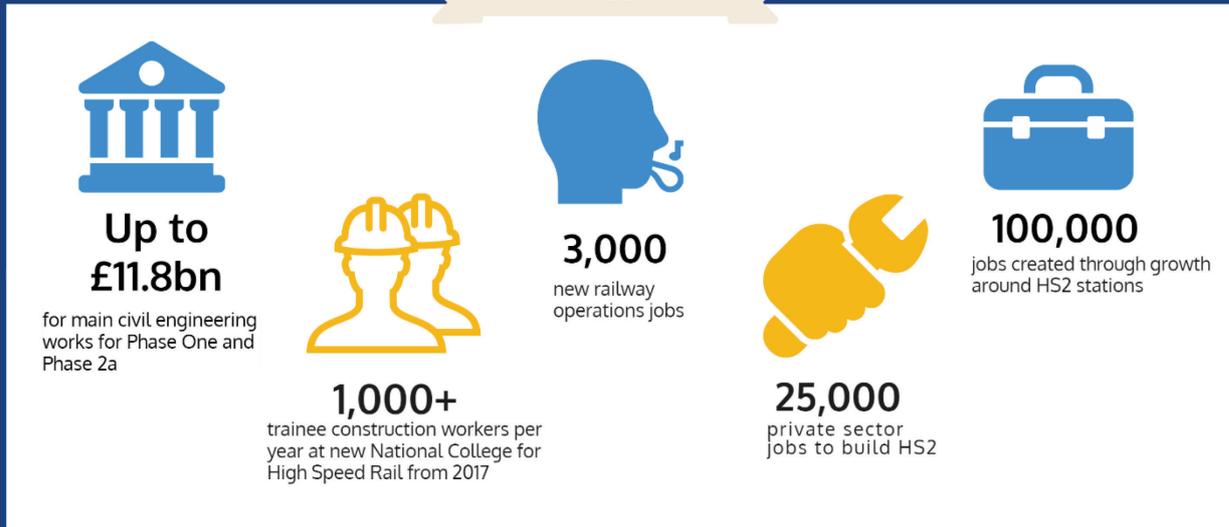


Figure 1 HS2: The Case for Action

HS2: The Case for Action

Connectivity



Up to 18 trains per hour by 2033 in each direction from London



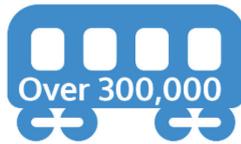
3X the number of seats leaving Euston daily



40% of the jobs created between 2012 and 2022 are expected to be in knowledge based sectors. People working in these sectors tend to travel more by rail



HS2 will open up new possibilities for leisure travel



Over 300,000 a day on HS2 services, with connections to the rest of the rail network

Directly connect **8 out of 10** of our largest cities



Benefits



800 lorries

off the road, on average, each day



£103bn

in benefits overall. 80% of the benefits will translate directly into higher GDP



100 cities & towns

could benefit from new or improved rail connections



new and redeveloped stations developing recent success of B'ham New Street, Manchester Victoria



Helping the Northern Powerhouse and the Midlands Engine to rebalance our economy



£7.5m

in growth strategy funding for Phase 2 locations



2,000

new apprenticeships



Many substantial journey time savings



Over £2.50

in benefits for every £1 spent

Figure 1 HS2: The Case for Action

HS2: the Y network

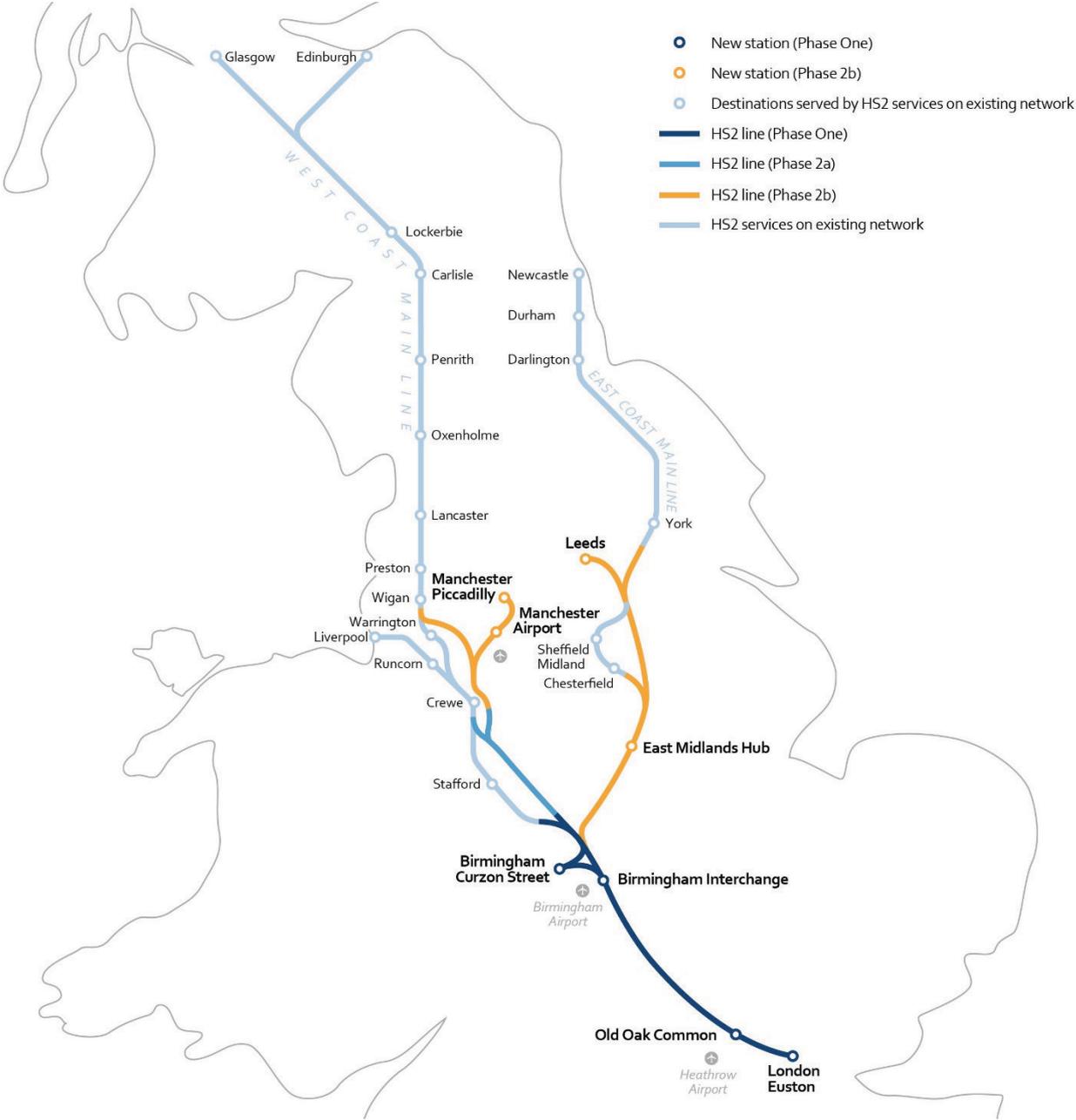


Figure 2 The Y network

HS2: reducing journey times

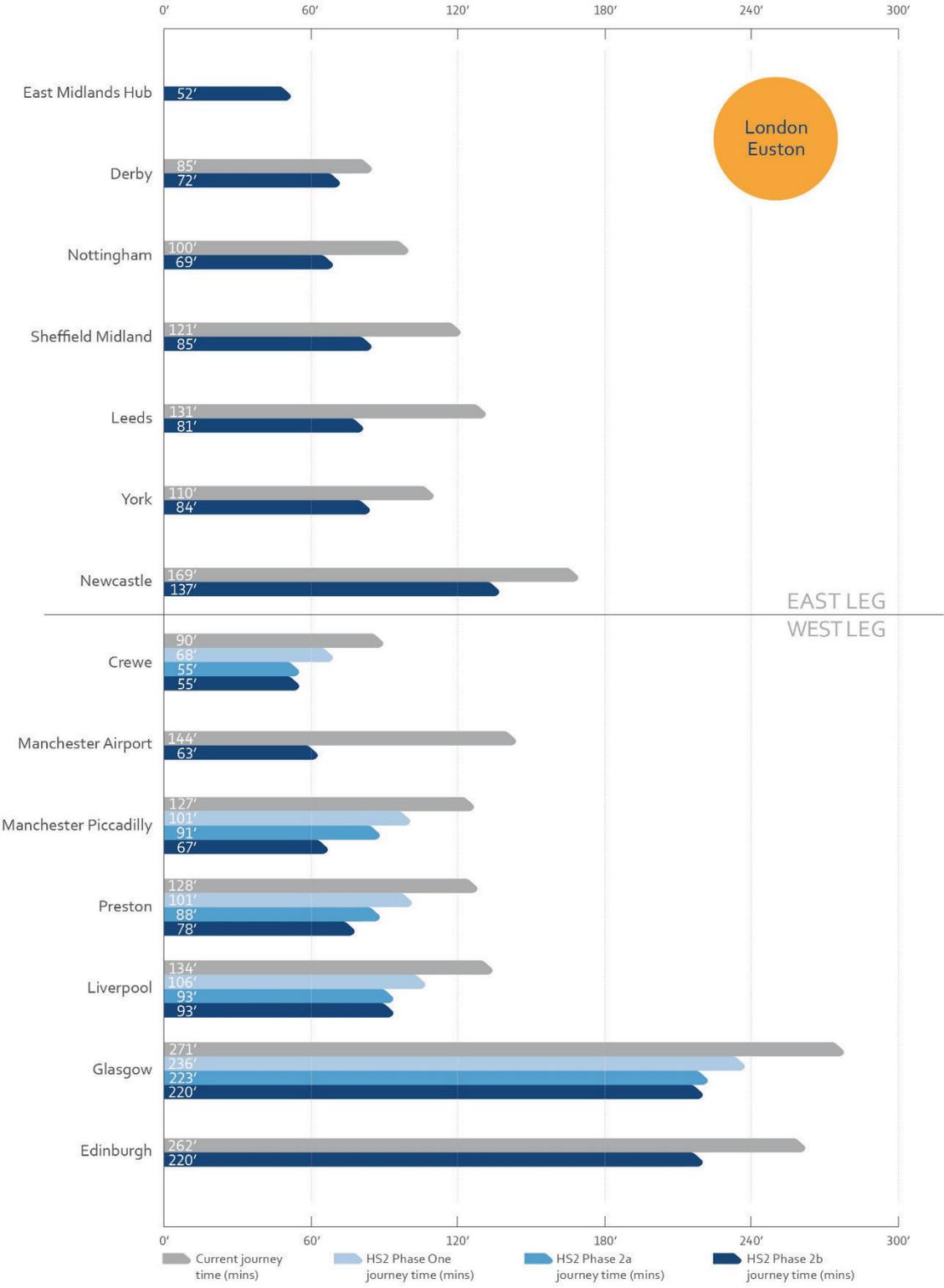


Figure 3 Journey times between London and major economic centres¹

¹ Current journey times are fastest typical times. All HS2 journey times are current estimates showing fastest southbound times. 5min interchange time is assumed at East Midlands Hub for Nottingham and Derby. The Economic Case for Phase 2b takes the slowest of the southbound and northbound times by convention. All journey times for Phase 2a in this document include a timetabling allowance due to routing all three London to Manchester services on the HS2 network to Crewe, and corresponds to the 'first alternative scenario' set out in the 2015 Phase 2a Strategic Outline Business Case. This is set out in more detail in The Economic Case for Phase 2b. HS2 Edinburgh times are shown to Edinburgh Haymarket.

Executive summary

1 **HS2 will:**

- **Add capacity to our constrained network**
- **Increase connectivity** and be a new backbone for our national rail network
- **Be a catalyst for sustained and balanced economic growth across the UK**, helping to build an economy that works for all
- **Create opportunities for skills and employment** and promote UK leadership and expertise in construction and engineering
- **Set new standards in passenger experience, reliability, and accessibility**, improving journeys for people
- **Deliver value to the UK taxpayer and passenger**
- **Create an environmentally sustainable solution** and be a good neighbour to communities
- **Be designed, built and operated with world-class health, safety and security standards**

2 Today the Secretary of State has confirmed the majority of the Government's preferred route for Phase 2b of HS2, which will complete the full Y network. Following the previous public consultation (from this point referred to as the 2013 consultation) HS2 Ltd has been developing the scheme and has recommended a number of refinements to the route in order to respond to concerns raised at consultation, as well as other factors. A summary report of the development of the Phase 2b scheme is available at <https://www.gov.uk/government/collections/hs2-phase-two-from-the-west-midlands-to-leeds-and-manchester>

3 In most cases these refinements are relatively minor and do not result in impacts on new communities, or substantially different impacts on communities than the route proposed in the 2013 consultation². However, in seven areas where the proposed refinements are substantial the Secretary of State is launching a further consultation to seek the views of communities and other interested parties. The Secretary of State intends to confirm the full Phase 2b route after considering responses to this consultation in 2017. The Route Refinement Consultation is available at <https://www.gov.uk/government/collections/hs2-phase-two-from-the-west-midlands-to-leeds-and-manchester>

4 The Secretary of State has today issued safeguarding directions along the whole of the Phase 2b route to protect it from conflicting development. The Government is also consulting on the property compensation schemes that will apply to owner-

² <http://webarchive.nationalarchives.gov.uk/20141027142236/http://www.hs2.org.uk/phase-two/route-consultation/document-library/ajax/589/nojs>

occupiers on the Phase 2b route based on what is already in place for the rest of HS2. However, we recognise the need to offer assistance as soon as possible, so with immediate effect we are today opening the Express Purchase and Need to Sell (NTS) schemes on an interim basis for eligible owner-occupiers living along the Phase 2b route.

- 5 Information on the new safeguarding directions and property compensation is available at <http://www.gov.uk/hs2> or by phoning the HS2 Ltd enquiries line on 020 7944 4908.

The Western Leg

- 6 The Western Leg is the route from Crewe to Manchester with new stations at Manchester Piccadilly and Manchester Airport and a connection to the West Coast Main Line (WCML) at Golborne. The Secretary of State is today confirming the preferred route and stations on the Western Leg, except for the following proposals which the Government is consulting on in order to inform a decision in 2017. The proposals are to:
 - Move the previously proposed rolling stock depot (RSD) at Golborne to a site north of Crewe
 - Change the alignment on the approach to Manchester Piccadilly station so that it runs to the east of West Gorton
 - Move the route in the Middlewich-Northwich area (Cheshire)
- 7 These proposals are discussed in more detail in Chapter 5 and a summary of other refinements to the Western Leg (which we are not consulting on) is at Annex E.
- 8 The stations are described at the current stage of design development. Working with local stakeholders, further development of the station designs will be carried out in preparation for a hybrid Bill. This will include looking at how wider development can contribute to station construction costs.

Manchester Piccadilly

- 9 The HS2 station at Manchester Piccadilly will be constructed alongside the existing main line station. The HS2 platforms will be parallel with, and alongside, platform one. The platforms will be elevated with HS2 concourse facilities located at ground level, beneath the elevated platforms.
- 10 HS2 will have a transformational effect on journey times, with journeys between Manchester and Birmingham taking just 40 minutes, compared to 1 hour 28 minutes currently, and between Manchester and London taking 1 hour 7 minutes, compared to 2 hours 7 minutes currently.
- 11 We continue to work with Transport for the North (TfN) 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.

Manchester Airport

- 12 The station at Manchester Airport will have two platforms in addition to two through tracks for non-stopping trains. The station will lie west of and parallel to the M56. This parkway station will help to bring the benefits of high speed rail to south Manchester and north Cheshire, as well as allowing passengers to change directly between HS2

services and the airport.

- 13 HS2 will have a transformational effect on journey times, with journeys between Manchester Airport and Birmingham taking just 32 minutes compared to 1 hour and 49 minutes currently, and between the airport and London taking 1 hour and 3 minutes compared to 2 hours and 24 minutes currently.
- 14 Development of this station remains subject to agreeing an appropriate local funding contribution. We continue to collaborate positively with Greater Manchester Combined Authority, Manchester Airports Group and other Greater Manchester delivery partners on this matter.
- 15 Both HS2 stations in Manchester offer considerable opportunities for development and regeneration in and around the site, supporting jobs and housing. Manchester is developing growth plans for both stations, supported so far by £625,000 of UK Government HS2 Growth Strategy funding for each station. Today we are confirming a further £625,000 of funding will be available for each station. We will work with local authorities to release these funds to provide continued support for this important work.

Connecting with the WCML, the North West and Scotland

- 16 The Secretary of State has confirmed the connection to the WCML at Golborne, south of Wigan. This connection will help ensure that the Western Leg is fully integrated into the wider rail network.

Liverpool

- 17 The Liverpool City Region is a significant market and will be part of the HS2 network from day one.
- 18 As currently planned, when Phase One opens, HS2 trains will serve Lime Street station and provide Liverpool with faster and more frequent direct services to London. The current journey to London of 2 hours 14 minutes will fall to 1 hour 46 minutes and will improve further, to 1 hour 33 minutes, when Phase 2a opens between the West Midlands and Crewe.
- 19 Phase One opens and will improve further, to 1 hour 33 minutes when Phase 2a opens between the West Midlands and Crewe.

Phase 2a - the route to Crewe

- 20 Crewe is an important location on the existing rail network and will provide wider important connectivity to the HS2 network. In November 2015, the Government decided on the route from the West Midlands to Crewe (Phase 2a) which is planned to open in 2027. Since taking those decisions, HS2 Ltd has progressed their design work in preparation for deposit of the Phase 2a hybrid Bill in 2017. As part of that work they have proposed some changes to the route.
- 21 The Government consulted on these proposed changes in the *West Midlands to Crewe Design Refinement Consultation*³ which closed on 7 November 2016. The Government is now considering responses.

Crewe Hub

- 22 In *HS2 Plus*⁴ (March 2014) and *Rebalancing Britain, from HS2 towards a national*

³ <https://www.gov.uk/government/publications/hs2-phase-2a-west-midlands-to-crewe-design-refinement-consultation>

⁴ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/374695/HS2_Plus_-_A_report_by_David_Higgins.pdf

*transport strategy*⁵(October 2014) Sir David Higgins recommended that the Government construct a Crewe Hub, bringing together a better HS2 service with the existing rail network.

- 23 *High Speed Two: East and West, the next steps to Crewe and Beyond*⁶(November 2015) (from this point referred to as the 2015 Command Paper) set out that Network Rail were considering two locations for a Crewe Hub station: at, or immediately south of, the existing Crewe station; or Basford Hall (around 2km south of Crewe). Since then Network Rail have continued to consider these options, and has today issued a summary of this work⁷ which recommends that, if the Crewe Hub scheme is to be taken forward, it should be located at the site of the existing station. The Government supports this conclusion.
- 24 The Government continues to support the vision for a Crewe Hub. A key consideration in developing options and deciding whether or not to take them forward is affordability and value for money. Proposals for a Crewe Hub are additional to the core HS2 scheme and are beyond the HS2 budget. The Government plans to take decisions on additional investment at Crewe in 2017 and will confirm whether any such measures should be included in the hybrid Bills for Phase 2a and Phase 2b.

Stoke-on-Trent

- 25 In the 2015 Command Paper we made clear that the Government recognises the important role that Stoke-on-Trent plays in the wider economic region, and the Secretary of State therefore asked HS2 Ltd to explore how we might best serve Stoke-on-Trent and Macclesfield as part of Phase Two.
- 26 In considering all options it was important that HS2 remains affordable and that we maximise the benefits from HS2 without going beyond the existing budget.
- 27 HS2 Ltd identified that the option with lowest cost and highest benefit would be to serve Stoke-on-Trent and Macclesfield with one HS2 train per hour via the Handsacre Junction. This service would also include a stop at Stafford and allow a standardisation of HS2 service patterns to Liverpool.
- 28 The Government has asked HS2 Ltd to undertake the additional detailed work needed to reach a firm decision on this option. We will continue to engage with both Stoke-on-Trent City Council and Cheshire East Council as this work develops.
- 29 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. They have been supported so far by £625,000 of UK Government HS2 Growth Strategy funding. Today we are confirming a further £625,000 of funding will be available. We will work with local authorities to release these funds to provide continued support for this important work.

