

Midlands Engine Rail

Our plan for a more sustainable, productive
and mobile Midlands



Midlands Connect
Transport | Investment | Growth

September 2019



Foreword by Sir John Peace

Chair, Midlands Engine and Midlands Connect

“In the Midlands, more people are travelling on the railways than ever before. We now need investment from Government to allow our people, businesses and infrastructure to reach their full potential, and to drive a further boost in passenger numbers. Once delivered, Midlands Engine Rail will vastly enhance connectivity across the region and beyond, an essential step in creating a more sustainable, productive and mobile Midlands.

Whether they live in Shrewsbury, Lincoln, Birmingham or Leicester, our communities deserve the opportunity to make greener choices, to access a world-class education and to reach the widest possible variety of career opportunities. The time for discussion and inertia is over, we urgently need to move these plans forward and with the support of Government, to turn this vision into reality.”

What is Midlands Engine Rail?

Midlands Engine Rail is a £3.5billion programme of improvements that will deliver a step-change in rail connectivity; sustainably supporting job growth and housing development across the region. The programme is made up of seven projects, identified and developed due to their fundamental importance in ensuring the region’s future social, environmental, and economic success.

Over the past two years, rail patronage in the Midlands has grown faster than anywhere else in the UK¹. Our Victorian infrastructure is groaning under the strain of this increased demand, and urgent intervention is needed if the network is to keep up with growth in passenger numbers.

However, while journey numbers are rising, on many intercity routes our railways are still worryingly underutilised. On some parts of the network, ageing signalling systems, bottlenecks and sections of single track mean that services are slow, infrequent and an unattractive alternative to travelling by car.

¹ https://orr.gov.uk/__data/assets/pdf_file/0003/26598/Regional-Rail-Usage-2016-17.pdf
https://orr.gov.uk/__data/assets/pdf_file/0011/40520/regional-rail-usage-2017-18.pdf

The declared climate change emergency, and resulting UK commitment to becoming carbon-neutral by 2050, means that encouraging more people to get out of their cars and make journeys by train is essential. Improvements to the network must also be made to increase rail freight capacity, allowing non-perishable goods to be transported via our railways rather than on our congested roads. Moving cargo in this way produces 76% less CO₂, and offers a sustainable, affordable alternative for businesses².

Midlands Engine Rail will better connect businesses with their clients, collaborators and workforces, opening up a generation of people to a greater variety of homes, job opportunities, schools, and leisure destinations. This improved inter-regional connectivity is essential if the Midlands is to meet one of its most complex and enduring challenges. Despite strong economic growth, regional productivity stagnates as much as 15% below the UK average³. The Midlands is set to greatly benefit from the advent of HS2, however, only by combining the new high speed network with an equivalent step-change in regional connectivity can the full benefits of this once-in-a-lifetime national investment be realised.

Growth in rail journeys over the past decade

West Midlands + 121%
East Midlands + 37%

Regional productivity

11% below UK average:
✓ **West Midlands**

15% below UK average:
✓ **East Midlands**

Moving goods by rail =
✓ **76% less CO₂**

Journey mode splits between economic centres; rail vs. road⁴

Midlands routes

Coventry > Leicester **1% / 99%**



Derby > Stoke **3% / 97%**



Nottingham > Birmingham **18% / 82%**



Birmingham > Leicester **13% / 87%**



Other inter-city routes

Manchester > Sheffield **50% / 50%**



Newcastle > Manchester **46% / 54%**



Liverpool > York **51% / 49%**



² DfT Rail Freight Strategy: September 2016

³ ONS: Regional and sub-regional productivity in the UK: February 2019

⁴ Midlands Connect Rail Programme: Economic Evidence 2018

Programme Overview

Costs

This prospectus of improvements requires a total investment of approximately **£3.5bn***. Midlands Engine Rail provides Government with a long-term pipeline of projects to invest in; championing social mobility, increased sustainability and economic growth across the Midlands Engine region.







