

THE HS2 PHASE TWO PROPOSED ROUTE



Phase Two would extend high speed lines from the West Midlands to Manchester and Leeds, with proposed intermediate stations at Manchester Airport, Sheffield Meadowhall and the East Midlands Hub at Toton. It would also allow trains to run on further north, serving destinations including Scotland, York and Newcastle.

Western Route

Western route summary

The western leg of the network would serve the proposed stations at Manchester Airport and Manchester Piccadilly. The line would connect with the London-West Midlands HS2 route near Lichfield, before heading north-west past Stafford and on towards Crewe. A connection with the West Coast Main Line (WCML) would be provided just south of Crewe, with the main line continuing in a twin tunnel under the town heading north. It would cross over the M6 and M56, and then head east of Warrington to a further connection with the WCML south of Wigan. The Manchester stations would be served by a spur off the main line running roughly parallel with the M56 towards Manchester Airport. Manchester Airport High Speed Station would be located between Junctions 5 and 6 of the M56 as the line approaches the main built-up area of Manchester. Heading north from here, the line would enter a 7.5-mile twin tunnel, surfacing a short distance from the new station, which would be alongside the existing station at Manchester Piccadilly. The total route length would be 94 miles (150km).

Line of route


The Manchester leg of Phase Two would commence at a spur of the high speed route from the south, just before the southern route's connection with the WCML, and just north of Fradley Wood. The route would continue in a north-easterly direction, crossing mainly open countryside on a series of embankments, viaducts and cuttings, passing to the east of Rugeley and Stafford, and close to the west of Hopton, where it would pass through a raised or green tunnel. The line would continue north-west, crossing over the M6 and passing to the north of Swynnerton and Baldwin's Gate, and entering twin tunnels through a hill on Whitmore Heath. Continuing on a series of embankments, cuttings and viaducts, the route would pass through a hill in twin tunnels to the south-west of Madeley, before turning to a more northerly alignment on its approach to Crewe.

Just south of Crewe, the route would run alongside the WCML corridor where it would spur, providing a connection to the WCML. An infrastructure maintenance depot would be provided in this area, adjacent to the existing Network Rail Basford Hall sidings. Just south of Crewe station, the route would enter twin tunnels, which extend north under Crewe, emerging alongside the WCML corridor just north of Coppenhall.

The route would then move away from the WCML corridor continuing north in mainly open countryside, passing to the east of Lostock Green, Lostock Gralam and Higher Wincham. The route would again pass over the M6, following which the line would spur, with the spur passing east towards Manchester Airport and the terminus station at Manchester Piccadilly, and the mainline accessing the rolling stock maintenance depot and the WCML.

The Manchester spur would turn east and pass to the north of Rostherne Mere, running parallel to the M56. It would then turn north to pass under the M56 at Warburton Green and into an interchange station at Manchester airport. Just past the station, the route would enter twin tunnels, taking it under south Manchester to emerge in the Ardwick area, where it would rise onto a viaduct to enter the terminus at Manchester Piccadilly.

The mainline would continue north-west through mainly open countryside, crossing under the M56, and over the Manchester Ship Canal on a viaduct to the east of Hollins Green. Passing over the M62, the route would follow a curved route to the south-west of Culcheth, and then between Lowton and Lowton



Common. The route would then curve east to enter the rolling stock depot, at Golborne, and provide a connection into the WCML at Bamfurlong.

Trains running between Manchester Piccadilly and the rolling stock depot would use a chord connecting to the Manchester spur just west of junction 8 of the M56. This chord would pass under the M56 and pass through open countryside to connect to the depot spur to the east of Broomedge.

Manchester Piccadilly station

A new station would be built alongside the existing station at Manchester Piccadilly, in the heart of the city. This would allow easy connections with regional rail services to places such as Salford, Stockport and Bolton. There would also be excellent easy access to the extensive Manchester public transport network, such as Metrolink services to Bury, Altrincham, Eccles and Salford Quays. Local and regional buses would be on the doorstep and there would be easy pedestrian access to the city.