The Eastern Leg

- 30 The Eastern Leg is the route from the West Midlands to Leeds, with new stations at Leeds and the East Midlands Hub, a connection onto the East Coast Main Line (ECML) at Church Fenton and connections to the existing network north and south of Sheffield. The Secretary of State is today confirming the preferred route and stations

⁵ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/374709/Rebalancing_Britain_-_From_HS2_towards_a_national_transport_strategy.pdf

⁶ <https://www.gov.uk/government/publications/hs2-phase-two-east-and-west-the-next-steps-to-crewe-and-beyond>

⁷ <https://www.gov.uk/government/collections/hs2-phase-two-from-the-west-midlands-to-leeds-and-manchester>

on the Eastern Leg, except for the following proposals that the Government is consulting on in order to inform a decision in 2017, which are to:

- Move the route to the east of Measham (Leicestershire)
- Go round instead of under the East Midlands Airport
- Lengthen the viaduct over the River Trent flood plain so that the line passes through Long Eaton either at a high level (up to around 16m) or an alternative option on an embankment at a lower level (around 4m)
- Move the alignment of the route from Derbyshire to West Yorkshire to reflect a change in the proposals for serving the Sheffield City Region, as recommended by Sir David Higgins in his report *Sheffield and South Yorkshire*⁸ (July 2016)

- 31 These proposals are discussed in more detail in Chapter 6 and a summary of other refinements to the Eastern Leg (which we are not consulting on) is at Annex E.
- 32 The stations are described at the current stage of design development. Working with local stakeholders, further development of the station designs will be carried out in preparation for a hybrid Bill. This will include looking at how wider development can contribute to station construction costs.

Leeds station

- 33 Today the Government is confirming that Leeds will be served with the station configuration as proposed by Sir David Higgins in *The Yorkshire Hub*⁹ (November 2015), with a shared concourse connecting the existing station with the HS2 station. This proposal will create a seamless interchange between HS2 services, and local rail services to places such as Bradford, Wakefield, Huddersfield and Halifax, and potentially future NPR services.
- 34 HS2 will have a transformational effect on journey times, with journeys between Leeds and Birmingham taking just 49 minutes, compared to 1 hour 58 minutes currently, and between Leeds and London taking 1 hour 21 minutes, compared to 2 hours 11 minutes currently.
- 35 Leeds stakeholders are already planning how to make the most of this opportunity for local growth and regeneration, as well as improving existing station facilities. This work has been supported so far by £625,000 of UK Government HS2 Growth Strategy funding. Today we are confirming a further £625,000 funding will be available. We will work with local authorities to release these funds to provide continued support for this important work.

Approach to Leeds

- 36 Today the Government is confirming that, after listening to consultation responses and considering alternatives to the previously proposed viaduct, the route will now pass under Woodlesford in a tunnel, reducing the environmental and visual impact on Woodlesford and the Aire and Calder Navigation.

South Yorkshire

- 37 The 2013 consultation proposed serving South Yorkshire with a route along the Rother Valley and a new HS2 station at Meadowhall, around 6km from Sheffield City Centre.
- 38 Since the 2013 consultation, opinion amongst local stakeholders about the best

⁸ <https://www.gov.uk/government/publications/hs2-sheffield-and-south-yorkshire-report-2016>

⁹ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/480396/Higgins_-_The_Yorkshire_Hub.pdf

location for a station has remained divided and no consensus has been reached. This has made the decision about how HS2 can best serve the region very challenging and the factors around the decision are finely balanced.

39 In addition, there have been a number of new developments since 2013, including the NPR aspiration for fast and frequent services between city centres.

40 In light of these developments and the feedback received in response to the 2013 consultation HS2 Ltd continued to consider a range of options for how HS2 can best serve South Yorkshire, while maintaining the integrity of the service to the larger markets in Leeds, York and Newcastle.

41 As a result of this work in *Sheffield and South Yorkshire*¹⁰(July 2016) Sir David Higgins made the following recommendations:

- A 9.4km southern spur at Stonebroom should be built off the HS2 mainline, enabling HS2 trains to run into Sheffield city centre along the existing rail network
- The main north-south alignment should follow a more easterly alignment over some 70km between Derbyshire and West Yorkshire

42 Sir David Higgins also identified in his report the potential to create a connection back onto the HS2 mainline north of Sheffield and recommended also that a study be undertaken to examine whether there is a case for a parkway station on the newly proposed route.

43 Since then we have undertaken further detailed work regarding the above recommendations. The Secretary of State is minded to accept them as the Government's preferred option and is seeking views on this option (instead of the original Meadowhall option) in the Route Refinement Consultation launched today.

44 Building a northern connection would result in Sheffield being served by a 'loop' rather than a 'spur', enabling services stopping at Sheffield Midland to continue on to destinations further north. This connection could allow journeys between Sheffield and Leeds of 25 minutes¹¹, within the TfN ambition of 30 minutes.

45 The Secretary of State is minded to include a junction in the ongoing development of the HS2 scheme (with provision in the Phase 2b hybrid Bill) and is seeking views on this in the Route Refinement Consultation launched today.

46 With regards to the recommendation of a parkway station study, HS2 Ltd are now undertaking work with local stakeholders to examine whether there is a case for constructing such a station and how best to serve demand in the wider city region.

47 We look forward to the results of this work which is due to conclude in spring next year. Alongside the Route Refinement Consultation this will be used to inform a decision on HS2 in South Yorkshire in 2017.

48 The Secretary of State is today confirming that £625,000 of UK Government HS2 Growth Strategy funding has been made available for the Sheffield City Region Local Enterprise Partnership (LEP). The Government plans to make a further £625,000 available following confirmation of the route in South Yorkshire. We will work with local authorities to release these funds.

East Midlands Hub station

49 The East Midlands Hub station will be constructed at Toton. The station will be a new development using existing railway land to the south west of Nottingham. The design

¹⁰ <https://www.gov.uk/government/publications/hs2-sheffield-and-south-yorkshire-report-2016>

¹¹ Indicative estimate that may change significantly in subsequent analysis

includes four high speed platforms and four platforms for conventional services allowing connections to Nottingham, Leicester and Derby. There will also be two fast lines through the middle of the station for non-stopping services.

- 50 HS2 will have a transformational effect on journey times, with journeys between the East Midlands and Birmingham taking just 20 minutes, and between East Midlands and London taking just 52 minutes.
- 51 East Midlands local authorities are working to maximise the development and regeneration benefits of HS2 in the area supported so far by £625,000 of UK Government HS2 Growth Strategy funding. We are today confirming a further £625,000 will be available to support this important work and we will work with local authorities to release the funds.

New Crofton Depot

- 52 The 2013 consultation proposed that a RSD should be sited at New Crofton. In response to concerns raised by the local community during recent engagement activities, ongoing work by HS2 Ltd has identified alternative options. We are confident that some of these may be viable alternatives for the Secretary of State to consider. The Government will update on the location for the depot in 2017 as part of the response to the Route Refinement Consultation launched today.

Connecting to the ECML, York, Durham, Darlington and Newcastle.

- 53 The Secretary of State has confirmed the connection to the ECML at Church Fenton, east of Leeds. This link will help ensure that the Eastern Leg is fully integrated into the wider rail network. On current plans the link will be used by direct HS2 services to York, Darlington, Durham and Newcastle from both Birmingham and London.

HS2 and Wider Connectivity

Scotland

- 54 Scotland will be part of the HS2 network from day one, with HS2 trains serving Glasgow on the WCML.
- 55 Phase 2b is central to the UK and Scottish Government's shared ultimate ambition of 3 hour rail journeys between London and Scotland's Central Belt. In order to understand how we can build on HS2 towards this ambition the Department for Transport (DfT) and Transport Scotland have been working closely together and commissioned HS2 Ltd to study options for improving journey times north of the core HS2 network.
- 56 This work was set out in *Broad options for upgraded and high speed railways to the North of England and Scotland*¹² (March 2016).
- 57 The report was welcomed by both the UK Government and the Scottish Government with a joint commitment for DfT and Transport Scotland to work with Network Rail to identify any and all options (whether on the east or the west) with strong business cases that can improve journey times, capacity, resilience and reliability on routes between England and Scotland, for consideration for implementation between 2019 and 2029. This work is underway and decisions will be taken as part of the normal rail network planning cycle.

¹² <https://www.gov.uk/government/publications/broad-options-for-upgraded-and-high-speed-railways-to-the-north-of-england-and-scotland>

HS2 supporting the Midlands Engine and the Northern Powerhouse

58 HS2 supports the Midlands Engine agenda to boost the economy of the Midlands. Good connectivity for the Midlands will be central to the success of Midlands Engine. To support this the Government has committed £17m to support the transport arm of the Midlands Engine, Midlands Connect (a partnership of 28 local authorities and 10 Local Enterprise Partnerships) right across the Midlands. They are developing a dedicated HS2 readiness work package ensuring the Midlands capitalises on the economic benefits of HS2.

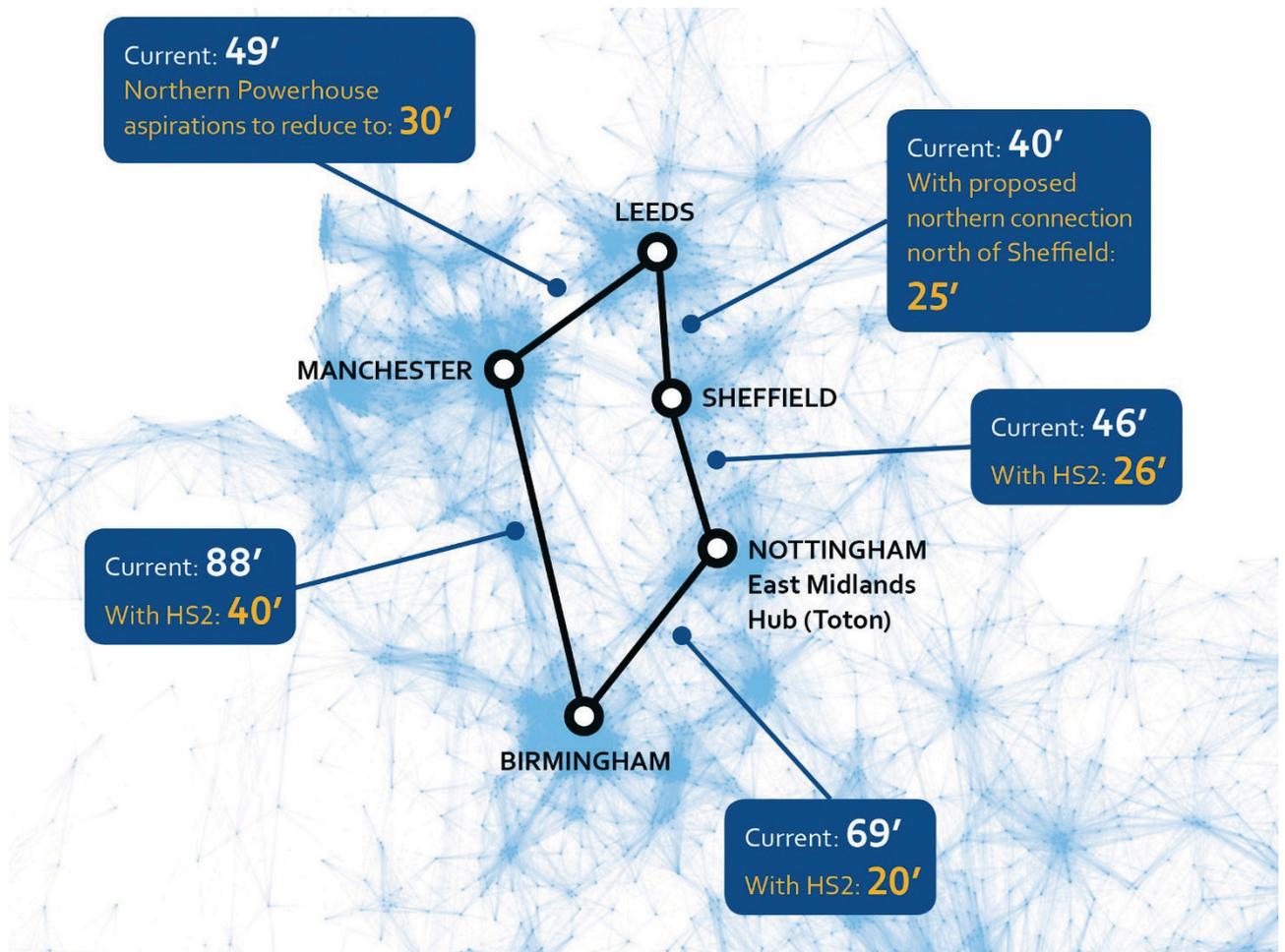


Figure 4 Journey times between the Midlands and the North with HS2¹³

- 59 NPR is TfN's and the Government's vision for a faster, more frequent, more reliable rail network across the North.
- 60 TfN are working with DfT, Network Rail and HS2 Ltd to prepare, by the end of 2017, a single integrated strategy that supports NPR and brings together:
- The upgrade of the Trans-Pennine line between Manchester and Leeds
 - The significant investment already committed in the North, including the new Northern and TransPennine rail franchises

¹³ The background to this map shows transport flows across the UK. Source: Alasdair Rae, University of Sheffield. Current journey times are fastest typical times. All HS2 journey times are current estimates showing fastest southbound times. Leeds to Sheffield HS2 time is an indicative estimate that may change significantly in subsequent analysis. Journey times at Nottingham are shown for the East Midlands Hub at Toton.

- The design of the northern phase of the HS2 network, including connectivity to Sheffield and Liverpool
- Proposals for the redevelopment of Manchester Piccadilly station

61 This means where necessary, we will include passive provision for NPR services in the Phase 2b hybrid Bill (to be laid before Parliament in 2019) subject to agreement of funding and the supporting business case.

Connections to the existing network

62 Ongoing development work, including that as part of the NPR programme, has identified a number of possible additional junctions that could be included in the design of Phase 2b.

63 Whilst further junctions offer significant flexibility to the system to meet new and emerging passenger demands, they also may impact on programme cost, schedule and operational reliability. The business case for new junctions requires a clear view of the additional services that would likely be run.

64 The Government is therefore taking a system-wide approach to the consideration of further junctions and will provide an update on this work in 2017.

Airport connectivity

65 HS2 will play an important role in improving access to major and regional airports across the UK, including via Old Oak Common for Heathrow, Birmingham Interchange for Birmingham Airport, Manchester Airport station, and via the East Midlands Hub for East Midlands Airport.

66 DfT and HS2 Ltd are working closely with airport operators, local authorities, LEPs, Highways England and Network Rail to ensure as the scheme develops that the opportunities for airport access are fully realised.

Released capacity

67 Released capacity created by HS2 on the existing network provides options for possible services to towns which currently do not have a direct connection to London. There may also be options for cross-country, commuter and freight services as well.

68 At this stage, no decisions have been taken on these new services, but the Government will continue to consider the options.

Value for money

69 For every £1 invested in HS2, the UK will receive over £2.50 in benefits, delivering £103bn in benefits overall.

70 80 per cent of the benefits will translate directly into higher GDP.

71 The 2015 Spending Review set a budget for HS2 of £55.7bn. 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, yet the Government is committed to delivering HS2 within this budget.

Next steps

72 The Government has a clear plan to deliver an affordable, value for money, innovative and high performing railway, fit for the long term future of this country.

73 The next steps are to:

- Continue to work with communities and stakeholders to inform a decision in 2017 on those areas of the Phase 2b route where we are consulting
- Begin construction of Phase One in 2017
- Update on plans for Crewe in 2017
- Set out the TfN priorities for NPR in spring 2017, and produce a single integrated strategy by the end of 2017
- Begin procurement of rolling stock for Phase One in spring 2017 with contracts issued by the close of 2019
- Deposit a hybrid Bill for Phase 2a by the end 2017
- Deposit a hybrid Bill for Phase 2b by the end of 2019
- Open Phase One in 2026, Phase 2a in 2027, and the full HS2 scheme in 2033

74 The Government is determined to move quickly so that we can ensure the country realises the benefits of HS2 as soon as possible. We will continue to look for opportunities to accelerate construction in the coming years as the construction schedule for Phase 2b is developed. By taking action now, we can ensure that we create a long-lasting, secure and efficient legacy for future generations.

Section 1: Our vision for HS2

This Command Paper has three sections. In this section, we set out the benefits of HS2 and the progress we have made in delivering the project.

1. The benefits of HS2

HS2 will add capacity to our constrained network

- 1.1 The West Coast Main Line (WCML) was built in stages between 1830 and 1880. By the 1850s, it was possible to take a direct train from London to Glasgow, and the WCML became essentially the line we know today. In that decade, the UK population was 15 million people. Those 15 million people made 60 million rail journeys in 1850. Today we have a population of 65 million yet we haven't built a new rail line north of London in over a century, while demand continues to grow.
- 1.2 Since privatisation in the mid-1990s, passenger numbers have more than doubled, and even more so on some of the routes HS2 will serve.
 - In 1994-95, 735 million rail journeys were made every year
 - In 2015-16 this had increased to 1.69 billion journeys
 - Freight has increased by 37 per cent since privatisation and is anticipated to grow by around 90 per cent by 2033, particularly multi-modal freight as international trade continues to expand
 - Demand for Virgin West Coast Main Line services has been growing by more than the average for long distance services. Since 2010-11 annual passenger journeys have increased by 24 per cent to 35.7 million
 - London Midland, the main commuter operator running into London Euston, has experienced similar growth over the same period as Virgin West Coast Main Line services and now caters for up to 69.6 million annual passenger journeys
 - 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 2016, this had increased to 48 trains per day
 - There is overcrowding on peak 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. 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
 - The WCML is already the most intensively used mixed use railway in Europe and 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

- 1.3 Only HS2 can deliver the step change in long term capacity that is needed. It will:
- Provide up to 18 trains per hour by 2033 running to and from London and up to an additional 12 trains per hour to and from Birmingham
 - 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

HS2 will increase connectivity and be a new backbone for our national rail network

- 1.4 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 Leeds will reduce from 2 hours 11 minutes to 1 hour 21 minutes
 - London to Liverpool will reduce from 2 hours 14 minutes to 1 hour 33 minutes
 - London to Glasgow will reduce from 4 hours 31 minutes to 3 hours 40 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 49 minutes
 - Nottingham to Leeds will reduce from 1 hour 44 minutes to 44 minutes
- 1.5 HS2 will become the new backbone of our rail network, carrying over 300,000 people a day. Network Rail estimate that around 100 cities and towns will benefit from new or improved rail connections.
- 1.6 Old Oak Common station will be used by around a quarter of a million people every day and will be served by direct trains from all HS2 destinations. This station will connect the North and the Midlands with services operating on the Great Western Mainline, Heathrow Airport, local commuter services in the Thames Valley, longer distance services to the west of England and South Wales, and Elizabeth Line services through central London, the City and to the east of London.

HS2 will be a catalyst for sustained and balanced economic growth across the UK helping to build an economy that works for all

- 1.7 Poor connectivity between the cities and regions of the Midlands and the North is restraining economic growth. We need to respond to our changing economy:
- Jobs are being created in our city regions at more than twice the rate than 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, as face-to-face business remains important
- 1.8 The *Northern Transport Strategy*¹⁴(March 2015) set out how better connecting cities can create more unified economies and labour markets to promote growth and agglomeration. This is at the heart of the Northern Powerhouse vision to rebalance the economy of the UK through increasing productivity in the north of England. It also underpins the Midlands Engine agenda of better connecting the East and West Midlands. HS2 Phase 2b will transform connectivity between the Midlands and the North. Our aim is for these regions to develop as a prosperous, well connected, multi-centre economy similar to the Randstadt in the Netherlands and the Rhein-Ruhr region in Germany.
 - 1.9 By delivering additional capacity and enhanced connectivity, allowing for more services to more destinations, transport infrastructure allows businesses to grow, work together and access a wide range of customers, suppliers and skilled labour markets. This also creates the environment in which businesses themselves can deliver their services across a wider area.
 - 1.10 The future prosperity of the UK depends on a strong and growing economy that works for all, and which enables us to compete on the international stage. That is why Government is developing an industrial strategy that will support the industries that are of most value to our economy and promote them through trade, tax policy, skills, training, R&D (research and development) and infrastructure. HS2 is a key part of this.
 - 1.11 In addition to the investment in HS2, £38 billion is being invested in our classic rail network between 2014 and 2019. We are also investing £13 billion in wider transport in the North.
 - 1.12 These investments will improve access to HS2 stations, spreading the benefits of HS2 wider, and helping to create the Northern Powerhouse and the Midlands Engine, boosting the economic power and productivity of these regions.
 - 1.13 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 people to meet up, and providing new opportunities for visitors to explore more of our country.