Project	Development Stage	Estimated Delivery	Estimated Capital Cost
Midlands Rail Hub	Strategic Outline Business Case	2022 - 2033	£ 2,020m
Birmingham Airport Connectivity	Outline Business Case	In line with HS2 Phase One	£ 150m
Midlands Connect Conventional Compatible HS2 Services	Strategic Outline Business Case	In line with HS2 Phase Two	£ 170m ⁺⁺
Necessary Electrification for Conventional Compatible Services	N/A Network Rail developed scheme	Ahead of HS2 Phase Two	£ 600m
HS2 East Midlands Hub (EMH) Station Connectivity	Strategic Outline Business Case	In line with HS2 Phase Two	£ 330m
Derby - Stoke - Crewe	Feasibility Study	2022 - 2033	> £ 50m ⁺⁺
Birmingham - Shrewsbury	Feasibility Study	In line with HS2 Phase One	£ 200m
Nottingham - Lincoln	Feasibility Study	2022 - 2026 (Line speed improvement) In line with HS2 Phase Two (Extra service)	£ 50m
TOTAL CAPITAL COST:			£ 3.57bn

*Current estimate, more detailed breakdown of costs will be developed as research moves to a more advanced stage

⁺⁺ Operational costs to be calculated at a later stage

Midlands Engine Rail

Key

HS2	
HS2 Conventional Compatible Services	
MC Conventional Compatible Services	
MC Wider Rail Programme	
Midlands Rail Hub	
Midland Main Line Electrification	



Midlands Rail Hub

Poor east-west connectivity is a national problem. Left unaddressed, it will continue to stifle economic growth and threaten the future integrity of our increasingly-popular rail network. The Midlands Rail Hub (MRH) is Midlands Connect's flagship rail project; a £2 billion package of improvements that will create space for faster, more frequent services between our economic centres, including Birmingham, Coventry, Leicester, Derby, Nottingham, Hereford, Worcester, the South West and South Wales.

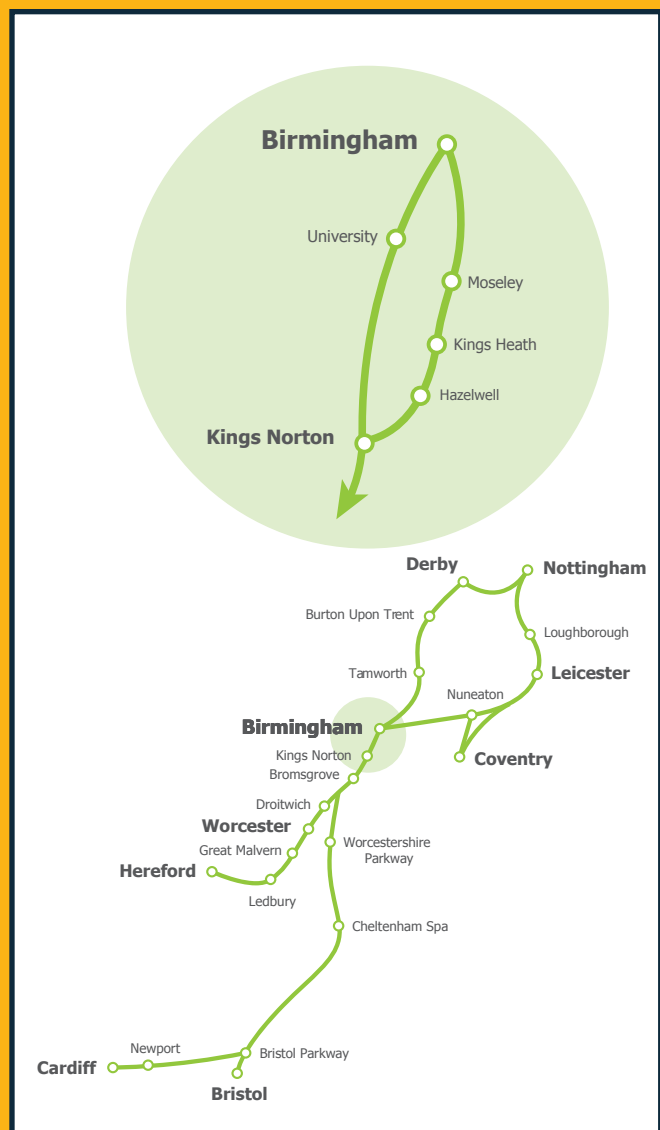
The scheme includes plans for two new viaducts east of Birmingham city centre to allow 20 extra trains per hour to run into and out of an enhanced Birmingham Moor Street station, enabling easy connections with HS2 services at the adjacent Birmingham Curzon

Street station. Other interventions will see the reintroduction of four direct services each hour between Coventry, Leicester and Nottingham, for the first time in two decades.