Manchester Airport High Speed Station

A new interchange station would provide direct links to Manchester airport. This station would also give south Manchester and the wider Cheshire area easy access to the high speed rail network, both by public transport and by car. The Government recognises potential for significant development. This development potential led Government to support the station, subject to agreement with the airport and wider region on a suitable funding package.

Depots

In order for the railway to operate effectively, HS2 Ltd has identified the need for infrastructure and rolling stock maintenance depots at key points along the proposed routes.

An infrastructure maintenance depot would be used as a base from which to carry out engineering activities to inspect, maintain and renew the infrastructure. Rolling stock depots would be used to stable trains overnight, for cleaning and maintenance. The rolling stock depots would be in addition to the proposed Washwood Heath depot that would support both Phases One and Two.

The depots would be required to operate for 24 hours, seven days a week. The depots would provide immediate access to the trunk road network to facilitate access by large goods vehicles. Good transport links would allow the depots to be served by a suitable and relatively local workforce; as such, the potential for access by public transport would be considered.

Crewe infrastructure maintenance depot

A proposed infrastructure maintenance depot for the western leg would be located approximately halfway along the western route, south of the existing Crewe station and adjacent to the west side of Basford Hall sidings. The site is currently identified for rail-connected industrial development.

Golborne rolling stock maintenance depot

This depot would be located to the north of Golborne, around 2.5 miles south of Wigan. This is a convenient location to service trains terminating in Preston, Liverpool and Manchester.

Connections to the main line network

On the western route, high speed trains would be able to run onto the classic network to serve destinations such as Wigan, Preston, Lancaster, Penrith, Carlisle, Glasgow and Edinburgh.

HS2 would also connect with the WCML at Crewe, meaning key destinations like Liverpool, Runcorn, Crewe and Warrington would benefit from direct services. By serving the key rail interchange of Crewe, high speed train services would be made easily accessible for passengers in North Wales and elsewhere.



Eastern Route

The eastern leg would serve stations in the East Midlands, South Yorkshire and Leeds. The line would connect with the HS2 London-West Midlands route to the east of Birmingham, near Junction 4 of the M6, and then follow the M42/A42 corridor north-east towards Derby and Nottingham. The East Midlands Hub station would be located between these two cities at Toton, about a mile from the M1. The line would diverge from the M1 to the south of Staveley before passing through the Rother Valley. The infrastructure maintenance depot would be located at Staveley. Further north, and upon re-joining the M1 corridor, the station serving South Yorkshire would be located at Meadowhall alongside the M1, between Sheffield and Rotherham. From here, the line would pass to the east of Barnsley and between the towns of Wakefield and Normanton before connecting to the East Coast Main Line nine miles to the south-west of York. The rolling stock depot would be east of Wakefield at New Crofton. As with Manchester, Leeds would be served by a spur off the main line. It would run within the existing Castleford to Leeds railway corridor, passing the southern suburbs of Leeds before rising above street level into the new station at Leeds New Lane. The total route length would be 115 miles (185 km).

East Midlands Hub station

A new station at Toton, between Nottingham and Derby, would offer excellent links to the East Midlands' cities and stimulate growth across the region. The station would be readily accessible by public transport from both Derby and Nottingham, with the site close to Junction 25 of the M1 and on rail lines which could be configured to serve Derby, Leicester, Nottingham and many other regional centres.

Sheffield Meadowhall station (South Yorkshire)

A new station at Sheffield Meadowhall would be situated alongside the M1, providing convenient access by road, serving Sheffield and the wider South Yorkshire region. This station would be well placed to encourage jobs and growth in Sheffield and already has excellent connectivity with existing public transport networks, including the Supertram. Trains connect Meadowhall to Sheffield, Rotherham, Barnsley and beyond to Wakefield and Doncaster and stations to Leeds, Manchester and Chesterfield. With the addition of HS2, Meadowhall could become a key transport hub within the region, in a location that allows quick access, not only from central Sheffield but also from across the region.

Leeds New Lane station

A new station in central Leeds would be built in the Leeds Waterfront area of the city centre. This would be connected to the existing station by a dedicated pedestrian link, making it just a short walk between the two. Leeds station offers connections to a number of regional rail destinations, such as Bradford, Halifax and Castleford, as well as to the city's extensive bus network. There would be immediate access to this station from the M621 (Junction 3), providing connections with the city's ring roads and regional motorways.