Local growth and regeneration

- 1.14 We know that maximising the benefits of HS2 will require integrated transport and growth planning so we are funding Euston, Old Oak Common, the West Midlands, the Northern Gateway Partnership, Manchester, the East Midlands, Sheffield and Leeds to develop Local Growth Strategies. These have already been completed for the West Midlands and Old Oak Common where the emphasis is now on implementing the strategies.
- 1.15 The Old Oak and Park Royal Development Corporation in West London has ambitious plans to turn one of London's last large brownfield sites into a vibrant new community, delivering 24,000 new homes for local people, together with up to 55,000 new jobs.

¹⁴ <https://www.gov.uk/government/publications/northern-transport-strategy>

- 1.16 In the West Midlands an Urban Growth Company has been established to ensure that the strategic advantage of the Interchange station, adjacent to the National Exhibition Centre (NEC) and Birmingham Airport, is maximised. A new business district is envisaged which will incorporate updated 'Garden City' principles and deliver 16,000 jobs and 1,900 homes. This will form the core of the wider UK Central proposals for growth at key locations in the M42 corridor.
- 1.17 At Birmingham Curzon Street station the regeneration company will use Enterprise Zone business rates income to help fund infrastructure to facilitate the creation of 36,000 jobs in the creative, digital, and professional services sectors and 4,000 new city centre homes.
- 1.18 Phase Two places are currently working on similarly ambitious proposals which will support growth across the Midlands and the North and this is set out in further detail in Chapters 5 and 6.

HS2 will create opportunities for skills and employment and promote UK leadership and expertise in construction and engineering

- 1.19 HS2 provides opportunities for British businesses throughout the supply chain including small and medium-sized enterprises (SMEs). HS2 will increase the UK's international competitiveness in high-tech engineering and construction:
- £7.1 - £11.8 billion of contracts are currently being procured for the main civil engineering works for Phases One and 2a
 - Up to £100m for Phase 2a and £520m for Phase 2b in contracts for design work, with further opportunities to follow
 - 2,000 new apprenticeships
 - 25,000 private sector jobs to build HS2, with over 1,000 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
 - Over 70 per cent of the new jobs created (directly) by HS2 being outside London

HS2 will set new standards in passenger experience, reliability, and accessibility, improving journeys for people

- 1.20 HS2 is being designed, developed, and constructed to be focused on the needs of passengers. Our ambition is for HS2 to improve journeys for people by:
- Giving passengers more choice, both in the range of services available and the flexibility with which people can use them, by for example using smart ticketing
 - Making travel more convenient with faster journeys that connect efficiently to where people want to travel from and to, with integrated stations, planning and connections
 - Making travel more reliable across the rail network, and giving passengers a better travelling environment with comfort and accessibility for all passengers

1.21 To help achieve this HS2 Ltd has:

- Consulted passengers through Transport Focus to better understand their needs
- Appointed an independent design panel bringing together experts who have produced a Design Vision¹⁵ to focus design on three core principles of people, place and time

HS2 will deliver value to the UK taxpayer and passenger

1.22 For every £1 invested in HS2, the UK will receive over £2.50 in benefits, delivering £103bn in benefits overall.

1.23 Eighty per cent of the benefits will translate directly into higher GDP.

1.24 The 2015 Spending Review set a budget for HS2 of £55.7bn. 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. Work over the last year has identified that there is the potential to realise significant efficiency savings as the detailed design and procurement progresses.

1.25 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. The Government is committed to delivering HS2 within budget.

HS2 will create an environmentally sustainable solution and be a good neighbour to local communities

1.26 HS2 will continue to be developed, designed and constructed as an environmentally sustainable solution in line with HS2 Ltd's Sustainability Policy. This commits to the protection of the environment through seeking to avoid significant adverse effects on communities, businesses and the natural, historic and built environment, including the prevention of pollution. Furthermore minimising impacts where they occur and delivering enhancements as far as reasonably practicable to attain no net loss to the natural environment, for example by planting trees along the line of route.

1.27 As we develop the scheme we will continue to consult and listen to communities and a wide range of stakeholders in order to avoid, reduce or, where reasonably practicable, off-set any significant adverse effects.

HS2 will be designed, built and operated with world-class health, safety and security standards

1.28 HS2 aims to match the excellent safety record of other high speed rail systems, such as High Speed One (HS1) – the line between London St. Pancras and the Channel Tunnel.

1.29 HS2 will achieve this by:

¹⁵ <https://www.gov.uk/government/publications/hs2-design-vision>

- Running only high speed trains on the line as a dedicated high speed passenger service, not transporting freight or dangerous goods.
- Using proven standards and practice
- Not using level crossings
- Mitigating risks and isolating HS2 from hazards.

2. Our progress so far

Phase One

- 2.1 The first part of HS2, from London to Birmingham, is on track to open in 2026 as planned. The High Speed Rail (London – West Midlands) hybrid Bill which gives powers to build the line, is progressing well in Parliament. The main civil engineering contracts worth up to £11.8bn (including an option for Phase 2a) are out to tender, and cities are developing their growth plans to maximise the economic effect of HS2 in their areas.
- 2.2 The Phase One hybrid Bill, subject to Parliamentary approval, will provide the powers we need to build Phase One. It was deposited in Parliament in November 2013. At the Third Reading stage in the House of Commons in March 2016, it was passed by an overwhelming majority of 399 to 44, showing the widespread cross-party support for the scheme.
- 2.3 The Phase One hybrid Bill was considered by a Select Committee of MPs who heard petitions from those directly and specially affected by the scheme, and recommended changes. For example, as a result of recommendations from the Select Committee, on 10 October 2016 the Secretary of State confirmed plans to make £70m available to support local communities and road safety along the route between London and the West Midlands.
- 2.4 The hybrid Bill is now following a similar process of scrutiny in the House of Lords, where a Select Committee of Peers is hearing petitioners. The hybrid Bill remains on target to achieve Royal Assent in time for construction work to begin in 2017.

Phase 2a

- 2.5 In November 2015 the Secretary of State decided to accelerate construction of the Phase Two route between the West Midlands and Crewe (Phase 2a) in order to bring the benefits of HS2 to northern cities and regions sooner, supporting growth and jobs in the local area, and helping to create the Northern Powerhouse and the Midlands Engine.
- 2.6 Since then we have begun preparation of a hybrid Bill which is on track to be deposited in Parliament by the end of 2017. We have safeguarded the necessary land from conflicting development, launched assistance schemes for owner-occupiers, begun purchase of properties, and begun the procurement process by including Phase 2a as an option in Phase One civil engineering procurement. We have also consulted on the environmental and equality impacts of the scheme, as well as a number of route refinements. The responses to these consultations will inform the design for the Phase 2a route that is presented to Parliament in the hybrid Bill by the end of 2017, alongside the formal Environmental Impact Assessment Report.

HS2 is already having an impact

- 2.7 In *Changing Britain*¹⁶ (February 2016) and *Changing Britain: HS2 Taking Root*¹⁷ (October 2016) Sir David Higgins set out how the project is already changing the way central and local government and local enterprise partnerships (LEPs) are working together to plan the future of their cities both in terms of developing their transport systems and transforming local economies.
- 2.8 For example, businesses are taking tangible action:
- The UK supply chain is gearing up - HS2 Ltd has held more than 50 events across the UK and engaged with over 3,500 businesses
 - HSBC, Deutsche Bank and Jacobs Engineering have all relocated to or expanded their Birmingham operations
 - More than £500m investment has been attracted to the South Bank in Leeds in the last two years including Sky's technology hub which opened earlier this year
- 2.9 HS2 is also at the heart of strategic transport planning in the North and the Midlands, for example:
- Work is progressing to see how HS2 could help deliver parts of a fast, frequent Northern Powerhouse Rail (NPR) network for Liverpool, Manchester, Sheffield, Leeds, Hull and Newcastle
 - The Government has committed £17m to support Midlands Connect (a partnership of 28 Local Authorities and 10 LEPS) in East and West Midlands. They are developing a dedicated HS2 readiness work package ensuring the Midlands capitalises on the economic benefits of HS2

Completing HS2

- 2.10 We have made significant progress so far. HS2 is already having an impact, and today we take a big step closer to our vision. In the following section we set out our plan to complete the network to Manchester, the East Midlands, South Yorkshire and Leeds, helping to make the economy work for everyone.

¹⁶ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/503349/HS2_Changing_Britain.pdf

¹⁷ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/563677/CS567_Changing_Britain_2_WEB.pdf

Section 2: The Phase 2b Route Decision

In this section of the Command Paper, we provide the Government's response to the 2013 consultation on the Phase Two route; we set out where the Secretary of State has taken a route decision and where we will be consulting further. We also provide an update on our work looking at options for a Crewe Hub station and how HS2 could serve Stoke-on-Trent.

3. Making the route decision

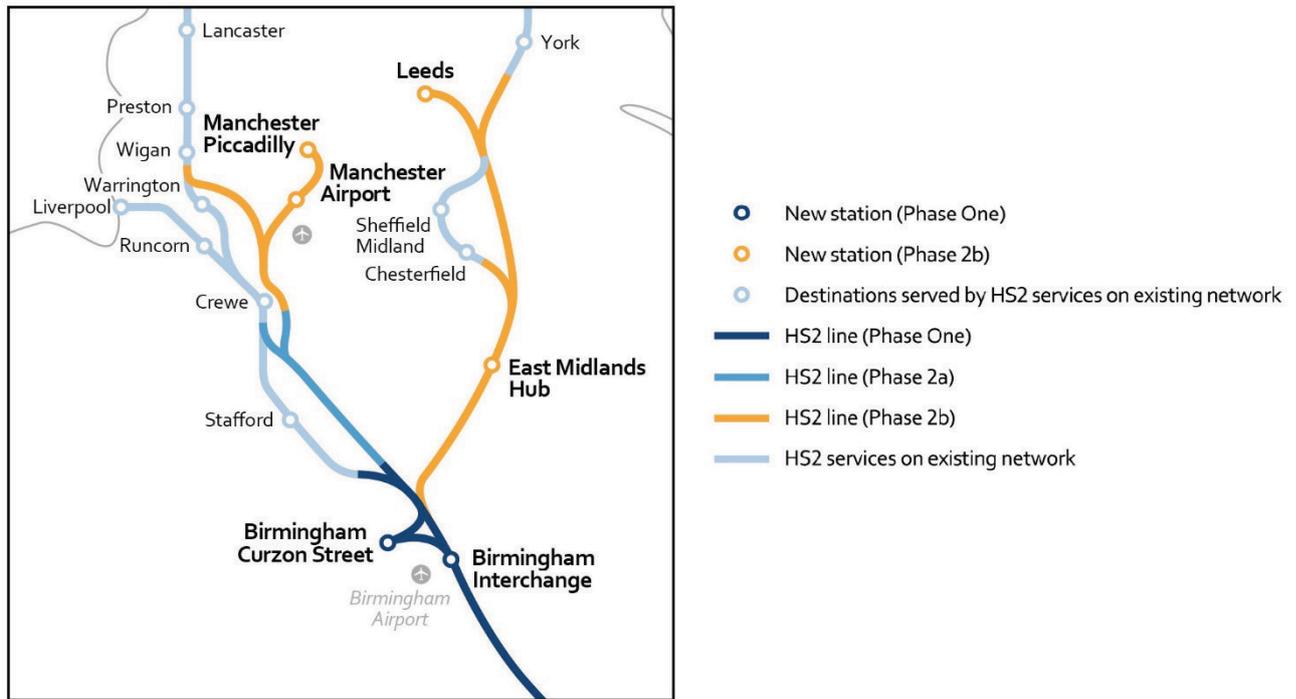


Figure 5 Phase 2b

- 3.1 In November 2015 the Government confirmed the first section of Phase Two, setting out the route from the West Midlands to Crewe (Phase 2a). We confirmed that this section will open in 2027, six years earlier than originally planned, meaning the North West and Scotland can realise more of the benefits of HS2 sooner. Today the Secretary of State has confirmed the majority of the Government's preferred route for Phase 2b of HS2, which will complete the full Y network. The Government has also launched a consultation in a number of areas of the route that have changed substantially since the previous public consultation¹⁸ (from this point referred to as the 2013 consultation) The Secretary of State has today issued safeguarding directions along the whole of the Phase 2b route to protect it from conflicting development.
- 3.2 Phase 2b consists of the Western Leg from Crewe to Manchester and the Eastern Leg from the West Midlands to Leeds, with connections onto the existing rail network at Golborne for the West Coast Main Line (WCML), Church Fenton for the East Coast Main Line (ECML), and Clayton and Clay Cross for the existing network north and south of Sheffield. New HS2 stations will be constructed at Manchester Piccadilly, Manchester Airport, Leeds, and Toton for the East Midlands Hub. The Sheffield City Region will be served by HS2 services running into the city centre via a

¹⁸ <http://webarchive.nationalarchives.gov.uk/20141027142236/http://www.hs2.org.uk/phase-two/route-consultation/document-library/ajax/589/nojs>

dedicated spur from the HS2 main line. Destinations including Liverpool, Glasgow, Edinburgh, Newcastle, York will also be served by direct trains.

- 3.3 The 2013 consultation was launched on 17 July 2013 and closed on 31 January 2014. During the 2013 consultation, public events were held at locations along the proposed route.
- 3.4 Just over 10,000 responses were received. These included responses from residents on the proposed line of route, local authorities, local and regional groups, heritage and environmental organisations and other bodies. Ipsos MORI analysed the responses and delivered an independent report¹⁹ of the consultation process and a summary of the issues raised with the Government, which was published alongside the Phase 2a route decision in November 2015.
- 3.5 This included the Government response to consultation feedback for the section of the route from the West Midlands to Crewe. We also responded to comments relating to the Phase Two scheme as a whole on the Appraisal of Sustainability²⁰, the use of freed up capacity on the existing network and the introduction of utilities alongside the route.
- 3.6 The announcement today covers the remainder of the Phase Two route (Phase 2b) and therefore completes the Government's response to the 2013 consultation.
- 3.7 Following the 2013 consultation HS2 Ltd has been developing Phase 2b to take account of:
 - Feedback from communities and stakeholders gathered in the 2013 consultation (summarised at Annex D)
 - Ongoing engagement with communities and other interested parties such as local authorities, environmental bodies, Network Rail, and Transport for the North (TfN)
 - Lessons learnt from the development of Phase One and Phase 2a
 - Updated engineering and design
 - Evidence gathered and analysis undertaken to inform a series of reports by Sir David Higgins
- 3.8 As a result HS2 Ltd has recommended a number of refinements to the route in order to respond to concerns raised at consultation, as well as other factors. A summary report of the development of the Phase 2b scheme is available here <https://www.gov.uk/government/collections/hs2-phase-two-from-the-west-midlands-to-leeds-and-manchester>
- 3.9 In most cases these refinements are relatively minor and do not result in impacts on new communities, or substantially different impacts on communities than the route proposed in the 2013 consultation. However, in seven areas where the proposed refinements are substantial the Secretary of State is launching a further consultation to seek the views of communities and other interested parties. The Secretary of State intends to confirm the full Phase 2b route after considering responses to this consultation in 2017. The Route Refinement Consultation is available here <https://www.gov.uk/government/collections/hs2-phase-two-from-the-west-midlands-to-leeds-and-manchester>

¹⁹ <https://www.gov.uk/government/consultations/hs2-phase-two-proposed-line-of-route-from-west-midlands-to-manchester-and-leeds>

²⁰ <https://www.gov.uk/government/publications/post-consultation-appraisal-of-sustainability-route-to-crewe-report>

3.10 The proposed refinements under consultation are to:

- Move the previously proposed rolling stock depot (RSD) at Golborne to a site north of Crewe
- Change the alignment on the approach to Manchester Piccadilly station so that it runs to the east of West Gorton
- Move the route in the Middlewich-Northwich area (in Cheshire)
- Move the route to the east of Measham (Leicestershire)
- Go round instead of under the East Midlands Airport
- Lengthen the viaduct over the River Trent flood plain so that the line passes through Long Eaton either at a high level (up to around 16m) or an alternative option on an embankment at a lower level (around 4m)
- Move the alignment of the route from Derbyshire to West Yorkshire to reflect a change in the proposals for serving the Sheffield City Region, as recommended by Sir David Higgins in his report *Sheffield and South Yorkshire*²¹ (2016)

3.11 The Route Refinement Consultation closes on 9 March 2017. As part of this consultation HS2 Ltd are running a series of information events along the line of the Phase 2b route between January and March.

3.12 Details the environmental and community impacts of the Government's preferred route are available in the *Sustainability Statement*²² published today. It builds on the work published in support of the 2013 consultation on Phase Two and the 2015 Phase 2a route decision.

Alternatives to HS2

3.13 In order to ensure it is the right investment, we have consistently looked at alternatives to HS2 throughout the development of the scheme. This included earlier examination of road and aviation options, and whether the Y network was the right solution. We have not revisited these options but most recently Atkins undertook an independent assessment of possible rail alternatives to Phase 2b which we have published today²³. This work demonstrates that whilst the alternatives have similar benefit to cost ratios (BCR) and lower costs to Phase 2b they will not provide the same capacity, journey time benefits, or reliability as Phase 2b and would be more disruptive to construct.

3.14 Further detail of this work is set out in the *Strategic Case*²⁴ for Phase 2b.

Managing costs and efficiency savings

3.15 The 2015 Spending Review set a budget for HS2 of £55.7bn. 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, yet the Government is committed to delivering HS2 within this budget.

3.16 The National Audit Office reviewed the scheme, publishing their report²⁵ in June 2016.

²¹ <https://www.gov.uk/government/publications/hs2-sheffield-and-south-yorkshire-report-2016>

²² <https://www.gov.uk/government/collections/hs2-phase-two-from-the-west-midlands-to-leeds-and-manchester>

²³ <https://www.gov.uk/government/collections/hs2-phase-two-from-the-west-midlands-to-leeds-and-manchester>

²⁴ <https://www.gov.uk/government/collections/hs2-phase-two-from-the-west-midlands-to-leeds-and-manchester>

²⁵ <https://www.nao.org.uk/wp-content/uploads/2016/06/Progress-with-preparations-for-High-Speed-2.pdf>

- 3.17 At the 2015 spending review, the estimated cost of Phase Two included efficiency savings which HS2 had identified and were working to embed within the programme.
- 3.18 Work over the last year by the Department for Transport, HS2 Ltd and the Infrastructure and Projects Authority has identified that there is the potential to realise significant efficiency savings as the detailed design and procurement progresses.
- 3.19 In line with the approach taken for Phase One, we will establish a target price for delivery of the Phase 2b infrastructure ahead of procurement of major works. In the interim, the Secretary of State has set a Benchmarked Target Design Cost (BTDC), in line with international best practice, to guide HS2 Ltd and its contractors as they develop the design of the scheme. This BTDC of £65m/km is included in the incentivisation mechanism for HS2 Ltd Professional Services Contractors and Development Partner. Further information regarding the costs of the scheme is available in the *Financial Case*²⁶ for Phase 2b.
- 3.20 Phase Two remains at an early stage of development and our understanding of costs will continue to develop over time. 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 funding envelope.