Significant reductions in journey times will bring businesses closer to clients, collaborators and existing employees, while opening up access to additional skilled labour. Measures to expand network capacity will also allow 72 extra freight trains to run through the region each day, creating space for over a million more lorries' worth of goods to be moved from our congested roads, onto our railways, each year.

In June 2019 Midlands Connect submitted a Strategic Outline Business Case for the MRH to Government, completed in partnership with Network Rail.

 <h2>Next steps</h2>	<p>Outline Business Case to be completed 2020-2022</p>
<p>£</p>	<p>Estimated Capital Cost: £2 billion</p>
<p>>></p>	<p>Delivery: 2022 - 2033</p>
<p>Journey time reduction:</p>	
<p>Hereford > Birmingham 85 min → 65 min</p>	
<p>Coventry > Leicester 57 min → 38 min</p>	
 <p>24 extra passenger trains an hour</p>	 <p>£649m boost to the Midlands economy each year</p>
 <p>85,000 more seats every day in and out of central Birmingham</p>	 <p>Space for >1m lorries' worth of goods to be transported on our railways each year</p>
 <p>Bringing 1.6 million more people to within an hour of the region's biggest towns and cities by public transport</p>	



Birmingham Airport Connectivity

Birmingham Airport already attracts more than 12 million passengers a year, connecting them to over 150 destinations worldwide. Improving connectivity to the airport is essential to realising its masterplan ambitions to increase passenger numbers to 18 million by 2033.

The area around the airport includes nationally-significant assets such as the National Exhibition Centre (NEC), Resorts World, Birmingham Business Park and Jaguar Land Rover's Solihull plant. To take advantage of the arrival of HS2, the Urban Growth Company is stimulating investment in another 140 hectares of mixed-use development between the airport, NEC and the new HS2 Interchange station, known as UK Central. Also benefiting from its proximity to the M5, M6, M40 and M42 motorways, this truly multi-modal hub will make UK Central one of the most connected investment locations in the country, creating tens of thousands of jobs.

Our rail improvement plans ensure better access to the airport on the conventional network, utilising the extra network capacity released by HS2, as well as double tracking sections of the route south of the airport.

These factors, alongside modest timetable changes will improve connections to Coventry and Birmingham Airport from the south of England, East Midlands, Yorkshire and the North East; increasing the frequency of services from Leamington, Banbury, Oxford and Reading from one to two trains per hour and opening up new direct paths to and from Derby, Sheffield, Doncaster, York, Darlington, Durham and Newcastle. This will increase the attractiveness of flights from Birmingham Airport to a host of new passengers, and bring hundreds of thousands of people closer to UK Central's leisure, business and tourism destinations via public transport. It will also open up capacity on the Birmingham to Solihull rail corridor.

 Next steps	Outline Business Case to be submitted to Government in March 2020
	Estimated Capital Cost: £150 million
	Delivery: In line with HS2 Phase One
	National access to Birmingham Airport, NEC, Birmingham Business Park
	New direct services to Coventry and Birmingham International Stations from Derby, Sheffield, York and Newcastle
	Doubling number of services to BHX from Leamington, Banbury, Oxford and Reading



Midlands Connect Conventional Compatible HS2 services

Bringing HS2 services to Leicester and Nottingham city centres

Midlands Connect is working to ensure the region makes the most of its new high speed rail infrastructure. We are investigating the potential for additional conventional compatible trains serving the city centres of Leicester and Nottingham, boosting east-west and north-south rail links.