Staveley infrastructure maintenance depot

This depot would be located slightly to the north-west of Staveley, on the eastern leg to Leeds. The depot would sit within a brownfield site - a former ironworks. The site is designated for industrial and business use.

This depot would require a potential diversion of the River Rother and the depot would be located within its floodplain; hence replacement floodplain provision may also be required. A small number of demolitions may be required, but every effort would be made to limit or avoid this through further design.

New Crofton rolling stock maintenance depot

This depot would be located to the east of Wakefield, south of the village of New Crofton on a disused coal disposal plant adjacent to the existing railway line. The site is within an area currently designated as a Regeneration Priority Area.



Mainline connections

On the eastern leg, the high speed line would continue almost as far as York, making it possible for high speed trains to continue directly to places such as Newcastle, Darlington and Durham.

Key elements of the service pattern

HS2 will provide high frequency, high capacity services for passengers. Up to 18 trains an hour will run between the UK's major cities in each direction, each carrying up to 1,100 passengers. The HS2 network is expected to carry over 300,000 people every day.

It is not possible to write the timetable at this early stage, but service patterns for HS2 have been modelled as part of the economic case for HS2. We will be publishing an update of the economic case for HS2, including updated indicative services, in October 2013.

The current indicative service patterns, based on the economic case published in August 2012, shows:

- three trains per hour could run from London to each of Birmingham, Manchester and Leeds, with intermediate stops along the way;
- two trains per hour could run from London to each of Liverpool, Newcastle, Glasgow and Edinburgh; and
- two trains per hour could run from Birmingham to Manchester and Leeds.

It would be possible to revise some of these services so that they run onto High Speed One (HS1) to serve Paris, Brussels and Amsterdam.

A key component of the overall service pattern likely to operate on HS2 is that the trains will run on both the HS2 network and the existing rail network. These trains will travel at high speed on HS2 and then run at conventional speed on the existing network.

Journey times

Journey	2026 fastest journey time	Current average journey time	Saving
London-Birmingham	49 mins	1 hour 24 mins	35 mins
London-Manchester (city centre)	1 hour 8 mins	2 hours 8 mins	60 mins
London-Leeds	1 hour 23 mins	2 hours 12 mins	49 mins
Birmingham-Leeds	57 mins	1 hour 58 mins	61 mins
Birmingham-Manchester (city centre)	41 mins	1 hour 28 mins	47 mins
London-Glasgow	3 hours 38 mins	4 hours 8 mins	30 mins
London-Edinburgh	3 hours 38 mins	4 hours 23 mins	45 mins

Station connectivity

All of the station locations were chosen partly for their existing good connectivity to the wider transport network. We will continue to work with the station city partners to ensure the connectivity opportunities are realised.

Manchester Airport High Speed Station

The station would lie west of - and parallel to - the M56, approximately halfway between Junction 5 and 6, making it very well placed for motorway access. The M56 would link the station to the M60 Manchester orbital motorway, the M6 and the wider regional transport network. A new road access would be provided to link the station to the M56 and local road network.

A number of options exist to link the station to the airport terminals and adjacent transport interchange. These include existing proposals for extending the Manchester Metrolink network to serve the station directly and provide a service into both the airport and wider area.



Manchester Piccadilly

Manchester Piccadilly station benefits from excellent transport connectivity. The existing station is served by six train operating companies serving routes across the region, northern England and inter-city services to the Midlands, London, Scotland and elsewhere.

The station serves as a terminus for Manchester Metrolink services to Altrincham, Eccles and Salford Quays (including MediaCity UK), with connections to Didsbury, Oldham and Rochdale. Since early 2013, the station has been served by a through Metrolink route from Bury to Droylsden. That service is to be extended to Ashton-under-Lyne (planned opening Winter 2013/14) and a further extension to Manchester Airport is planned for 2015. The redevelopment of Manchester Piccadilly would seek to enhance access and connectivity with the Metrolink tram network across the city and region. Vehicular access to the station would also be achievable from the Inner Relief Road.

There are opportunities to enhance the station's already good connectivity with additional bus, coach and taxi services, and also to improve its access by walking and cycling.