²⁶ <https://www.gov.uk/government/collections/hs2-phase-two-from-the-west-midlands-to-leeds-and-manchester>

4. Property

- 4.1 The Secretary of State has today issued safeguarding directions along the whole of the Phase 2b preferred route to protect it from conflicting development. Safeguarding this part of the route will ensure that proposed new developments along the line of route do not affect the ability to build or operate HS2, or lead to excessive additional costs. This will have implications for local planning authorities, and also for those considering submitting planning applications in respect of land in the safeguarded area.
- 4.2 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.
- 4.3 Information on the new safeguarding directions and property compensation is available at <http://www.gov.uk/hs2> or by phoning the HS2 Ltd enquiries line on 020 7944 4908.
- 4.4 HS2 is being designed to minimise the number of properties affected. Where people are affected by HS2, we are committed to assisting them fairly.

Phase 2b property compensation and assistance schemes

- 4.5 We are consulting on the property compensation schemes that will apply to owner-occupiers on the Phase 2b route based on what is already in place for the rest of HS2. However we recognise the need to offer assistance as soon as possible, so with immediate effect we are today opening Express Purchase and Need to Sell (NTS) schemes on an interim basis for eligible owner-occupiers living along the Phase 2b route.

Express purchase

- 4.6 Where a property is within the safeguarded area, owner-occupiers who meet the qualifying criteria and who wish to sell their property may serve a blight notice, thereby requiring the Secretary of State to buy their property prior to it being needed for the project. The Express Purchase scheme streamlines the statutory procedures applicable to blight notices served in response to surface safeguarding directions for HS2. The Express Purchase scheme does not affect the application to blight notice claims of the relevant principles of the UK Compensation Code, which comprises of:
 - The full un-blighted open market value of the property (that is, the value of the property if there was no HS2)
 - A further 10 per cent up to a maximum of £58,000 (known as the home-loss payment)
 - Reasonable costs of moving

Need To Sell

- 4.7 The Need To Sell (NTS) scheme is available to owner-occupiers who can demonstrate that they have a compelling reason to sell their property, but have been unable to do so, other than at a substantially reduced price, as a direct result of the announcement of the route of Phase 2b of HS2. The scheme has no geographic boundary, and for a successful applicant, the Government would agree to buy properties for their full un-blighted market value. This will replace the current Exceptional Hardship Scheme which required owner occupiers to go further than the requirements for NTS and demonstrate an exceptional reason to sell their property.
- 4.8 These schemes have been opened on an interim basis whilst the *Phase 2b Property Consultation*²⁷ takes place, but if they are confirmed they will remain in place until one year after the railway is fully operational.

Phase 2b property consultation

- 4.9 We welcome views on the aforementioned schemes and the following schemes as part of the Phase 2b Property Consultation:
- Rural Support Zone (Cash Offer or Voluntary Purchase)
 - Homeowner Payment Scheme
 - Rent Back
- 4.10 The proposed Phase 2b schemes offer assistance beyond what is required by law and reflect the exceptional duration and scale of the HS2 project.

Next Steps

- 4.11 You can get more information at the public events we will hold at locations along the Phase 2b route, beginning in January 2017. For further information on these events please visit <https://www.gov.uk/hs2>
- 4.12 Subject to the outcome of the Phase 2b Property Consultation, an announcement on compensation schemes will be made in 2017 alongside confirmation of the route decision in 2017.

²⁷ <https://www.gov.uk/government/collections/hs2-phase-two-from-the-west-midlands-to-leeds-and-manchester>

5. The Western Leg



Figure 6 The Western Leg of Phase 2b

- 5.1 The preferred route for the Western Leg of Phase 2b has a total length of 51 miles²⁸ (82 km). At its southern end it connects to the Phase 2a route to the south of Crewe. North of there, it passes under Crewe in a tunnel. At its northern end the Western Leg joins the West Coast Main Line (WCML) at Golborne, south of Wigan. A spur from the main line serves a new station at Manchester Airport before entering an 8 mile (13km) tunnel to reach a new station adjacent to the existing station at Manchester Piccadilly. The Western Leg also includes a proposed rolling stock depot (RSD) located to the north of Crewe, between the HS2 route and the WCML.
- 5.2 The Secretary of State has issued safeguarding directions in respect of the whole Western Leg route to protect it from conflicting development, and launched further property compensation schemes to assist those living along the route (see Chapter 4).
- 5.3 Since the 2013-2014 public consultation²⁹ on the Phase Two route and stations (from this point referred to as the 2013 consultation) a number of refinements have been made to the Western Leg route.

²⁸ This excludes depot connections and assumes the Phase 2a tunnel portal is as set out in the November 2015 route decision

²⁹ <http://webarchive.nationalarchives.gov.uk/20141027142236/http://www.hs2.org.uk/phase-two/route-consultation/document-library/ajax/589/nojs>

- 5.4 The Secretary of State is today confirming the route and stations on the Western Leg, except for the following proposals which the Government is consulting on in order to inform a decision in 2017. The proposals are to:
- Move the previously proposed RSD at Golborne to a site north of Crewe
 - Change the alignment on the approach to Manchester Piccadilly station so that it runs to the east of West Gorton
 - Move the route in the Middlewich-Northwich area (Cheshire)
- 5.5 These proposals are discussed below and in more detail in the Route Refinement Consultation³⁰. A summary of other refinements to the Western Leg (which we are not consulting on) is at Annex E.
- 5.6 The stations are described at the current stage of design development. Working with local stakeholders, further development of the station designs will be carried out in preparation for a hybrid Bill. This will include looking at how wider development can contribute to station construction costs.

Manchester Piccadilly

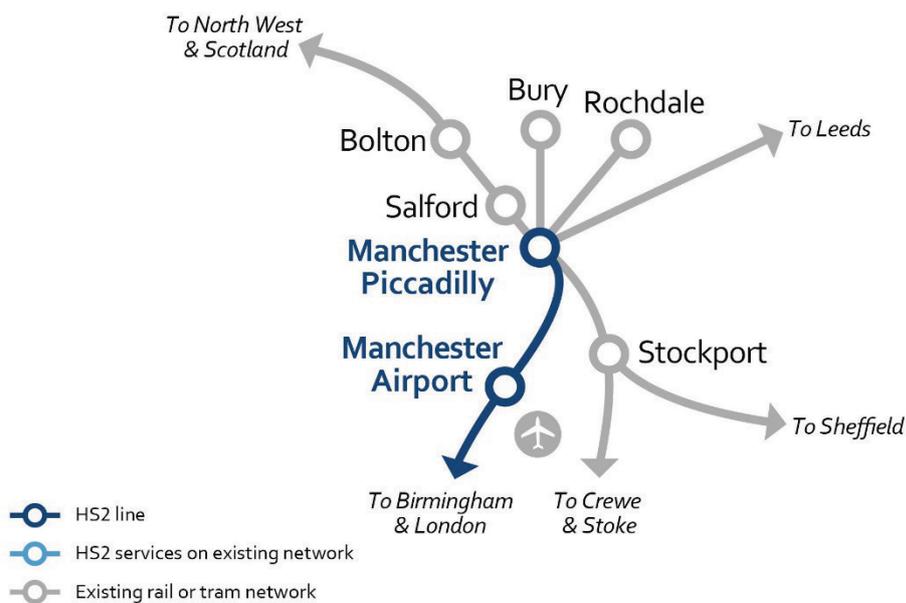


Figure 7 Manchester Piccadilly connectivity

- 5.7 The HS2 station at Manchester Piccadilly will be constructed alongside the existing main line station. The HS2 platforms will be parallel with, and alongside, platform one. The platforms will be elevated with HS2 concourse facilities located at ground level, beneath the elevated platforms.
- 5.8 HS2 will have a transformational effect on journey times, with journeys between Manchester and Birmingham taking just 40 minutes, compared to 1 hour 28 minutes currently, and between Manchester and London taking 1 hour 7 minutes, compared to 2 hours 7 minutes currently.
- 5.9 The Secretary of State is seeking views on a proposal to move the approach to Manchester Piccadilly Station eastwards by up to 370m to take it further away from

³⁰ <https://www.gov.uk/government/collections/hs2-phase-two-from-the-west-midlands-to-leeds-and-manchester>

West Gorton and to lengthen the tunnel by approximately 880m so that the northern tunnel exit would be located within the site of the Ardwick rail depot.

5.10 This change would reduce the flood risk and engineering complexities by moving the tunnel portal out of the Corn Brook floodplain and away from the existing railway viaducts and avoid direct impacts on residential properties and a school at West Gorton. It would also allow the approach to Manchester Piccadilly Station to be straightened which would maximise operational capacity and reduce the impact on the structure of the existing station.

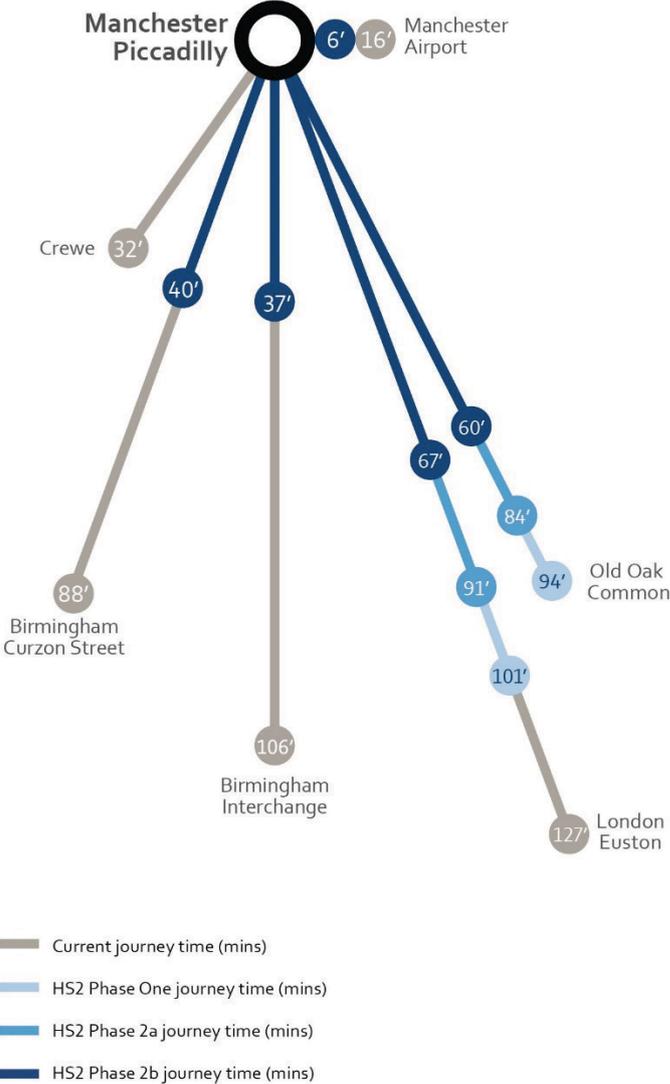


Figure 8 Manchester Piccadilly journey times³¹

5.11 Manchester Piccadilly benefits from excellent transport connectivity. The existing station is served by six train operating companies serving routes across the region, northern England and intercity services to the Midlands, London, Scotland and elsewhere. It is also well served by the Metrolink tram network and local bus routes.

5.12 In *High Speed North*³² (March 2016) the National Infrastructure Commission recommended that Transport for the North (TfN), should work with Transport for Greater Manchester, Manchester City Council, Network Rail, the Department for

³¹ Current journey times are fastest typical times. All HS2 journey times are current estimates showing fastest southbound times.
³² <https://www.gov.uk/government/publications/high-speed-north-a-national-infrastructure-commission-report>

Transport and HS2 Ltd to “prepare by the end of 2017 a single integrated strategy, combining short-term action with an ambitious long-term vision”. We continue to work with TfN 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. Throughout this work, we will embed the HS2 design principles to ensure that passengers using Manchester Piccadilly station will benefit from an enhanced passenger experience, accessible to all.

- 5.13 An HS2 station at Manchester Piccadilly will offer considerable opportunities for development and regeneration in and around the site, supporting jobs and housing. Manchester is developing a growth strategy, supported so far by £625,000 of UK Government HS2 Growth Strategy funding. This builds on the considerable body of work they have already developed, including their Piccadilly Regeneration Framework, and will be further reviewed to incorporate the opportunities afforded by NPR proposals. We are confirming a further £625,000 of funding today to continue to support this important work.

Manchester Airport

- 5.14 The current design for the station at Manchester Airport will have two platforms in addition to two through tracks for non-stopping trains. The station will lie west of and parallel to the M56, between junctions five and six. This parkway station will help to bring the benefits of high speed rail to South Manchester and North Cheshire, as well as allowing passengers to change directly between HS2 services and the airport.
- 5.15 This station will 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 Manchester Piccadilly. The M56 will link the station to the M60 Manchester orbital motorway, the M6, and the wider regional transport network. A new road access will be needed to link the station to the M56 and local road network.
- 5.16 HS2 will have a transformational effect on journey times, with journeys between Manchester Airport and Birmingham taking just 32 minutes compared to 1 hour and 49 minutes currently, and between the airport and London taking 1 hour and 3 minutes compared to 2 hours and 24 minutes currently.
- 5.17 In response to concerns raised during consultation, the proposed access arrangements and layout of the station at Manchester Airport have been altered in order to maximise the use of space in between the M56 and the HS2 station and reduce land take. Correspondingly, the station car park has been moved to the east of the station. This refinement reduces visual impacts and land take, facilitates constructability, reduces cost and improves ease of maintenance.
- 5.18 There is potential for significant development around a station in this location and potential benefits from integration with nearby employment opportunities in the Manchester Enterprise Zone, including Airport City North, the MediPark, and University Hospital South Manchester, and also with other nearby proposed developments such as Davenport Green.
- 5.19 This is supported by Transport for Greater Manchester who say in their draft *Greater Manchester Transport Strategy 2040*³³ (2016): “HS2 and Northern Powerhouse Rail proposals will transform rail connectivity to the Airport from across the North of

³³ <http://www.tfgm.com/2040/Pages/default.aspx>

England and the UK, unlocking new jobs and productivity growth. More frequent and faster rail services will help to increase the effective population catchment area of the Airport, supporting the case for introducing new inter-continental trade routes, and thereby boosting the economic potential of the North of England.”

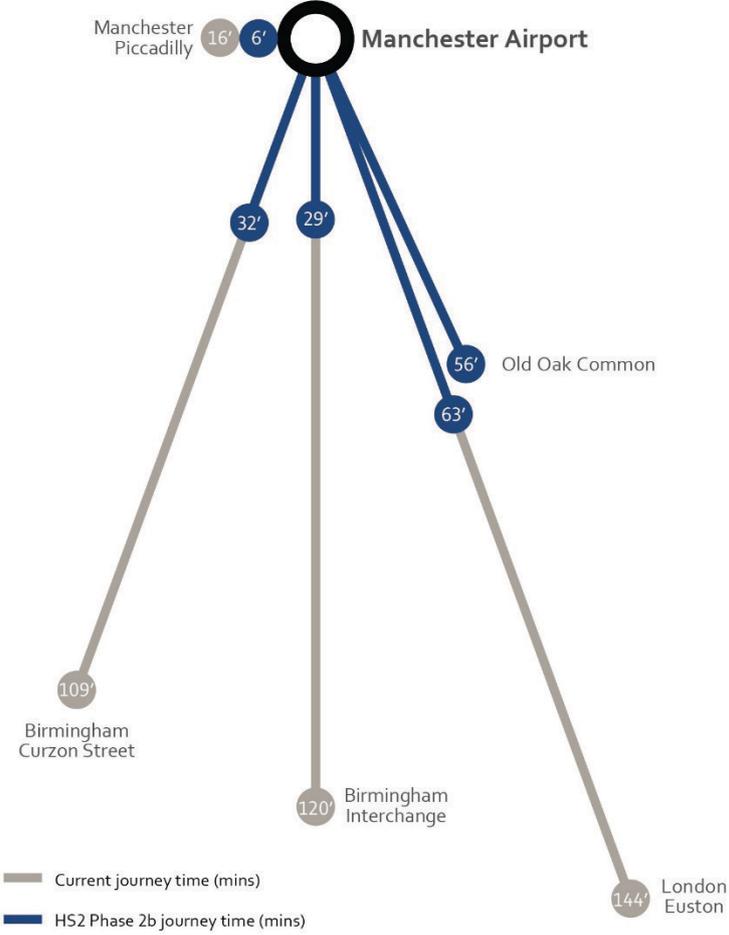


Figure 9 Manchester Airport journey times³⁴

5.20 Manchester is developing a growth plan for the HS2 Airport station, supported so far by £625,000 of UK Government HS2 Growth Strategy funding. We are confirming a further £625,000 of funding today, to continue to support this important work.

5.21 The Government is today setting out its support for the construction of an HS2 station at Manchester Airport. It remains the case that the development of this station is subject to agreeing an appropriate local funding contribution. We continue to collaborate positively with Greater Manchester Combined Authority, Manchester Airports Group and other Greater Manchester delivery partners on this.

Proposed rolling stock depot (RSD) north of Crewe

5.22 In the 2013 consultation the proposed route included a RSD located north of Golborne.

5.23 Respondents to the 2013 consultation raised a number of concerns about the potential impact of the RSD on the local environment and community. For example,

³⁴ Current journey times are fastest typical times. All HS2 journey times are current estimates showing fastest southbound times.

impacts on the setting of the Grade II Listed Lightshaw Hall, Grade II Listed Byrom Hall and Abram Flashes Site of Special Scientific Interest were highlighted.

- 5.24 The Secretary of State is minded to relocate the RSD to a site north of Crewe to reduce the overall impact of the facility and he is seeking views on this proposal in the Route Refinement Consultation. Locating the RSD near Crewe would mean that the northern chord of the Manchester Junction near High Leigh, which had previously been designed solely to enable trains to travel to and from the RSD from Manchester, will no longer be required.
- 5.25 A similar connection, albeit designed for trains travelling at faster speeds remains an option as part of NPR proposals for serving Liverpool from Manchester Piccadilly via HS2.

Middlewich-Northwich

- 5.26 The Government is consulting on the proposal to move the route in the Middlewich-Northwich area to avoid brining and gas storage infrastructure, minimise the risk of subsidence due to underlying geological conditions, and to raise the route onto a series of embankments and viaducts in the area between Winsford and Middlewich to allow better management of drainage.

Connecting with the West Coast Main Line, the North West and Scotland

- 5.27 The Secretary of State has confirmed the connection to the WCML at Golborne, south of Wigan. This connection will help ensure that the Western Leg is fully integrated into the wider rail network. As currently planned the North West and Scotland will receive HS2 services in Phase One and Phase 2a, which will reduce journey times compared to today. The WCML link at Golborne will further reduce journey times, and allow services to bypass the constrained Crewe-Weaver Junction section of the WCML. For example journeys from London to Edinburgh will fall under four hours for the first time to 3 hours 40 minutes. Having considered alternatives the link at Golborne strikes the best overall balance between costs and benefits.
- 5.28 As we develop the scheme we will continue to work with Network Rail to ensure that the additional services that HS2 proposes can be accommodated on the existing network north of Golborne.

Liverpool

- 5.29 The Liverpool City Region is a significant market and will be part of the HS2 network from day one.
- 5.30 As currently planned, when Phase One opens, HS2 trains will serve Lime Street station and provide Liverpool with faster and more frequent direct services to London. The current journey to London of 2 hours 14 minutes will fall to 1 hour 46 minutes and will improve further, to 1 hour 33 minutes, when Phase 2a opens between the West Midlands and Crewe.

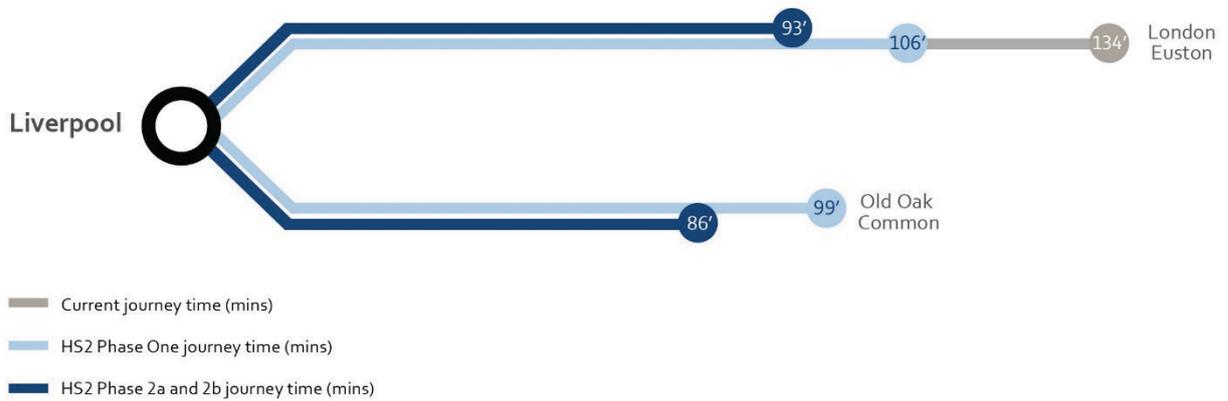


Figure 10 Liverpool journey times³⁵

- 5.31 Whereas Liverpool currently only receives one direct train per hour to London, on current plans Liverpool would receive two direct HS2 services.
- 5.32 TfN is investigating whether HS2 could be used to support NPR aspirations for faster, more frequent train services between Liverpool and Manchester and these are set out in Chapter 8.