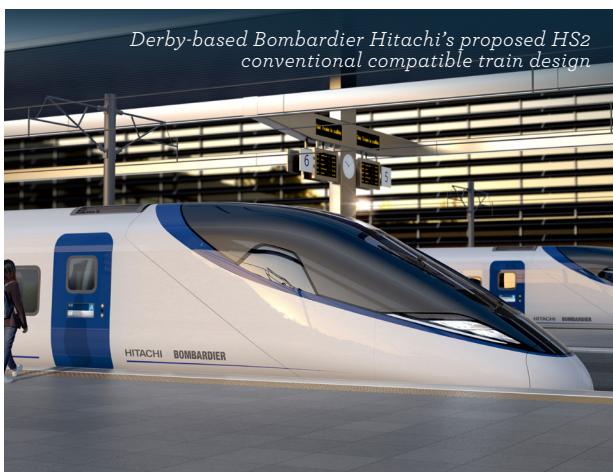
What is a conventional compatible service?

A journey undertaken in a train that can travel along both high speed and electrified tracks, allowing it to call at both new HS2 and existing stations.

Bedford – Leicester – EMH – Leeds

At present, there is no regular direct rail service between the cities of Leicester and Leeds, with slow, indirect services stifling passenger demand. People living in nearby Nottingham, which has a regular, direct, hourly service to Leeds, are five times more likely to make this journey by train.

Our work suggests that the introduction of an hourly, direct service between Bedford, Leicester and Leeds, joining High Speed Two at the East Midlands Hub (EMH), is both technically feasible, financially viable and in line with passenger demand. This improved connectivity will have huge implications for businesses looking to reach clients, employees seeking out new job opportunities and individuals keen to explore new leisure and cultural destinations. The service will cut journey times between Leicester and Leeds from two hours to 46 minutes.



Journey time reduction

Leicester > Leeds **120 min → 46 min**

Current rail mode share

Leicester > Leeds **10% / 90%**



Newcastle > Leeds **30% / 70%**



Birmingham – EMH – Nottingham

The construction of the new high speed network offers the Midlands a once-in-a-lifetime opportunity to revolutionise the relationship between its two Core Cities; Birmingham and Nottingham. An hourly, conventional compatible service would slash journey times between these vital economic centres by more than half. Midlands Connect has proposed an alternative junction south of EMH that would facilitate these services. Crucially, our suggested junction is likely to be less expensive to build than the current designs HS2 Ltd is planning to submit as part of the Phase 2b hybrid Bill.



Necessary electrification

Running these conventional compatible services requires electrification of the Midland Main Line north of Market Harborough and west of Nottingham. Not only will this upgrade facilitate enhanced connectivity between Leicester and Leeds, it will also benefit existing services – improving line speed and reducing carbon emissions.



HS2 East Midlands Hub Connectivity

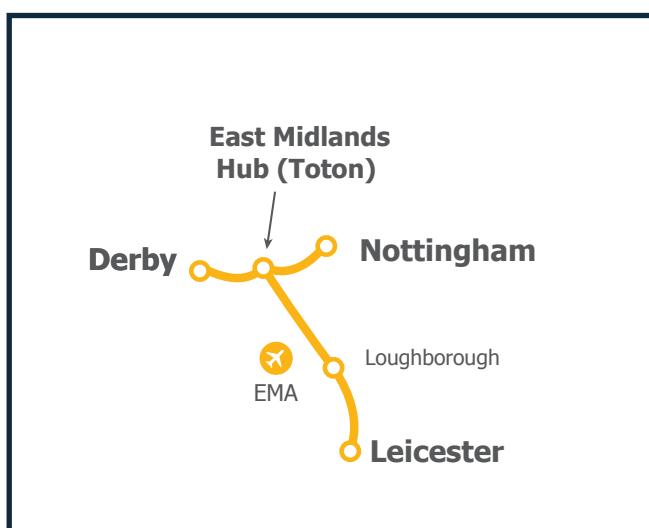
HS2 will arrive in the East Midlands via the East Midlands Hub station at Toton, which will be served by both high speed and conventional rail services. To maximise the benefits of this transformational project, it is essential that communities in nearby towns and cities across the East Midlands, can quickly and easily access the high speed rail network and proposed Innovation Campus at Toton.

The HS2 East Midlands Hub Connectivity study, part-funded by Midlands Connect in partnership with East Midlands Councils, is examining what modes and methods of transport will best link users to the station.