East Midlands Hub at Toton

Toton has good access to the M1 and could be served by a dedicated rail service to Nottingham, Derby, Leicester and other principal stations in the region, as well as bus services and an extension of the Nottingham tram.

By incorporating conventional rail platforms into the station, it would be possible to run a range of connecting services from existing stations, including Derby, Nottingham, Leicester and other stations in the wider region. For example, it would be possible for trains running between Nottingham and Derby to call at the East Midlands Hub station en route, with a journey time of 12 and 15 minutes respectively.

Sheffield Meadowhall

The existing Meadowhall station already has a frequent rail service. Up to nine trains per hour run into Sheffield Midland station in Sheffield city centre, with a journey time of as little as five minutes. Trains from Meadowhall also serve Rotherham, Barnsley, Wakefield, Doncaster and Scunthorpe, as well as to Leeds, Manchester and Chesterfield. Improved rail access from south-west Sheffield to Meadowhall could also be considered, with the possibility of including a frequent service between Dore & Totley and Meadowhall. Alternatively, extensions of the proposed new Tram Train could be considered, which would offer scope for additional new stops in south-west Sheffield.

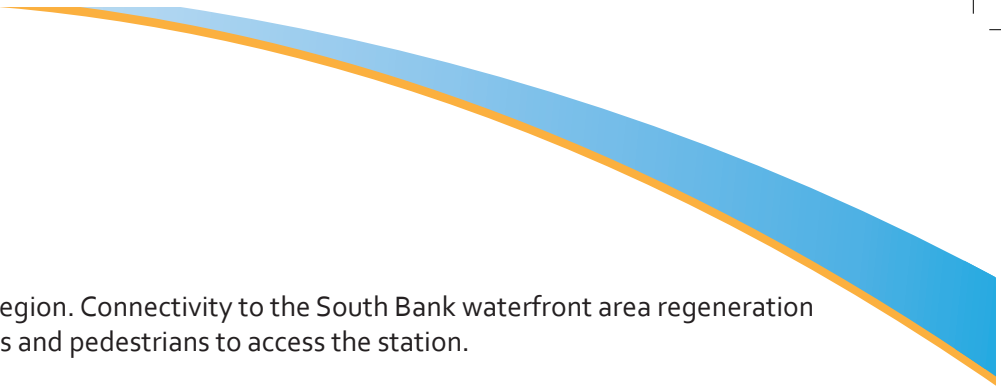
The existing Sheffield Supertram serves the existing Meadowhall station and provides a 20-minute journey into Sheffield city centre via the Lower Don Valley. Trams run every 10 minutes during peak times, providing a high capacity and convenient link to key parts of the city. A new tram stop integrated into the HS2 station would be built. Meadowhall is already a major bus station and an important calling point on the National Express coach network.

The HS2 station at Meadowhall would be situated alongside the M1, providing convenient access by road to and from the wider region. Work would be undertaken with the Highways Agency and local authorities to ensure adequate network capacity to support the station and other planned developments, such as those in the Sheffield Enterprise Zone.

Leeds New Lane

Leeds New Lane HS2 station would be located to the south of the existing Leeds City national rail station, and connected to it by a pedestrian link. This link between the two stations would enable passengers to benefit from the good connectivity to the wider region with frequent services to all major rail destinations in West Yorkshire and the wider Leeds city region, including Bradford, Huddersfield, Wakefield, Halifax, Skipton, Harrogate, Selby and further afield.

The HS2 station would be easily accessed by passengers using cars from the wider city region, due to its proximity to the ring road and the highway network. The southern entrance to the station would have good proximity to the Inner Ring Road, M621 and motorway network, which would provide good



highway access to the West Yorkshire region. Connectivity to the South Bank waterfront area regeneration will create an attractive area for cyclists and pedestrians to access the station.

Will HS2 trains run only on the high speed line?

A mixed fleet of high speed trains will be used. Many of the HS2 trains will be able to operate on both the high speed and existing railway lines. These trains, known as 'classic compatible' trains, will travel at high speed on HS2 and then run at conventional speed on the existing network. There will also be a fleet of 'captive' trains, which will operate only on high speed network.

No freight services will operate on the HS2 network.