Crewe



Figure 11 Crewe connectivity

Phase 2a - the route to Crewe

- 5.33 Crewe is an important location on the existing rail network and will provide strategically important connectivity to the HS2 network. In November 2015, the

³⁵ Current journey times are fastest typical times. All HS2 journey times are current estimates showing fastest southbound times.

Government decided on the route from the West Midlands to Crewe (Phase 2a) which is planned to open in 2027. At this time the Phase 2a route was proposed to end just south of Crewe at the portal of the tunnel as set out in the 2013 consultation, and included a junction onto the WCML. This design allows for a tunnel under Crewe to be built in Phase 2b. The Phase 2a proposal also included an Infrastructure Maintenance Depot for HS2 to the west of the existing Basford Hall freight yard, just south of Crewe.

5.34 Since taking those decisions, HS2 Ltd has progressed their design work in preparation for deposit of the Phase 2a hybrid Bill in 2017. As part of that work HS2 Ltd has proposed the following changes to Phase 2a the route:

- South of Crewe, to extend the Crewe tunnel shown in the November 2015 design south by approximately 2100m and re-site the tunnel portal south of the A500 and Weston Lane
- South of Crewe to move the spur lines that connect HS2 to the WCML further south and to extend their length
- Near Stone, to build a temporary construction facility (railhead) in between the proposed HS2 route and the M6

5.35 The Government consulted on these proposed changes in the Design Refinement Consultation³⁶ which closed on 7 November 2016. The Government is now considering responses.

Crewe Hub station



Figure 12 Crewe journey times³⁷

5.36 In line with the 2013 consultation proposal the HS2 route from the West Midlands to Manchester includes a tunnel under Crewe. The WCML Junction in Phase 2a enables some HS2 services to serve destinations on the existing rail network, including Crewe itself.

5.37 Under the assumptions made in the *Economic Case*³⁸, Crewe would receive two HS2 services to London per hour, with a journey time of just 55 minutes; cutting over 30 minutes off today's journey time of 90 minutes.

³⁶ <https://www.gov.uk/government/publications/hs2-phase-2a-west-midlands-to-crewe-design-refinement-consultation>
³⁷ Current journey times are fastest typical times. All HS2 journey times are current estimates showing fastest southbound times.
³⁸ <https://www.gov.uk/government/collections/hs2-phase-two-from-the-west-midlands-to-leeds-and-manchester>

- 5.38 In *HS2 Plus*³⁹ (March 2014) and *Rebalancing Britain, from HS2 towards a national transport strategy*⁴⁰ (October 2014) Sir David Higgins recommended that the Government construct a Crewe Hub, bringing together a better HS2 service with the existing rail network.
- 5.39 *High Speed Two: East and West, the next steps to Crewe and Beyond*⁴¹ (2015) (from this point referred to as the 2015 Command Paper) set out that Network Rail were considering two locations for a Crewe Hub station: at, or immediately south of, the existing Crewe station; or Basford Hall (around 2km south of Crewe). Since then Network Rail has continued to consider these options, and has today issued a summary of this work⁴² which recommends that, if the Crewe Hub scheme is to be taken forward, it should be located at the site of the existing station. The Government supports this conclusion.
- 5.40 There is clear evidence that, whilst a station at Basford Hall may have offered some growth opportunities for the region, to fully realise these the freight facility located at Basford Hall would have to be relocated resulting in significant cost and disruption. The existing station site offers excellent opportunities with 360 degree connectivity to major destinations and regions including Liverpool and Scotland; Manchester; Stoke-on-Trent and Derby; Stafford, Birmingham and London; Shrewsbury and South Wales; and Chester and North Wales.
- 5.41 The Government continues to support the vision for a Crewe Hub station. With the right investment, which will require both central and local government to work closely together, developing the hub at the existing station would ensure both the town of Crewe and the surrounding region have excellent access to conventional and HS2 services. 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. The Government is working with Cheshire East Council and the Northern Gateway Partnership to identify how they may invest in the scheme to ensure the benefits are fully realised, in particular investments in the existing station buildings and the local road network.
- 5.42 The Government is asking Network Rail and HS2 Ltd to continue working up proposals for what investment might be required at the existing station to:
- Address key constraints on the rail network at Crewe today to facilitate future conventional and HS2 services from 2027
 - Allow for more HS2 services to stop at Crewe, including services between Manchester and Birmingham, to provide Crewe with both northbound and southbound high speed connectivity
 - Accommodate splitting and joining of 400m HS2 trains at Crewe, to serve as many destinations as possible on the existing network
 - Construct a connection back from the WCML onto the HS2 network north of Crewe, to enable northbound high speed connectivity from Crewe
- 5.43 Key considerations in developing options and deciding whether or not to take them forward is affordability and value for money. Proposals for a Crewe Hub station are additional to the core HS2 scheme and are beyond the HS2 budget. The Government plans to take decisions on additional investment at Crewe in 2017 and

³⁹ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/374695/HS2_Plus_-_A_report_by_David_Higgins.pdf

⁴⁰ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/374709/Rebalancing_Britain_-_From_HS2_towards_a_national_transport_strategy.pdf

⁴¹ <https://www.gov.uk/government/publications/hs2-phase-two-east-and-west-the-next-steps-to-crewe-and-beyond>

⁴² <https://www.gov.uk/government/collections/hs2-phase-two-from-the-west-midlands-to-leeds-and-manchester>

will confirm whether any such measures should be included in the hybrid Bills for Phase 2a and Phase 2b.

Stoke-on-Trent

- 5.44 In the 2015 Command Paper we made clear that Government recognises the important role that Stoke-on-Trent plays in the wider economic region, and the Secretary of State therefore asked HS2 Ltd to explore how we might best serve Stoke-on-Trent and Macclesfield as part of Phase Two. We welcome the way Stoke-on-Trent City Council, Cheshire East and other partners are working together to ensure that the benefits of HS2 are maximised through their work in the Northern Gateway Partnership, and welcome continued dialogue and engagement going forward.
- 5.45 HS2 Ltd has looked at serving Stoke-on-Trent either via the Handsacre Junction from Phase One, or by building an 8km new spur as proposed by Stoke-on-Trent City Council (the 'Stoke Connector' proposal) from Phase 2a at Stone. In either option, trains are assumed to run into the existing Stoke station and there are a range of choices as to whether an additional HS2 service is assumed or an existing planned service is diverted to call at Stoke-on-Trent.
- 5.46 In considering all options, both affordability and value for money needed to be carefully considered. HS2 Ltd identified that all options come at an extra cost, although costs and benefits do vary considerably. The Stoke Connector Option has a capital cost of £450m (including £90m for rolling stock). If two extra trains per hour could be run it would have an operating cost of £1,360m and would provide £1,140m in net benefits. If two trains per hour were run (with one being an existing HS2 service diverted via Stoke-on-Trent) operating costs would be £920m and net benefits just £8m. If only one train per hour is run there would be an operating cost of £680m and would provide £650m in benefits.
- 5.47 HS2 Ltd's advice is that the option with lowest cost and highest benefit would be to serve Stoke-on-Trent and Macclesfield with one HS2 train per hour via the Handsacre Junction. This option would require £90m for extra rolling stock and an operating cost of £620m, but it would provide nearly £800m in additional revenue. This service would also serve the Stafford-London market and so allow a standardisation of HS2 service patterns to Liverpool. HS2 Ltd's analysis suggests that the Handsacre Junction option could deliver faster journey times than the current pendolino services between London and Stoke-on-Trent and Macclesfield, but not as good as the Connector.
- 5.48 Given its high cost and low benefits, the Government has decided not to pursue the Stoke Connector option further and will not be including this in the Phase 2a hybrid Bill. However, the Government can see the potential benefits of serving Stoke-on-Trent in support of the wider development plans of the Northern Gateway Development Zone and the ambitions of the Midlands Engine. The Secretary of State is therefore asking HS2 Ltd to take forward more detailed work on train planning for options to serve Stoke via Handsacre Junction, including operational feasibility in both 2027 and 2033. The Secretary of State is also asking HS2 Ltd to look at Stoke-on-Trent to Birmingham connections once HS2 opens. We will continue to engage with both Stoke-on-Trent City Council and Cheshire East Council as this work develops.

- 5.49 In the meantime we welcome the way Stoke-on-Trent City Council, Cheshire East and other partners are working together to ensure that the benefits of HS2 are maximised through their work in the Northern Gateway Partnership, and welcome continued dialogue and engagement going forward.
- 5.50 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. They have been supported so far by £625,000 of UK Government HS2 Growth Strategy funding. Today we are confirming a further £625,000 of funding will be available. We will work with local authorities to release these funds to provide continued support for this important work.

6. The Eastern Leg

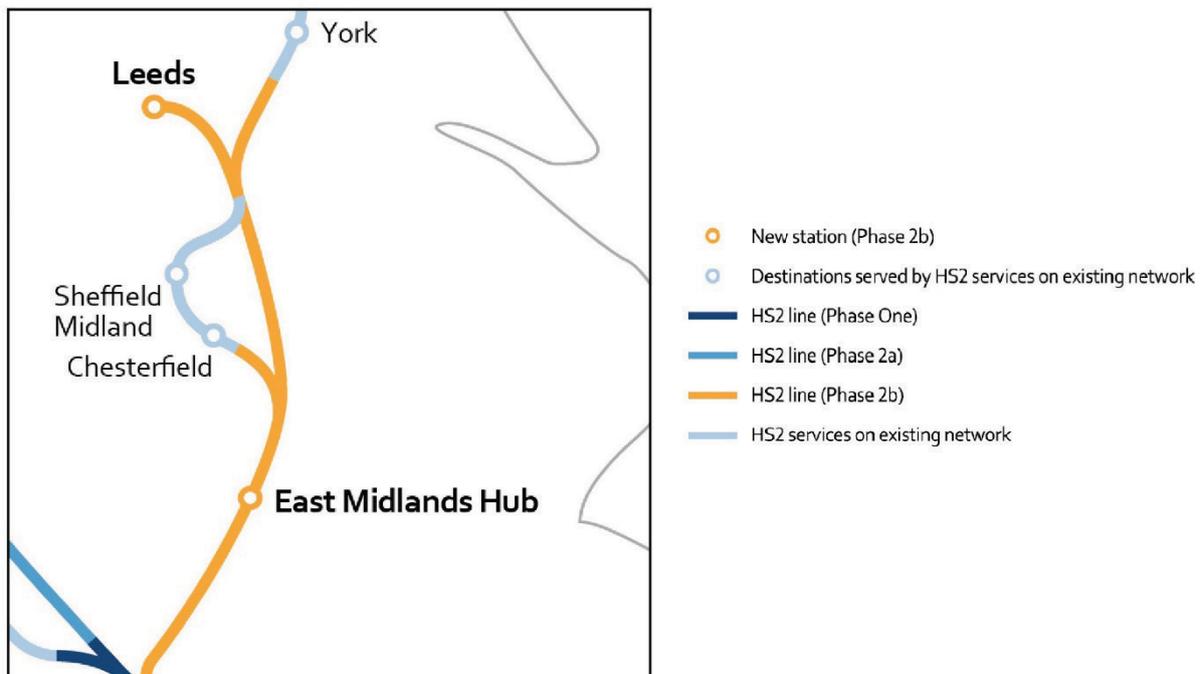


Figure 13 The Eastern Leg of Phase 2b

- 6.1 The preferred route for the Eastern Leg of Phase 2b has a total length of 123 miles (198 km). At its southern end it connects to the Phase One route at Marston in the West Midlands. At its northern end, the Eastern Leg joins the East Coast Main Line (ECML) via a connection at Church Fenton. The Eastern Leg includes a new station at Toton (East Midlands Hub) and a spur from the main line goes to a new station at Leeds. Sheffield city centre will be served by HS2 trains running into Sheffield Midland using a dedicated high speed spur and a junction at Clay Cross connecting to the existing network south of Chesterfield. The Secretary of State has proposed a junction between the existing network and the HS2 line north of Sheffield at Clayton to create a loop that would also allow faster journeys between Sheffield and Leeds. The Eastern Leg also includes an infrastructure maintenance depot (IMD) located at Staveley, and a rolling stock depot (RSD) at New Crofton, though HS2 Ltd is currently examining alternative locations for this depot.
- 6.2 The Secretary of State has issued safeguarding directions in respect of the whole Eastern Leg route to protect it from conflicting development, and launched further property compensation schemes to assist those living along the route (see Chapter 4).

- 6.3 Since the 2013-2014 public consultation⁴³ on the Phase Two route and stations (hereafter known as the 2013 consultation) a number of refinements have been made to the Eastern Leg route. The Secretary of State is today confirming the route and stations on the Eastern Leg, except for the following proposals which the Government is consulting on in order to inform a decision in 2017, that are to:
- Move the route to the east of Measham (Leicestershire)
 - Go round instead of under the East Midlands Airport
 - Lengthen the viaduct over the River Trent flood plain so that the line passes through Long Eaton either at a high level (up to around 16m) or an alternative option on an embankment at a lower level (around 4m)
 - Move the alignment of the route from Derbyshire to West Yorkshire to reflect a change in the proposals for serving the Sheffield City Region, as recommended by Sir David Higgins in his report *Sheffield and South Yorkshire*⁴⁴ (2016)
- 6.4 These proposals are discussed below and in more detail in the Route Refinement Consultation⁴⁵. A summary of other refinements to the Eastern Leg (which we are not consulting on) is at Annex E.
- 6.5 The stations are described at the current stage of design development. Working with local stakeholders, further development of the station designs will be carried out in preparation for a hybrid Bill. This will include looking at how wider development can contribute to station construction costs.

Leeds station

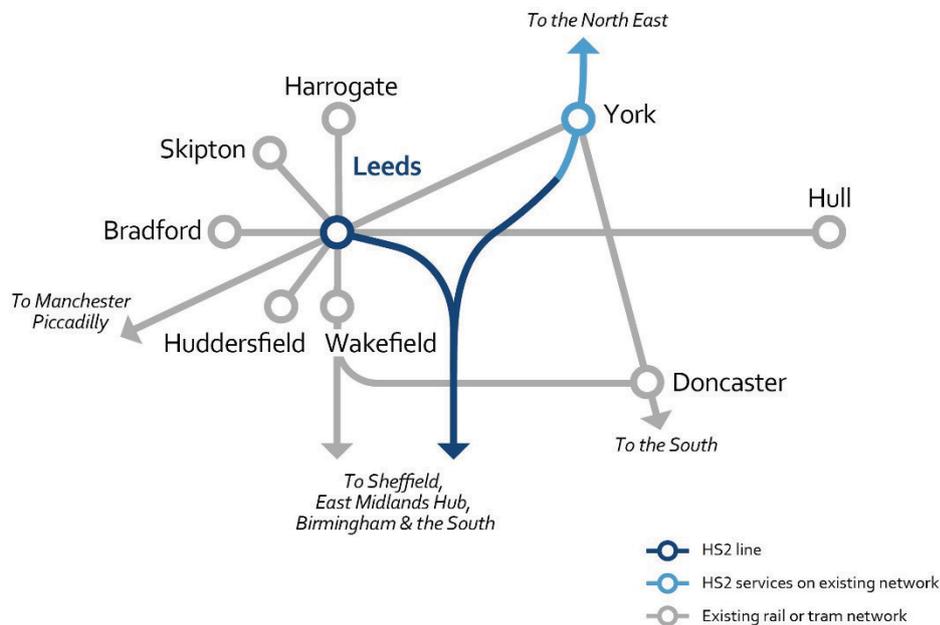


Figure 14 Leeds connectivity

- 6.6 The 2013 consultation proposed a city centre station in Leeds 500 metres south of the existing station. Responses from Leeds stakeholders to the 2013 consultation,

⁴³ <http://webarchive.nationalarchives.gov.uk/20141027142236/http://www.hs2.org.uk/phase-two/route-consultation/document-library/ajax/589/nojs>

⁴⁴ <https://www.gov.uk/government/publications/hs2-sheffield-and-south-yorkshire-report-2016>

⁴⁵ <https://www.gov.uk/government/collections/hs2-phase-two-from-the-west-midlands-to-leeds-and-manchester>

including local authorities and a report from the Leeds Chamber of Commerce, expressed dissatisfaction with the proposals as they did not feel sufficient weight had been given to the need for easy interchange with existing rail services across West Yorkshire. The Government therefore worked with stakeholders to develop an alternative proposal.

- 6.7 In *Yorkshire Hub*⁴⁶ (November 2015) Sir David Higgins recommend moving the HS2 station adjacent to the existing station, forming a T shape. This proposal was developed with input from Network Rail, Leeds City Council and the West Yorkshire Combined Authority.
- 6.8 Today the Government is confirming that Leeds will be served with the station configuration as proposed by Sir David Higgins, with a shared concourse connecting the existing station with the HS2 station. This proposal will create a seamless interchange between HS2 services, and local rail services to places such as Bradford, Wakefield, Huddersfield and Halifax, and potentially future NPR services.