The conclusions of this study will outline a range of local transport enhancements across heavy rail, light rail and road; including tram extensions, improved local rail and bus links, new road access schemes, cycling provisions and pedestrian infrastructure.

Our research to date suggests that running four trains per hour from Toton to Leicester, Nottingham and Derby could drive significant economic benefits. The next stage of work will tell us how we can best optimise connectivity along other rail corridors servicing towns across the East Midlands, including Loughborough, Matlock, Mansfield, Newark, Alfreton and Grantham.

 Next steps	Strategic Outline Business Case to be submitted to Government in December 2019
£	Estimated Capital Cost: £330 million
>>	Delivery: In line with HS2 Phase Two



Derby – Stoke – Crewe

Improving the speed and frequency of rail services along this east-west corridor will stimulate growth in the regional economy, increase passenger numbers and open up access to HS2. Currently, the route is served by an hourly service taking 79 minutes. Midlands Connect's plans will double the frequency of trains, creating greater convenience and more capacity for users. The plans have the potential to increase passenger demand on the line by 72%, to 350,000 users a year by 2037, providing an alternative to the congested A50 and M6.

Initial investigations suggest that changes to calling patterns on this additional service, coupled with improved trains could reduce journey times by 20 minutes.

By investing in the Derby-Stoke-Crewe corridor, north east Staffordshire and the East Midlands can also link more easily to HS2 and Northern Powerhouse Rail services at Crewe.



This connectivity will allow more people and businesses to access the benefits offered by fast and frequent journeys to the economic centres and national assets of the North West, as well as the airports in Liverpool, Birmingham and Manchester.

East Midlands Railway franchise operator, Abellio has proposed an extension to the services on this corridor from Derby to Nottingham and beyond. These plans will be included in the Midlands Connect study.



<p>→</p> <p>Next steps</p>	<p>Feasibility Study commissioned in August 2019</p> <p>--</p> <p>Strategic Outline Business Case to be submitted in 2020</p>	<p>Journey time reduction</p> <p>Derby > Crewe 1h19 min → 59 min</p>
<p>£</p>	<p>Estimated Capital Cost:</p> <p>>50 million</p>	<p>↓</p> <p>Doubling of services from one to two trains per hour</p>
<p>>></p>	<p>Delivery:</p> <p>In phases from 2022 to 2033</p>	<p>▲ 72% increase in rail passengers by 2037</p>

Birmingham – Black Country – Shrewsbury

The existing rail line linking Shrewsbury and Telford to Wolverhampton, Sandwell & Dudley and Birmingham does not provide the capacity needed to support business and housing growth. Organisations in these economic centres struggle to access and attract skilled workers, who are put off from rail commuting by slow, overcrowded, uncomfortable and unreliable services.

Slow line speeds between Birmingham, Wolverhampton and Shrewsbury are reducing productivity. Network Rail forecasts that without intervention, the corridor will soon be subject to ‘acute overcrowding’⁵. Therefore, working with West Midlands Rail Executive, Midlands Connect is examining the case for the number of trains on the corridor to be increased from three to four per hour, made possible by capacity released post-HS2.

These plans could introduce a direct, hourly service from Shrewsbury, Telford and Wellington to London, as well as doubling services to Birmingham International from Shrewsbury, Telford and Wellington. Ideally this scheme would involve electrification of the railway between Wolverhampton and Shrewsbury, offering a faster, greener and more reliable solution than the use of diesel or bi-mode trains.

The study will also examine the economic case for speeding up Shrewsbury-Birmingham services from 56 minutes to 45 minutes, a reduction that can be achieved via track upgrades and possible electrification. These measures would drive additional benefits, reducing operating costs to accommodate the introduction of longer trains, increasing capacity even further.



Artist's impression of Wolverhampton Station



Next steps

Feasibility Study
due for completion
in **March 2020**

Acute overcrowding forecast on the corridor

> 140% capacity

Journey time reduction

Shrewsbury > Birmingham **56 min → 45 min**

£

Estimated Capital Cost:
£200 million

>>

Delivery:
In line with HS2 Phase Two

Doubling of services to BHX
from Shrewsbury, Telford
and Wellington.