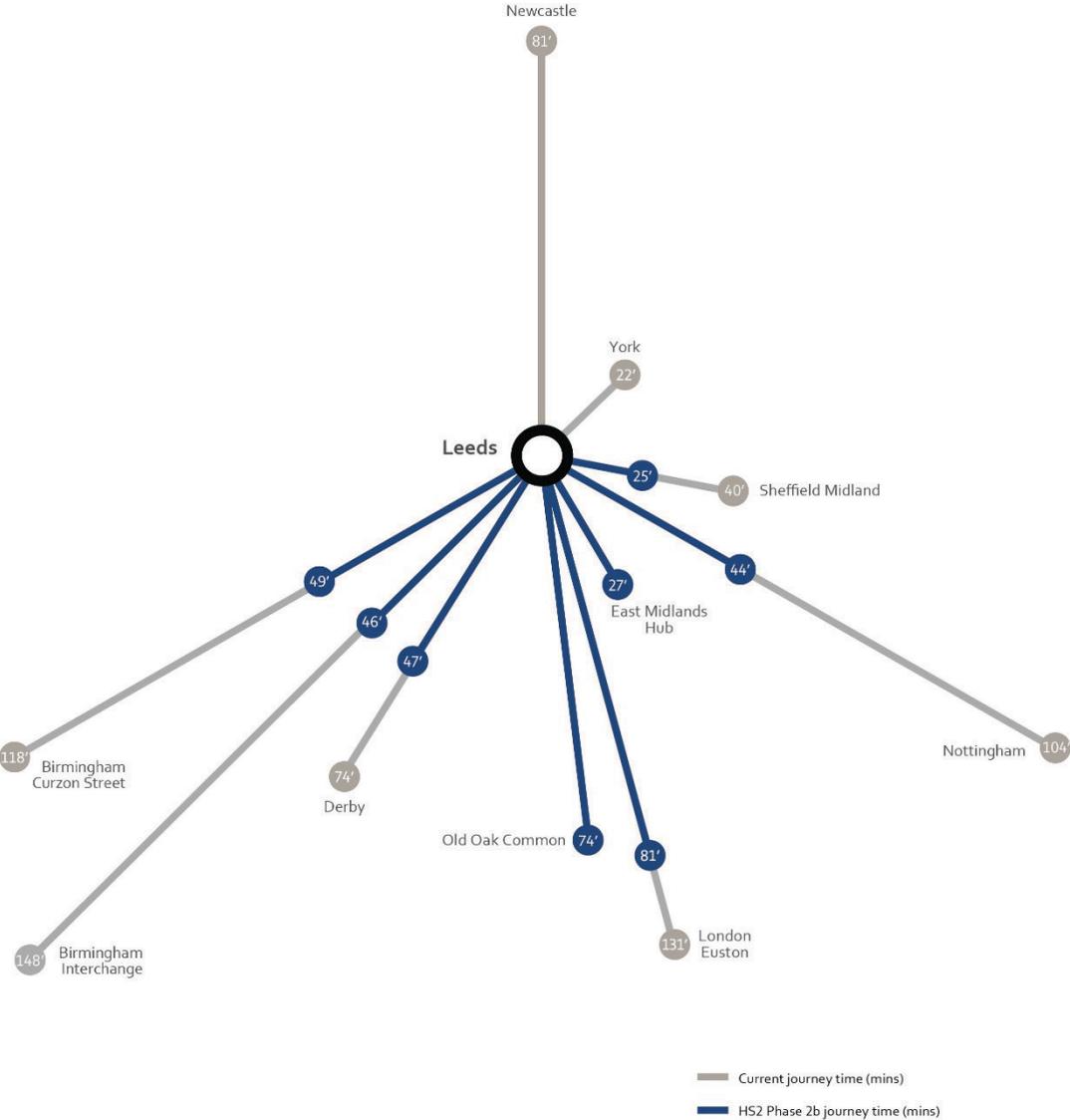


Figure 15 Leeds journey times⁴⁷

⁴⁶ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/480396/Higgins_-_The_Yorkshire_Hub.pdf
⁴⁷ Current journey times are fastest typical times. All HS2 journey times are current estimates showing fastest southbound times. Leeds to Sheffield HS2 time is an indicative estimate that may change significantly in subsequent analysis. Birmingham to Leeds HS2 journey time is for a service routed via the HS2 line, rather than the existing line into Sheffield Midland

- 6.9 HS2 will have a transformational effect on journey times, with journeys between Leeds and Birmingham taking just 49 minutes, compared to 1 hour 58 minutes currently, and between Leeds and London taking 1 hour 21 minutes, compared to 2 hours 11 minutes currently.
- 6.10 Leeds stakeholders are already planning how to make the most of this opportunity for local growth and regeneration, as well as improving existing station facilities. The T shaped station supports the Leeds Southbank and the Station Masterplan visions of regenerating the south side of Leeds, as one of the largest growth plans in Europe.
- 6.11 This work has been supported so far by £625,000 of UK Government HS2 Growth Strategy funding. Today we are confirming a further £625,000 funding, which will enable Leeds to continue to develop plans, bringing economic growth, improved access to transport and regeneration. We will work with local authorities to release these funds to provide support for this important work.
- 6.12 TfN is investigating how HS2 infrastructure could be used to support NPR aspirations for faster, more frequent train services between Leeds and other northern cities (see Chapter 8). TfN will publish their priorities for NPR in spring 2017. As a first step, the Secretary of State is minded to include a junction onto HS2 north of Sheffield in the Phase 2b hybrid Bill, subject to consultation, to allow fast services between Sheffield and Leeds, and this is discussed in greater detail below.

Approach to Leeds

- 6.13 The route proposed in the 2013 consultation approached Leeds with a viaduct over the River Aire flood plain that passed north of the village of Woodlesford. Responses to the Route Refinement Consultation raised concerns around the potential impact on the residents of Woodlesford and nearby roads, and on users of the Aire and Calder Navigation.
- 6.14 Today the Government is confirming that, after listening to consultation responses and considering alternatives to a viaduct, the route will now pass under Woodlesford in a tunnel, reducing the environmental and visual impact on Woodlesford and the Aire and Calder Navigation.

South Yorkshire

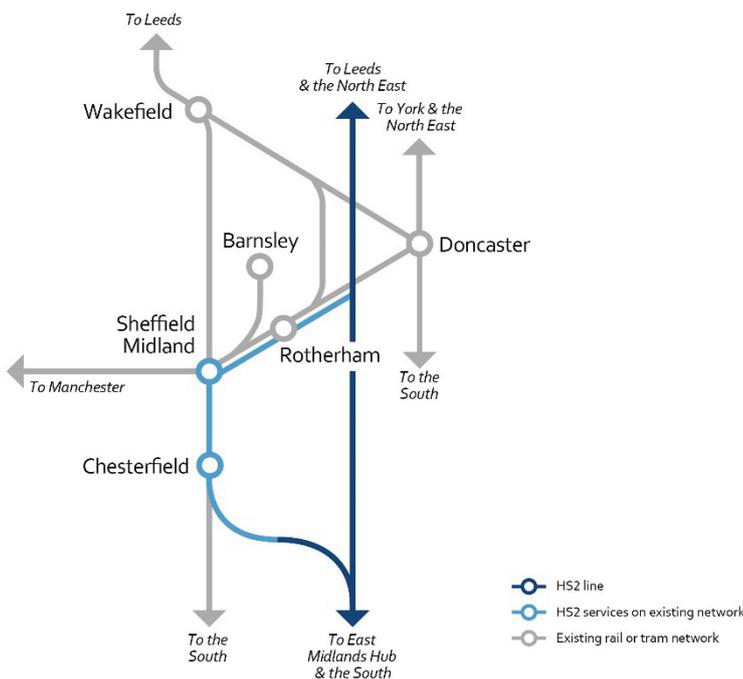


Figure 16 Sheffield Midland connectivity

- 6.15 The 2013 consultation proposed serving South Yorkshire with a route along the Rother Valley and a new HS2 station at Meadowhall, 6km from Sheffield City Centre.
- 6.16 Since the 2013 consultation, opinion amongst local stakeholders about the best location for a station has remained divided and no consensus has been reached. This has made the decision about how HS2 can best serve the region very challenging, and the factors around this decision are finely balanced.
- 6.17 In addition, there have been a number of new developments since 2013, including NPR's aspiration for fast and frequent services between city centres; increased concerns about congestion on the road network around Meadowhall and the associated impact on local air quality and the effect of the route proposed in 2013 on property and businesses near Meadowhall.
- 6.18 In light of these developments and the feedback received in response to the 2013 consultation HS2 Ltd continued to consider a range of options for how HS2 can best serve South Yorkshire, while maintaining the integrity of the service to the larger markets in Leeds, York and Newcastle. The five key factors that were considered when reviewing possible route options were:
- Demand – serving markets in South Yorkshire and further north
 - The needs of Sheffield and the wider City Region
 - Connectivity with existing rail, tram and the wider transport network
 - Topography, urban density, and the environment
 - Cost

6.19 As a result of this work, in *Sheffield and South Yorkshire*⁴⁸(July 2016) Sir David Higgins made the following recommendations:

- A 9.4 km southern spur at Stonebroom should be built off the HS2 mainline, enabling HS2 trains to run into Sheffield city centre along the existing rail network
- That the main north-south alignment should follow a more easterly alignment over some 70km between Derbyshire and West Yorkshire

6.20 Sir David Higgins also identified in his report the potential to create a connection back onto the HS2 mainline north of Sheffield and recommended that a study be undertaken to examine whether there is a case for a parkway station on the newly proposed route.

6.21 Since then we have undertaken further detailed work regarding the above recommendations. The Secretary of State is minded to accept them as the Government's preferred option and is seeking views on this option (instead of the original Meadowhall option) in the Route Refinement Consultation launched today, because this option:

- Provides direct access into Sheffield city centre: previous work by HS2 Ltd was unable to identify an affordable way in which high speed lines could be built into the city centre. Delivering HS2 services from high speed lines onto the existing railway to Sheffield Midland overcomes these issues
- Has the ability to serve additional markets: the southern connection provides the opportunity to provide a new HS2 service at Chesterfield
- Reflects the regional demand picture: enables areas where there are higher levels of demand for long distance rail journeys to be better served, particularly south west Sheffield and Chesterfield
- Whilst not as close to Barnsley and Rotherham it continues to allow for good access to HS2 from there via a change at Sheffield Midland
- Reduces the line of route impacts: the mainline would avoid much of the challenging topography, mining risk and densely populated urban areas associated with the Meadowhall route; resulting in fewer direct property demolitions. It also has less interference with watercourses and provides an overall reduction in anticipated noise impacts
- Reduces capital costs: provides a cost saving in the region of £1bn including contingency (whilst providing for a northern junction at Clayton)
- Improves journey times to Sheffield City Centre: provides a journey time saving to larger markets further North, including Leeds, York and Newcastle. This improves the overall business case for Phase Two
- Has the potential to meet Transport for the North's aspirations for city centre to city centre connectivity if a link on to the HS2 line north of Sheffield was to be built, thereby providing a high speed link to Leeds and destinations to the north

6.22 HS2 will have a transformational effect on journey times, with journeys between Sheffield Midland and Birmingham taking 48 minutes, compared to 1 hour 3 minutes currently, and between Sheffield Midland and London taking 1 hour 25 minutes, compared to 2 hours 1 minute currently.

⁴⁸ <https://www.gov.uk/government/publications/hs2-sheffield-and-south-yorkshire-report-2016>

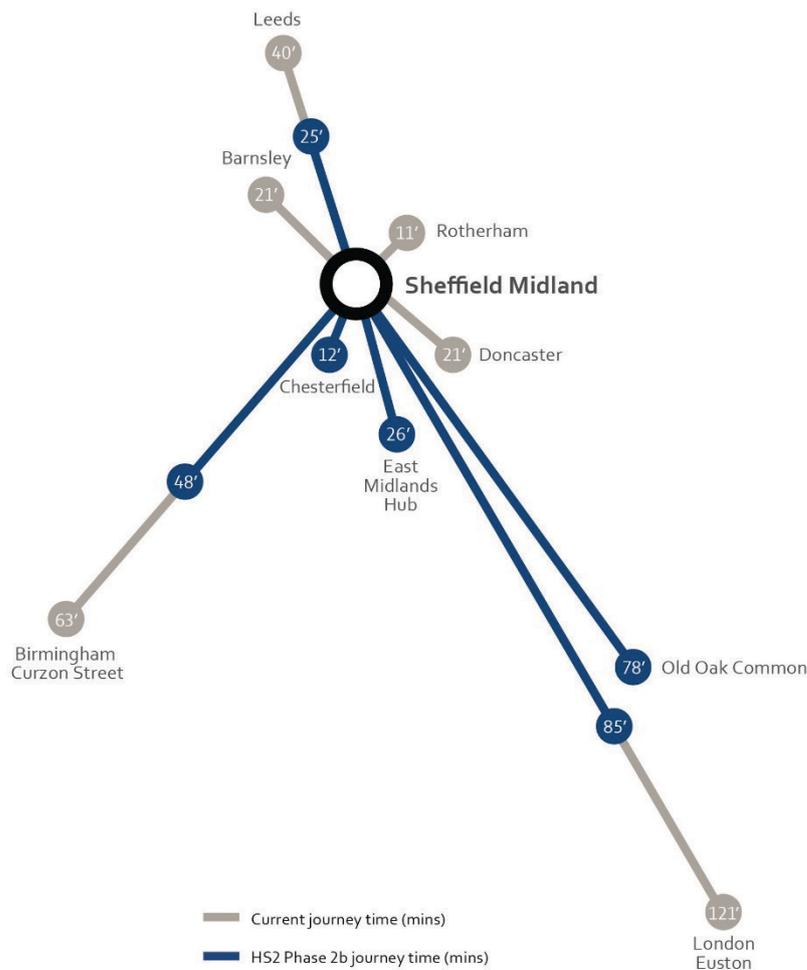


Figure 17 Sheffield Midland journey times⁴⁹

- 6.23 Building a northern connection would result in Sheffield being served by a 'loop' rather than a 'spur', enabling services stopping at Sheffield Midland to continue onto destinations further north. This connection could allow journeys between Sheffield and Leeds of 25 minutes, within TfN's ambition of 30 minutes.
- 6.24 The Secretary of State is minded to include a junction in the ongoing development of the HS2 scheme (with provision made in the Phase 2b hybrid Bill) and is seeking views on this in the Route Refinement Consultation launched today. Provision for a junction is made within the existing HS2 budget. To complete the loop, improvements including the electrification of the railway north of Sheffield to the junction would be needed. Funding for this will be considered as part of TfN's work and future Network Rail investment plans.
- 6.25 With regards to the recommendation of a parkway station study, HS2 Ltd is now undertaking work with local stakeholders across the city region including Barnsley, Doncaster and Rotherham to examine whether there is a case for constructing such a station and how best to serve demand in the wider city region. The study will also include examining the potential to extend terminating services beyond Sheffield Midland to Meadowhall, Barnsley or Rotherham.

⁴⁹ Current journey times are fastest typical times. All HS2 journey times are current estimates showing fastest southbound times. Leeds to Sheffield HS2 time and Birmingham to Sheffield HS2 time are indicative estimates that may change significantly in subsequent analysis.

6.26 We look forward to the results of this work which is due to conclude in spring next year. Alongside the Route Refinement Consultation this will be used to inform a decision on HS2 in South Yorkshire in 2017.

6.27 The Secretary of State is today confirming that £625,000 of UK Government HS2 Growth Strategy funding has been made available for the Sheffield City Region Local Enterprise Partnership so they can develop a plan to maximise the benefits of HS2 in their area. The Government plans to make a further £625,000 available following confirmation of the route in South Yorkshire next year. We will work with local authorities to release these funds to provide support for this important work.

East Midlands Hub station

6.28 The East Midlands Hub station will be constructed at Toton. The station will be a new development, using existing railway land to the south-west of Nottingham. The Toton site is alongside an existing rail freight yard, north of Long Eaton, just over a mile from Junction 25 of the M1, between Nottingham and Derby. The design includes four high speed platforms and four platforms for conventional services allowing connections to Nottingham, Leicester and Derby. There will also be two fast lines through the middle of the station for non-stopping services. The platforms will be at ground level, with the station entrance and forecourt located above and to the east.



Figure 18 East Midlands Hub connectivity

6.29 Having considered alternatives, the Government has chosen this site as it is 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. This site is supported by a clear consensus amongst local stakeholders.

6.30 HS2 will have a transformational effect on journey times, with journeys between the East Midlands and Birmingham taking just 20 minutes, and between East Midlands and London taking 52 minutes.

6.31 East Midlands stakeholders are working to maximise the development and regeneration benefits of HS2 in the area supported so far by £625,000 of UK Government HS2 Growth Strategy funding. They have made significant progress developing an East Midlands growth strategy which brings together the Toton Hub Station Area Plan, work by Ekosgen to identify opportunities for international universities, housing and local business, and work to develop employment and skills opportunities in the area. We are today confirming a further £625,000 to support this important work. We will work with local authorities to release these funds.

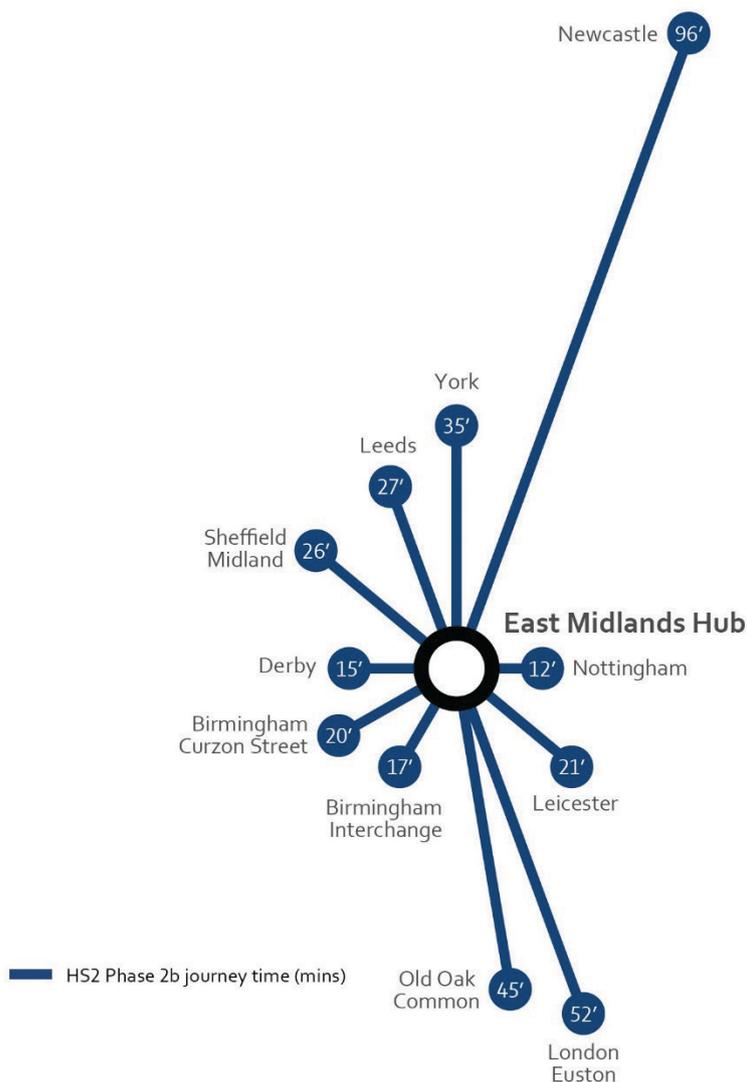


Figure 19 East Midlands Hub journey times⁵⁰

6.32 Work is also continuing to ensure that the East Midlands Hub is well connected to the city centres of Nottingham and Derby, and to ensure that locations in the wider region such as Leicester are properly served in support of the Midlands Engine agenda. Network Rail is working with local stakeholders on developing options for rail

⁵⁰ Current journey times are fastest typical times. All HS2 journey times are current estimates showing fastest southbound times. Leeds to Sheffield HS2 time and Birmingham to Sheffield HS2 time are indicative estimates that may change significantly in subsequent analysis.

connectivity to Toton. Local authorities are also considering road, bus and tram access to the main cities and East Midlands Airport.

East Midlands Hub approach

- 6.33 The route proposed in the 2013 consultation crosses the River Soar and River Trent on two viaducts before running at ground level through Long Eaton using the existing rail corridor on the approach to the East Midlands Hub station at Toton. The existing high level rail line through Long Eaton was proposed to be widened for use by conventional rail services.
- 6.34 Responses to the 2013 consultation highlighted concerns over the impact of this proposal on the local road network and community severance (when settlements are divided by the route, leaving some people separated from certain community facilities).
- 6.35 In addition, further work has been undertaken to better understand the wider rail network through this area, which highlighted that the 2013 proposal would mean substantial work on both of the existing rail corridors through Long Eaton, with construction and disruption impacts being spread more widely than the HS2 corridor alone.
- 6.36 As a result, the Secretary of State is considering two alternative options for the route as it passes through Long Eaton and is seeking views on these proposals in the Route Refinement Consultation. Both options would be immediately adjacent to the existing low-level rail corridor on the eastern side through Long Eaton but at different heights. The two options are to:
- Either lengthen the viaduct over the River Trent flood plain so that the line passes through Long Eaton at a high level (up to around 16m). This reduces the impact on local roads, although the visual impact is greater
 - Or, an alternative option where, after crossing the River Trent floodplain on a shorter viaduct, the route passes through Long Eaton on a lower viaduct and embankment (around 4m)

Responses to the Route Refinement Consultation will help to inform the Secretary of State's decision between these options in 2017.

New Crofton Depot

- 6.37 During the 2013 consultation we proposed that a rolling stock depot should be sited at New Crofton, as this site was a good fit with the engineering design requirements. This would now be served from the east, rather than the west, but is otherwise in the same general location, with a slight westward shift since the 2013 consultation.
- 6.38 In response to concerns raised by the local community during recent engagement activities, HS2 Ltd are considering a number of alternative locations for the depot. and we are confident that some of these may be viable alternatives for the Secretary of State to consider. The Government will update on the location for the depot in 2017 as part of the response to the Route Refinement Consultation launched today.

Other Route Refinements

6.39 Two other substantial refinements, which the Government is consulting on are to:

- Move the route to the south-east of Measham to avoid some of the significant impacts on the town, an existing business park and a significant development site. Although this route avoids many of the impacts on Measham itself, there will be some new impacts on areas to the south and east which will need continued consideration on how best to minimise
- Avoid the impacts in the area of Tonge, and the need to tunnel under the East Midlands Airport by following a route near to the east of the A42, and M1

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

6.40 The Secretary of State has confirmed the connection to the East Coast Main Line (ECML) at Church Fenton, east of Leeds. This link will help ensure that the Eastern Leg is fully integrated into the wider rail network. On current plans the link will be used by direct HS2 services to York, Darlington, Durham and Newcastle from both Birmingham and London.

6.41 HS2 will have a transformational effect on journey times, with journeys between Newcastle and Birmingham taking 1 hour 58 minutes, compared to 3 hours 15 minutes currently, and between Newcastle and London taking 2 hours 17 minutes, compared to 2 hours 49 minutes currently.

6.42 In response to concerns raised in the 2013 consultation, we considered alternatives to the Church Fenton link. This work demonstrated that the viable alternative connections would simply transfer impacts to a new area of the route, rather than delivering an overall reduction, and potentially result in longer journey times or greater complexities in integrating with the existing network.

6.43 We have therefore not moved the link. However, we have combined four short sections of viaduct in this area. Further information on the refinement to the route in this area is available in the Summary of Route Refinements⁵¹ report published today. We will continue to develop the design in preparing a hybrid Bill.

6.44 As we develop the scheme, we will continue to work with Network Rail to ensure that the additional services that HS2 proposes can be accommodated on the existing network north of Church Fenton.

6.45 TfN is investigating how HS2 could be used to support Northern Powerhouse Rail aspirations for faster, more frequent train services between northern cities, including using the Church Fenton link for services to Newcastle. TfN will publish their priorities for NPR in spring 2017.

⁵¹ <https://www.gov.uk/government/collections/hs2-phase-two-from-the-west-midlands-to-leeds-and-manchester>

Section 3: Wider connectivity and the next steps

In this section of the Command Paper we set out how HS2 will serve Scotland, how it will help create the Northern Powerhouse, and the next steps for the project.

7. HS2 and wider connectivity

- 7.1 HS2 is not a separate, standalone railway; it is an integral part of our nation's future rail network and overall transport infrastructure.
- 7.2 HS2 links to the existing network through stations, where passengers can interchange to a huge number of destinations across the country, and junctions which will allow us to provide direct services to more places.
- 7.3 In developing the business case we have started to consider the kinds of services HS2 might offer, and this is something we will build on. However, there are already some clear opportunities for places far beyond the HS2 line of route.

Scotland

- 7.4 Scotland will be part of the HS2 network from day one, with HS2 trains serving Glasgow on the West Coast Main Line (WCML). HS2 will have a transformational effect on journey times. As currently planned Phase One will see journeys between Glasgow and London fall below four hours for the first time, taking 3 hours 56 minutes compared to 4 hours 31 minutes currently.
- 7.5 The completion of the full Y network will reduce journey times between London and Glasgow even further to 3 hrs 40 minutes. It will also allow HS2 trains to serve Edinburgh as well, meaning journeys between London and Edinburgh take 3 hours 40 minutes, compared to 4 hours 22 currently.
- 7.6 HS2 will benefit the Scottish economy by over £5 billion. Phase 2b is central to the UK and Scottish Government's shared ultimate ambition of 3 hour rail journeys between London and Scotland's Central Belt. In order to understand how we can build on HS2 towards this ambition, the Department for Transport (DfT) and Transport Scotland have been working closely together and commissioned HS2 Ltd to study options for improving journey times north of the core HS2 network.
- 7.7 This work was set out in *Broad options for upgraded and high speed railways to the North of England and Scotland*⁵²(March 2016). The options studied include upgrades within the footprint of the existing railway, high speed bypasses of constrained sections and full high speed routes running north from HS2. The report did not recommend any particular option, or suggest whether interventions on the East or the West were preferable, nor did it consider the benefits or business cases of different options.
- 7.8 The report was welcomed by both the UK Government and the Scottish Government with a joint commitment for DfT and Transport Scotland to work with Network Rail to identify any and all options (whether on the east or the west) with strong business cases that can improve journey times, capacity, resilience and reliability on routes between England and Scotland, for consideration for implementation between 2019

⁵² <https://www.gov.uk/government/publications/broad-options-for-upgraded-and-high-speed-railways-to-the-north-of-england-and-scotland>

and 2029. This work is underway and decisions will be taken as part of the normal rail network planning cycle.

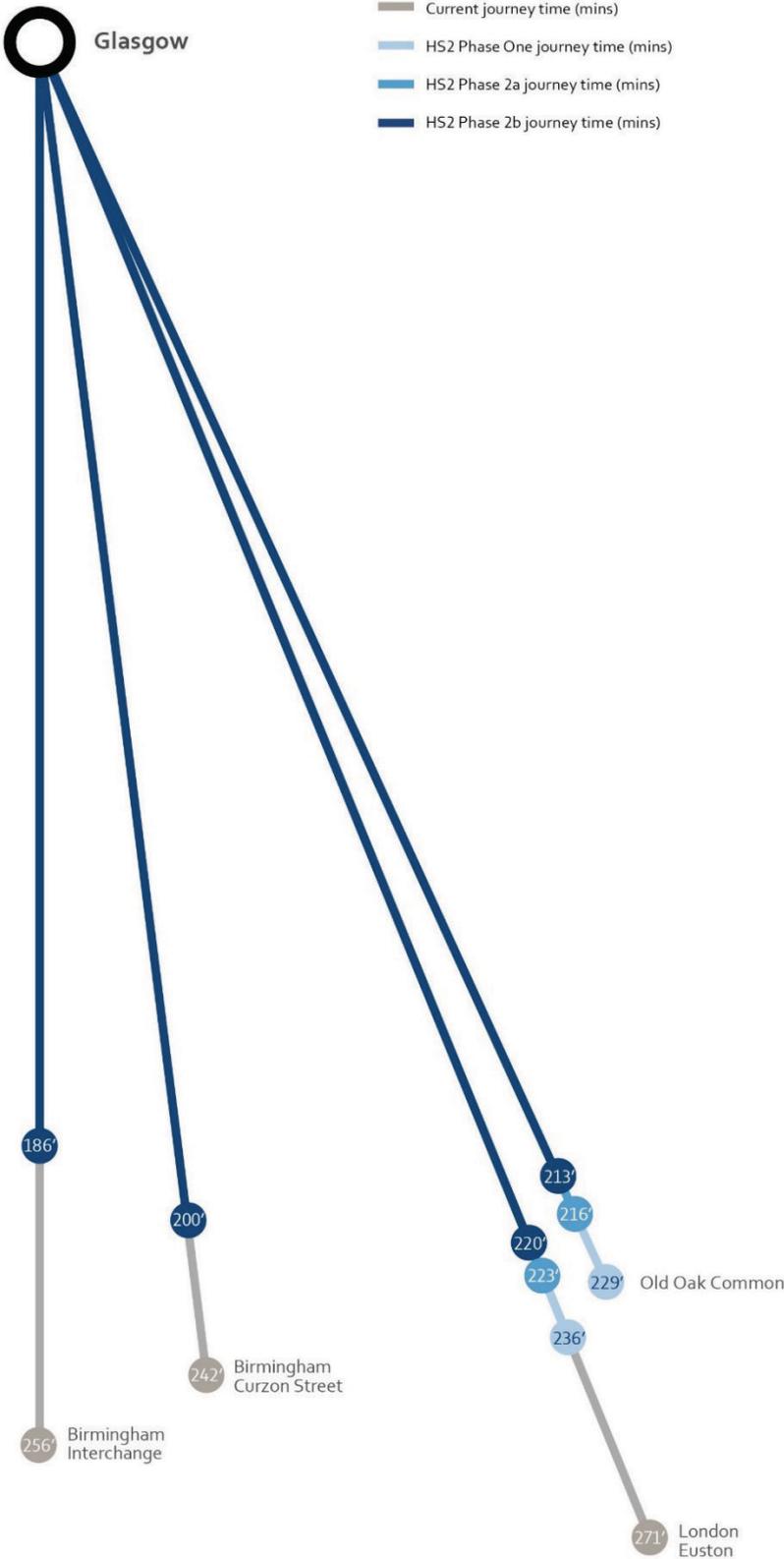


Figure 20 Glasgow journey times⁵³

⁵³ Current journey times are fastest typical times. All HS2 journey times are current estimates showing fastest southbound times. Since the Phase 2a route decision in November 2015 the estimated Phase 2b journey time for Glasgow has increased by two minutes. This is due to refinements to the Western Leg route in response to the 2013 consultation.

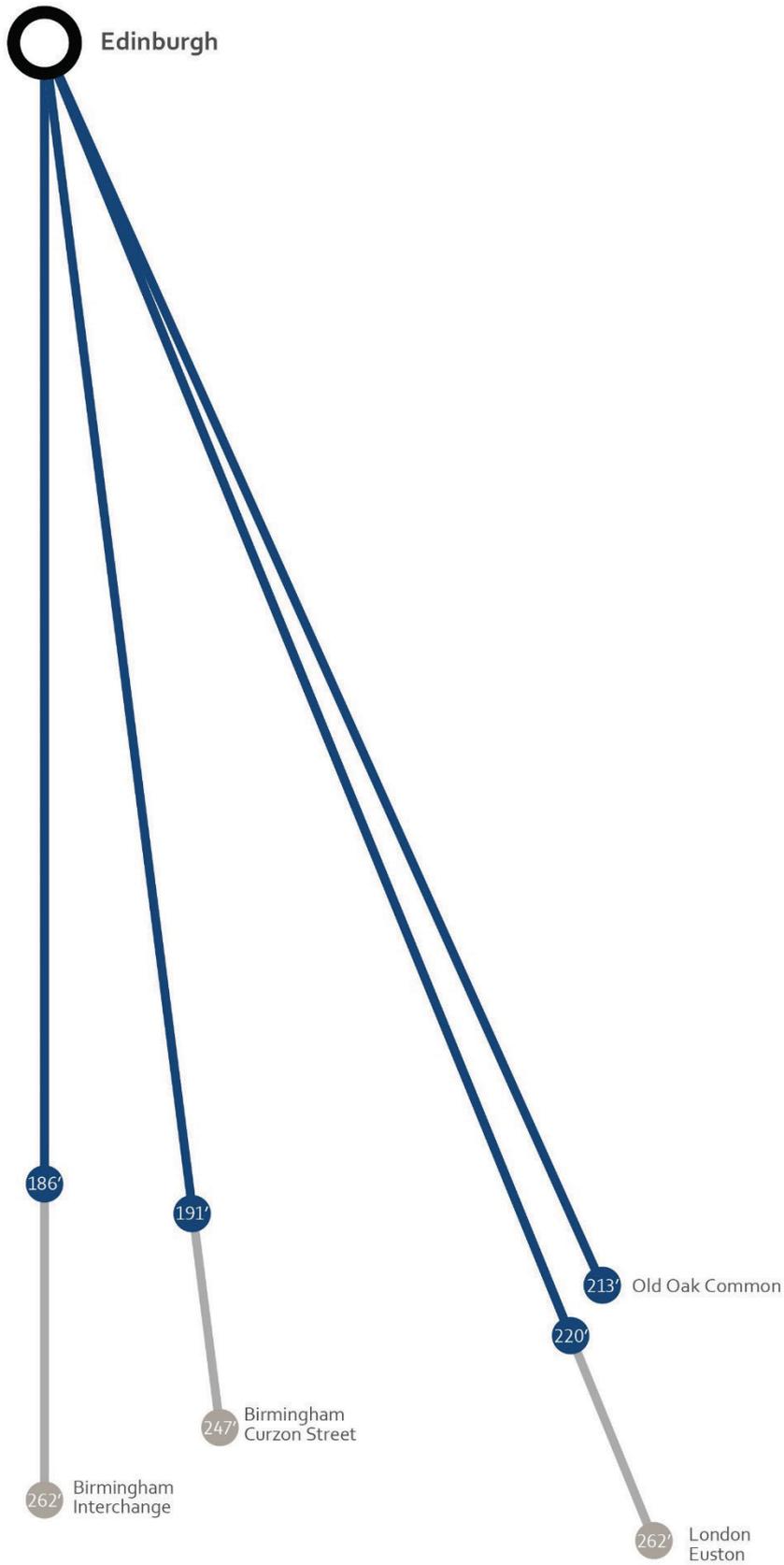


Figure 21 Edinburgh journey time⁵⁴

⁵⁴ Current journey times are fastest typical times. All HS2 journey times are current estimates showing fastest southbound times. Times are shown for Edinburgh Haymarket. Since the Phase 2a route decision in November 2015 the estimated Phase 2b journey time for Edinburgh has increased by one minute. This is due to refinements to the Western Leg route in response to the 2013 consultation.

Connections to the existing network

- 7.9 Phase One of HS2 will include a connection to the existing network at Handsacre allowing trains to serve destinations along the WCML and beyond from 2026. Phase 2a will introduce another junction with the WCML south of Crewe in 2027, further reducing journey times.
- 7.10 Our plans for the full Y network with Phase 2b will introduce further junctions at Golborne, Church Fenton, Clayton and Clay Cross in 2033 with a possible further junction north of Crewe under consideration as part of the Crewe Hub.
- 7.11 Taken together these junctions create the opportunity for significant integration of the national and HS2 networks, supporting the aim of an integrated network set out by Sir David Higgins in *HS2 Plus* (March 2014).
- 7.12 Ongoing development work, including that as part of the Northern Powerhouse Rail programme, has identified a number of possible additional junctions that could be included in the design of Phase 2b.
- 7.13 Whilst further junctions offer significant flexibility to the system to meet new and emerging passenger demands, they also may impact on programme cost, schedule and operational reliability. The business case for new junctions requires a clear view of the additional services that would likely be run.
- 7.14 The Government therefore intends to take a system-wide approach to the consideration of further junctions and will provide an update on this work in 2017.
- 7.15 Given our focus on delivering HS2 to budget we do not expect to be able to extend the scope of the programme further within the funding envelope, and hence consideration of additional junctions will also need to take into account sources of funding.

Airport connectivity

- 7.16 HS2 will play an important role in improving access to major and regional airports across the UK.

From 2026:

- Old Oak Common will allow HS2 passengers to connect to frequent direct rail services to Heathrow Airport. The station will be served by direct trains from all HS2 destinations, providing faster and easier access to Heathrow from across the Midlands and the North. As proposed, HS2 will reduce the journey time from central Birmingham to Heathrow from approximately two hours now to around one hour
- Birmingham Interchange will use a high capacity people mover to provide passenger access from the station to the National Exhibition Centre (1.5km), Birmingham International station (1.9km) and Birmingham Airport terminal (2.3km). The journey from Interchange station to the Birmingham Airport will take approximately six minutes

From 2033:

- Manchester Airport station will allow passengers from Birmingham and London fast and frequent access to the Airport. Transport for Greater Manchester recognise the value of this station for air passengers and said in their draft

Transport Strategy 2040^[2] (2016) “HS2 and Northern Powerhouse Rail proposals will transform rail connectivity to the Airport from across the North of England and the UK, unlocking new jobs and productivity growth”

- East Midlands local authorities are considering options for direct links to East Midlands Airport (EMA) from the East Midlands Hub at Toton

7.17 DfT and HS2 Ltd are working closely with airport operators, local authorities, Local Enterprise Partnerships, Highways England and Network Rail to ensure as the scheme develops that the opportunities for airport access are fully realised.

Released capacity

7.18 As set out in Chapter One, 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.

7.19 The released capacity provides options for possible services to towns which currently do not have a direct connection to London. There may also be options for cross-country, commuter and freight services as well. Our economic modelling makes assumptions about how released capacity be used. For example this capacity could be used for more frequent commuter services from Milton Keynes, Rugby and Peterborough.

7.20 At this stage, no decisions have been taken on the introduction of these new services, but the Government will continue to consider the possible options. We will build an open and shared evidence base, consult passengers, communities and freight users, establish options and take decisions ahead of introduction of a new timetable when HS2 opens.

^[2] <http://www.tfgm.com/2040/Pages/strategy/assets/Greater-Manchester-Transport-Strategy-2040-Consultation-Draft.pdf>

8. HS2 and the Northern Powerhouse

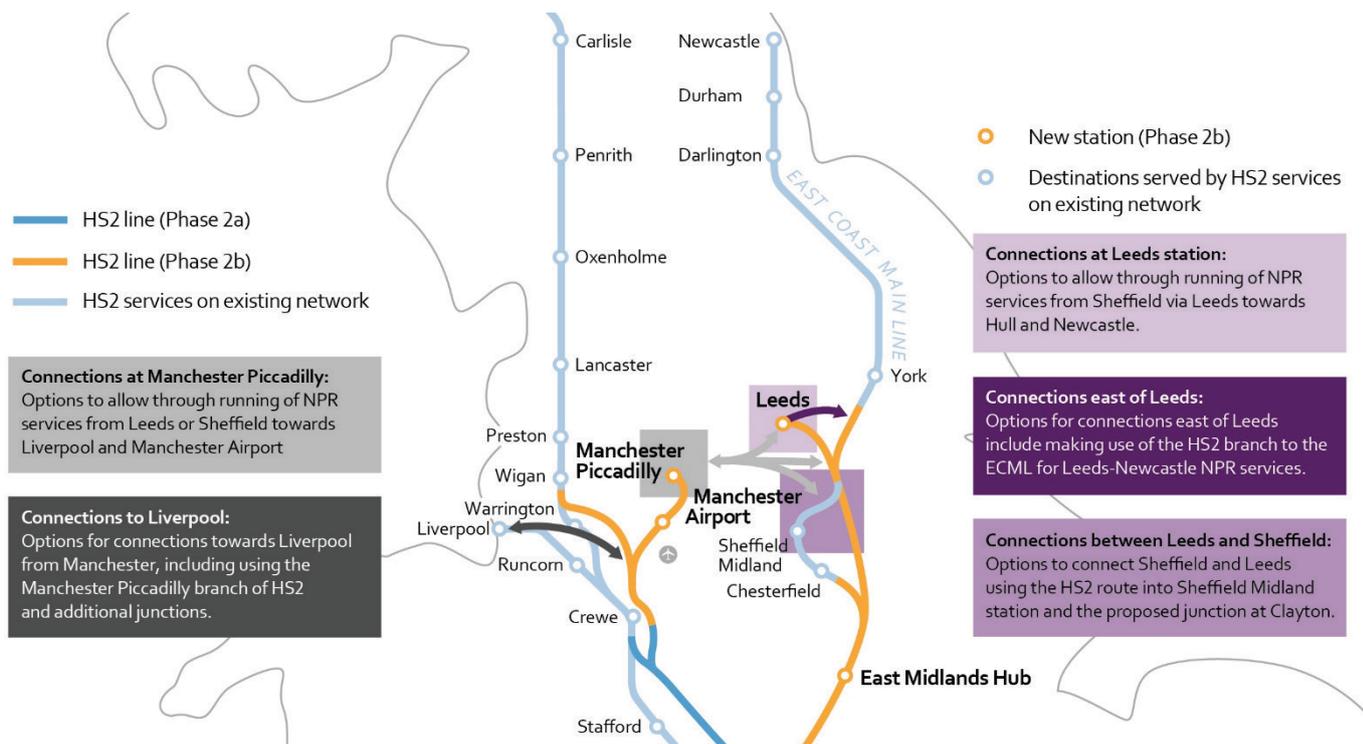


Figure 22 Options for using HS2 to support Northern Powerhouse Rail

- 8.1 Better transport is vital for building the Northern Powerhouse, a vibrant and growing economy that builds on existing strengths, attracts and retains the brightest and best talent, draws investment and promotes innovation.
- 8.2 Northern Powerhouse Rail (NPR) is Transport for the North's (TfN) and the Government's vision for a faster, more frequent, more reliable rail network across the North. Rail is the best way to move large numbers of people quickly and easily to and from work, and to facilitate quick business-to-business travel. A world-class rail network with smart tickets and simpler fares will make journeys faster, easier and less crowded, helping economic growth in the North.
- 8.3 In *High Speed North*⁵⁵ (March 2016) the National Infrastructure Commission (NIC) recognised that realising the Northern Powerhouse vision was contingent on delivering transformational improvements to transport and to rail in particular, and made a number of specific recommendations to support its development. The NIC noted that NPR should maximise the benefits of the investments in HS2, the TransPennine Route Upgrade, and the TransPennine Express and Northern Franchises. Considerable progress has been made in developing Phase 2b of HS2 to support TfN's aspiration of better connectivity between cities across the North.