⁵ Network Rail – West Midlands and Chilterns route study

Nottingham – Lincoln

Slow and infrequent rail services between Nottingham and Lincoln mean that only a small proportion of journeys along this corridor are made by train. Midlands Connect is undertaking work to understand how we can intervene to improve the speed and frequency of services, while delivering a good return on investment.

Our research suggests that post-HS2, it may be possible to double the number of services to two trains per hour, capitalising on the growth in demand and passenger numbers the UK's new high speed railway will create. This would also improve access between Lincolnshire and the West Midlands.

We're also examining how signalling upgrades and improved safety measures at level crossings could cut down journey times along the corridor from 55 to 45 minutes, providing a more attractive option for passengers currently making this journey by car and encouraging new trips via rail.

Finding a cost-effective and practical way of improving services along this route is particularly challenging due to the presence of a flat crossing with the busy East Coast Main Line, as well as the line's proximity to the River Trent, A1 and A46. Midlands Connect is working with its partners Network Rail and Highways England to investigate solutions that will overcome these challenges.

Next steps

Feasibility study
to be completed
in 2019

£

Estimated Capital Cost:
£50 million

>>

Delivery:
2022 – 2027 line speed
improvements
Post-HS2 Phase Two –
doubling of services



Doubling of services to
two trains per hour

Journey time reduction

Lincoln > Nottingham 55 min → 45 min



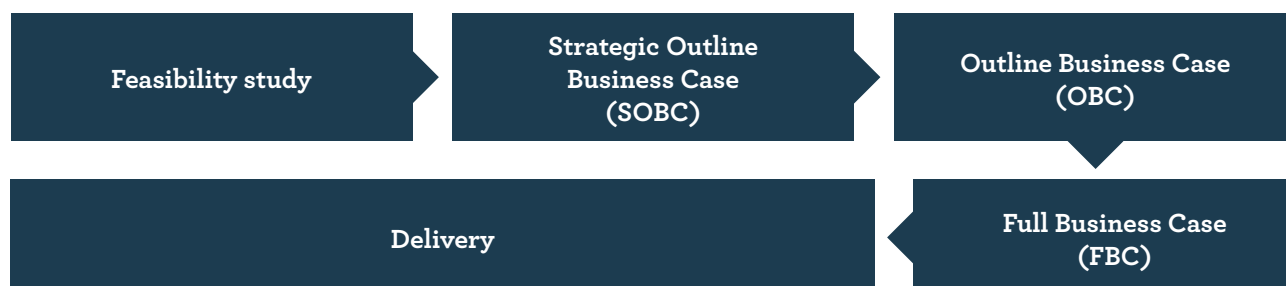
What's next? Our asks of Government

To ensure we maintain momentum for the development and, ultimately, the delivery of Midlands Engine Rail, it's essential that Government provides the Midlands with the investment it needs to move these projects through to the next stage of research and development.

In total, Midlands Connect requires **£45.5million** in development funding to advance all of the rail programmes outlined in this document to the next stage.

Project	Next Development Stage	Timing	Immediate Funding Requirement
Midlands Rail Hub	Outline Business Case	2020 - 2022	£ 25m
Birmingham Airport Connectivity	Full Business Case	2020 - 2022	£ 20m
Midlands Connect Conventional Compatible Services	N/A to be led by DfT	N/A	--
East Midlands Hub Connectivity	Advanced Strategic Outline Business Case	2019 - 2021	£ 0.5m
Derby - Stoke - Crewe	Strategic Outline Business Case	2019 - 2020	£ 0 (0.2m allocated in existing budget)
Birmingham - Shrewsbury	Strategic Outline Business Case	2019 - 2020	£ 0 (0.2m allocated in existing budget)
Nottingham - Lincoln	Strategic Outline Business Case	2019 - 2020	£ 0 (0.2m allocated in existing budget)

Rail scheme development lifecycle



Midlands Engine Rail fact sheet



736 extra
passenger trains
per day



72 more freight
trains per day



Space for >
1 million
more lorries'
worth of goods
on our railways



Faster and/or more
frequent services for
up to **60** stations
across the UK



Seven
schemes



Fully
integrated
with High
Speed Two



£3.5bn
capital investment
required