⁵⁵ <https://www.gov.uk/government/publications/high-speed-north-a-national-infrastructure-commission-report>

- 8.4 Commitment to Phase 2b provides a much-needed step towards certainty for investors and communities alike. This, together with an ambitious timetable for delivery, is crucial to realisation of TfN's ambitions.
- 8.5 A range of options, from entirely new lines to major upgrades of existing routes, such as major bypasses and cut-offs are under development and we expect TfN to set out their priorities for NPR in spring 2017.

Sheffield - Leeds

- 8.6 As set out in Chapter 6, the Secretary of State's preferred route includes a spur off the HS2 mainline to the south of Sheffield, enabling HS2 trains to run into Sheffield city centre on the existing rail network. Building a connection north of Sheffield Midland would result in Sheffield being served by a "loop" and create the opportunity to connect Sheffield city centre with Leeds, York and Newcastle. This connection could be the first step in delivering a Northern Powerhouse network, with journeys between Sheffield and Leeds of around 25 minutes, within the TfN aspiration of 30 minutes. TfN agrees that such a proposal would form an excellent opportunity to provide services from Sheffield city centre to Leeds city centre. By serving Sheffield Midland station (rather than the previously proposed Meadowhall site) HS2 also reflects the NPR ambition to improve connectivity directly into Northern city centres.
- 8.7 The Secretary of State is minded to include a junction off HS2 north of Sheffield in the ongoing development of the HS2 scheme and is seeking views on this in the Route Refinement Consultation⁵⁶ launched today.

East of Leeds

- 8.8 TfN and HS2 Ltd are also examining options to create a new connection for services travelling north from Sheffield to serve York, Newcastle and Hull via Leeds station. Other options HS2 Ltd has examined on behalf of TfN include the use of the Church Fenton link to create an HS2 link as a fast alternative to the existing railway from Leeds onto the East Coast Main Line.

Liverpool - Manchester

- 8.9 NPR aspirations for better services between Liverpool and Manchester could be met with a range of options. These options include new lines and upgrading existing lines. TfN has examined two options that make use of HS2 to connect Manchester and Liverpool. Both options involve construction of a new line to Liverpool, and a junction onto the HS2 route. Under these options it would be possible to deliver NPR's ambitions for a 30 minute journey between Manchester and Liverpool, connecting the cities via Manchester Airport.
- 8.10 We will continue to work with TfN to plan how HS2 may best complement the development of future NPR services into and through Manchester, including through the provision of an integrated station solution.

Stations

- 8.11 Integrating NPR and HS2 stations represents both an opportunity and a challenge. There is strong local aspiration for NPR services into, and through, Manchester to serve Manchester Piccadilly so that interchange can be made easily with HS2. At this early stage in the development of NPR, TfN and the Government are rightly considering a range of options that meet the ambition for NPR in Manchester.

⁵⁶ <https://www.gov.uk/government/collections/hs2-phase-two-from-the-west-midlands-to-leeds-and-manchester>

- 8.12 At Manchester Airport HS2 is working with local stakeholders to design the HS2 station so that it is well integrated into the transport networks that service the airport, as under some options that station could become a part of the NPR network.
- 8.13 Leeds City Council and West Yorkshire Combined Authority, with TfN and the Government, are working to integrate the plans for Leeds Station with NPR. Compared to the Leeds HS2 station proposed in the 2013 consultation, the current proposal better integrates HS2 into the city centre and the existing rail station, enabling easy interchanges onto current rail services across West Yorkshire and future NPR services.
- 8.14 As noted Sheffield Midland will be served by HS2 services, and as noted in Chapter 6 we have begun work on a study to examine the potential for a parkway station in Yorkshire, as well as whether HS2 services between Sheffield Midland and London can also serve Rotherham, Barnsley or Meadowhall.

Planning Northern Powerhouse Rail

- 8.15 TfN will publish their priorities for Northern Powerhouse Rail in spring 2017. TfN are working with DfT, Network Rail and HS2 Ltd to prepare, by the end of 2017, a single integrated strategy that supports NPR and brings together the upgrade of the Trans-Pennine line between Manchester and Leeds, the significant investment already committed in the North, including the new Northern and Trans Pennine rail franchises, the design of the northern phase of the HS2 network, including connectivity to Sheffield and Liverpool and proposals for the redevelopment of Manchester Piccadilly station.
- 8.16 This strategy will enable government to consider how we can develop and future-proof HS2 for the provision of NPR infrastructure. Where necessary, we will include passive provision for NPR services in the Phase 2b hybrid Bill, subject to agreement of funding and the supporting business case.

9. Next steps

- 9.1 The Government has a clear plan to deliver an affordable, value for money, innovative and high performing railway, fit for the long term future of this country.
- 9.2 The next steps are to:
- Continue to work with communities and stakeholders to inform a decision in 2017 on those areas of the Phase 2b route where we are consulting
 - Begin construction of Phase One 2017
 - Update on plans for Crewe in 2017
 - Set out Transport for the North's priorities for Northern Powerhouse Rail in spring 2017, and produce a single integrated strategy by the end of 2017
 - Begin procurement of rolling stock for Phase One by March 2017 with contracts issued by the close of 2019
 - Deposit a hybrid bill for Phase 2a by the end 2017
 - Deposit a hybrid bill for Phase 2b by the end of 2019
 - Open Phase One in 2026, Phase 2a in 2027, and the full HS2 scheme in 2033
- 9.3 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: List of supporting documents

- **The Strategic Outline Business Case for HS2 Phase 2b**

A five part business case for Phase 2b of HS2 produced in line with HM Treasury Green Book guidelines. This stage of developing a major project outlines the high level outcomes the project intends to deliver. It consists of the following documents:

- **Strategic Case:** sets out the need for Phase 2b and how it helps deliver the Government aims and objectives
- **Economic Case:** sets out the value for money assessment of Phase 2b
- **Commercial Case:** sets out the resource requirements for completing the full HS2 Y network and how HS2 Ltd will manage the programme of works for the project
- **Management Case:** sets out the management systems and procedures for the project
- **Financial Case:** sets out the funding and affordability for Phase 2b

- **HS2 Crewe to Manchester, West Midlands to Leeds: Route Refinement Consultation 2016**

Following the previous public consultation in 2013 HS2 Ltd has recommended a number of refinements to the route. In seven areas where the proposed refinements are substantial the Secretary of State is launching a further consultation to seek the views of communities and other interested parties. The Secretary of State intends to confirm the full Phase 2b route after considering responses to this consultation in 2017

- **High Speed Rail: Phase 2b Preferred Route, Sustainability Statement including Post Consultation Update - Volume 1: Main report of the Appraisal of Sustainability**

This document sets out an assessment of the environmental impacts of HS2 Phase 2b. It builds on the work published in support of the 2013 consultation on Phase Two and the 2015 Phase 2a route decision

- **Strategic alternatives to HS2 Phase 2b**

A report by Atkins assessing alternatives to constructing Phase 2b

- **Crewe to Manchester Route Engineering Report and West Midlands to Leeds Route Engineering Report**

Reports that set out the current engineering design for Phase 2b of HS2

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

This independent report by Ipsos MORI analyses the 2013 Phase Two consultation process and provides a summary of the issues raised as part of the consultation on the full Phase Two route

- **Property Consultation 2016 for Phase 2b**

This consultation document provides an overview of the statutory compensation that will be available to owner-occupiers affected by HS2 Phase 2b, as well as the proposed discretionary schemes

- **HS2: Sheffield and South Yorkshire Report 2016**

In this report, Sir David Higgins analyses the different options for HS2 services in South Yorkshire, and makes a recommendation about how to build and run HS2 in the area

- **Summary of route refinements**

A summary of the development of the Phase 2b scheme and refinements to the route since the 2013 consultation

- **Plan and profile mapping**

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

Annex B: List of figures

Figure 1: HS2: The Case for Action

Figure 2: The Y Network

Figure 3: Journey times between London and major economic centres

Figure 4: Journey times between the Midlands and the North with HS2

Figure 5: Phase 2b

Figure 6: The Western Leg of Phase 2b

Figure 7: Manchester Piccadilly connectivity

Figure 8: Manchester Piccadilly journey times

Figure 9: Manchester Airport journey times

Figure 10: Liverpool journey times

Figure 11: Crewe connectivity

Figure 12: Crewe journey times

Figure 13: The Eastern Leg of Phase 2b

Figure 14: Leeds connectivity

Figure 15: Leeds journey times

Figure 16: Sheffield Midland connectivity

Figure 17: Sheffield Midland journey times

Figure 18: East Midlands Hub connectivity

Figure 19: East Midlands Hub journey times

Figure 20: Glasgow journey times

Figure 21: Edinburgh journey times

Figure 22: Options for using HS2 to support Northern Powerhouse Rail

Annex C: Glossary

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

High Speed 2 (HS2): The scheme for a national high speed rail network in Britain, serving London, Birmingham, Manchester and Leeds and beyond, with a number of intermediate stations.

High Speed 2 Limited (HS2 Ltd): The company tasked with providing advice to the Government on the introduction of a national high speed rail network in Britain.

hybrid Bill: A bill with characteristics of both a public bill and a private bill.

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

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.

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 2b: The route from Crewe to Manchester in the west, and from the West Midlands to Leeds in the east, with junctions onto the existing network and new stations at Manchester Piccadilly, Manchester Airport, Leeds and the East Midlands Hub.

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.

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

Annex D: Summary of Consultation Responses

The Phase Two Consultation in 2013 asked seven questions which you can find on page 38 of the Route Refinement Consultation document, available here:

<http://webarchive.nationalarchives.gov.uk/20141027142236/http://www.hs2.org.uk/phase-two/route-consultation/document-library/ajax/589/nojs>

Western Leg

There were over 2,800 individual respondents who commented on the proposed route between the West Midlands and Manchester. In addition, there were responses from 18 organised campaigns and four petitions received which made reference to the Western Leg.

469 respondents said they agreed with the proposals, and 1,377 respondents said that they disagreed.

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.

Negative comments tended to focus on sections of the route with large infrastructure proposals, such as the crossing of the Manchester Ship Canal and the proposed depot at Golborne.

Some respondents argued that the Western Leg route should be straighter, there should be one line from Manchester to London, avoiding Crewe and using existing transport corridors.

The Government responded to the Route Refinement Consultation on the Western Leg from the West Midlands to Crewe as part of the Phase 2a route decision in November 2015, and we are responding to the remainder of the Western Leg to Manchester today.

Between Crewe and Golborne, the section of the route near Lymm, the Golborne depot and its connection to the route, the line from Golborne to Hoo Green and the Warburton to Bamfurlong section all attracted strong disagreement because of perceived impacts on the local area and communities.

A common alternative to the proposed line of route put forward by respondents was to upgrade the WCML north of Crewe. Suggestions included: that it should pass alongside or follow the M6 through Cheshire; or that the line should be lowered north of the M6 crossing or from Hoo Green towards Warburton. It was suggested that several sections of the route should be tunnelled and there were also calls for the route to be realigned to avoid impacts on local communities such as Culcheth, Warburton and Rixton-With-Glazebrook.

There were suggestions for different locations for the proposed rolling stock depot at Golborne, such as the Longsight depot in Manchester. Several respondents called for a direct route to Warrington.

On the approach to Manchester, alternatives suggested included following existing transport routes between Crewe and Manchester, straightening the route through Tatton, and lowering the line through Ashley. There were also calls for the location of the northern tunnel portal to be moved, and for a depot to be built in Manchester.

Western Leg Stations

2,049 respondents provided comments about the proposed station at Manchester Piccadilly. In addition, 11 campaigns made comments on the proposals. A total of 700 respondents agreed with the proposals and 895 respondents disagreed.

The main comments in support of Piccadilly welcomed the potential economic benefits of the station. The main argument against was that the station is not needed, given the proposals for a station at Manchester Airport. The main alternative suggestion was that it should be built as a through station.

There were 2,003 respondents who provided comments about the proposed Manchester Airport High Speed Station. 13 campaigns also commented on the proposals. 613 respondents said they agreed with the proposal and 909 disagreed.

The main positive comment was that a Manchester Airport station was sensible, given its proximity to the airport. The main negative reasons were that the proposed station is not needed given the Manchester Piccadilly proposal and that the station is too far from the existing airport terminals and station.

The Route Refinement Consultation also asked if there should be any additional stations on the Western Leg. A total of 234 respondents said they supported additional stations, while 1,128 said there should not be any additional stations.

The Eastern Leg

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.

There were 500 respondents who said they agreed with the proposals, and 1,425 respondents said that they disagreed.

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.

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. 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.

There were criticisms that Eastern Leg route does not directly serve Derby, Nottingham, East Midlands Airport, Leicester and Barnsley, among others.

A wide range of alternatives to the proposed route were put forward. These included running the route closer to existing infrastructure; altering the route through Pooley Country Park; the use of tunnelling, cuttings and embankments instead of viaducts;

and reconsidering some of the river crossings throughout this section, such as at Killamarsh and Renishaw.

There were also suggestions to realign the route to avoid local communities in locations including Tamworth, Measham, Ashby-de-la-Zouch, Packington and Long Eaton.

Many of the other suggestions focused on ways to mitigate the impact of the route, for example on the restoration of the Chesterfield Canal. It was also suggested that the Staveley depot be moved, with a number of alternative locations proposed.

Many suggestions focused on the use of existing transport corridors, tunnels, embankments and viaducts to minimise impacts on bodies of water, including canals and reservoirs.

Other comments focused on the location of the maintenance depot at New Crofton, with alternative locations including Royston and Wakefield suggested. There were also calls for the alternative route suggested by Alec Shelbrooke, MP for Elmet and Rothwell, to be considered, to minimise impacts to Swillington and Garforth.

There were suggestions that the route should minimise impacts on the Trans Pennine Trail as well as canals and the restoration of canals and that existing transport corridors, including motorways, should be followed.

Eastern Leg Stations

1,954 respondents provided comments about the proposed station at Leeds New Lane and seven campaigns commented on the proposals. There were 525 respondents who agreed with the proposals and 914 disagreed. Among those who agreed with the proposals, most thought it was a good and sensible idea to site the station as proposed. The location was convenient and noted the potential economic benefits of the proposals. Among those who disagreed, the two main reasons were that a station is not required, and that the proposed site would be too far away from the existing station in Leeds city centre.

There were 1,983 respondents who commented on a proposed South Yorkshire station at Sheffield Meadowhall. In addition, eight campaigns commented on the proposals. A total of 543 respondents said they agreed with the proposal and 935 disagreed.

The main positive comment was that it would be sensible and a good idea to build the station as proposed. The main negative reasons were that the proposed site would be inconvenient for passengers to access from Sheffield city centre. The most commonly proposed alternative to the proposed station was to locate it in the city centre instead.

There were 2,003 respondents who provided comments about a proposed East Midlands station at Toton. In addition, eight campaigns commented on the proposals. A total of 514 respondents agreed with the proposal and 985 disagreed. A number of respondents said that the proposed station at Toton was well considered and sensible. The location was seen to be well-placed to serve major cities in the East Midlands. Other respondents made the opposite point; Toton was seen to be inconveniently located and poorly connected. A number of alternative locations were proposed, including Derby, Nottingham and East Midlands Airport.

We also asked if there should be any additional stations on the Eastern Leg. There were 142 respondents who said that there should be additional stations, and 1,263 said there should not be.

Annex E: Summary of other route refinements

The list below sets out a number of other route refinements that have been incorporated into the route by HS2 Ltd and on which it is not proposed to consult. Further consideration of the design of the route, including opportunities to mitigate the impacts of the route, will be undertaken as part of hybrid Bill design development.

Leeds Leg

Kingsbury / Whateley – The route in this area has been lowered by around 4m and moved approximately 35m closer to the M42. This was driven by lessons learned from Phase One and reflects concerns raised during the 2013 consultation over the height of the route in this area. As a result the route is lower in the landscape and closer to the existing transport corridor. The route is now also on a single continuous viaduct as opposed to sections of viaduct and embankment. It therefore requires fewer watercourse diversions and has a lesser impact at Kingsbury Water Park.

East Midlands Hub Station – East Midlands Hub Station has moved about 150m south to enable the route to fit through the gap between Stapleford and Sandiacre whilst incorporating lessons learned from Phase One. The station remains in the same general area and the configuration of the station has not changed. Heading north from East Midlands Hub Station, the route travels in the same corridor and has moved c. 50m to the west and reduced in height by around 1.5m over the Erewash Canal and existing rail line.

Strelley - The route has moved east by approximately 15m at the southern portal of the tunnel under Strelley, and 10m east at Bulwell Wood Site of Special Scientific Interest (SSSI). Beyond Strelley, the route is up to 3m higher over a long section of route, to improve clearances over watercourses and roads, reflecting lessons learned from the Phase One design, with higher embankments at Bulwell Wood SSSI and Nuthall, and a reduction in the depth of the cutting through Park Forest. The route follows the same corridor, although there would be some increase in impacts on the setting of the conservation area and local listed buildings, although the route under Strelley itself would continue to be in a cut and cover tunnel.

Bogs Farm – In response to feedback from the 2013 consultation and intelligence about design risk, the route has moved to the west by approximately 80m so that it runs more closely alongside the M1, largely avoiding Bogs Farm SSSI and entirely avoiding Bentinck Colliery Tip. The route has also been moved approximately 250m further away from Langton Hall, largely avoiding the demolitions that were associated with the previous design. This move also means that the route sits deeper into the hillside and crosses the River Erewash approximately 11m lower.

M1 corridor North of Tibshelf – The route crosses under the M1 at Tibshelf and proceeds to the west of the M1, in the M1 corridor, passing a number of heritage assets including Hardwick Hall and Sutton Scarsdale. The height of the route has increased by around 5m as it crosses the Doe Lea Floodplain to improve the clearance over the floodplain, reflecting lessons learned from Phase One. However, the route continues in the same general corridor.

Manchester Leg

Crewe Tunnel - The northern portal of the tunnel at Crewe has moved around 270m south to reflect the reduction in the tunnel diameter introduced as a value engineering measure. As it leaves the tunnel, the route continues to follow the existing West Coast Main Line corridor. Some increases in noise impacts are expected as a result of the shorter tunnel, and opportunities for noise mitigation will be considered as part of the development of the hybrid Bill scheme.

Delta Junction – As a result of the proposed removal of the northern chord of this junction (facilitated by moving the Western leg Rolling Stock Depot), there are reduced landscape and visual impacts. This has also allowed refinements to the vertical alignment of the Manchester Spur, delivering improved watercourse crossings, and has removed the need for a grade separated junction across the Bridgwater Canal.

Manchester Ship Canal –The 2013 consultation proposed that the route should cross the Manchester Ship Canal on a viaduct. We continue to recommend a viaduct in this area. The height of the viaduct is determined by the need for clearances on the ship canal. In response to design lessons learned from Phase One, the design speed has been reduced allowing for the profile of the viaduct to be smoothed, with longer approaches but without increasing the maximum height. This slower speed delivers a small reduction in noise impacts.

Manchester Airport Station: The general location of Manchester Airport Station has not changed since consultation. The proposed design of Manchester Airport Station has been amended in response to consultation, so that car parking is now provided in the space between the HS2 main line and the M56. The design of the station will be subject to further development in liaison with stakeholders during the hybrid Bill design process and beyond.

Culcheth – In response to consultation the route alignment has been moved approximately 300m further from the town of Culcheth, within the same general corridor but further from the town itself. This avoids impacts on the Culcheth Linear Park, an important local amenity, and the Taylor Business Park, an important site for local employment, which were previously in the line of the route. These changes, which have included slowing the alignment speed have reduced some of the noise impacts at Culcheth, although there are expected to be some additional noise and visual impacts at Wigshaw, as well as affecting a fish farm which was previously to the south of the route.

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