

An aerial photograph of a large circular tunnel under construction. The tunnel's interior is lined with wooden panels and reinforced with metal structures. Several workers in orange safety gear are visible on the inner wall. The construction site is surrounded by various pieces of equipment, including a large blue and white machine on the right and a green container on the left. Red safety barriers are placed around the perimeter of the tunnel. The overall scene depicts an active and complex engineering project.

HS2

Corporate Plan

2023 - 2026



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Front cover image: Chesham Road vent shaft near Great Missenden, Buckinghamshire.

Part One

Project overview and update

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Image: A concrete support for the Curzon Street viaduct.

HS2 project overview: Chair



Sir Jon Thompson, Chair, HS2 Ltd.

“HS2 is kickstarting growth before a single train has started running. This year we revealed that businesses in the West Midlands have already won £1.7 billion worth of work on HS2.”

There has never been a better time to be involved with the HS2 project. We are building Britain's future and are pushing ahead in the peak construction stage on Phase One.

Iconic structures and world-class civil engineering schemes are now part of our everyday lives and I'm proud of the way we are building as well as what we are building. It's a solid foundation for other crucial steps in the delivery of HS2, including systems installation and testing in the future.

In last year's Corporate Plan, I noted that challenges are never far away on a project of HS2's unprecedented size and national strategic importance. The complex programme is not immune to the global inflationary pressures we are all grappling with. The significant rise in construction costs means businesses throughout our supply chain are struggling to meet the commitments they made just a few years ago. That's why it's right that along with other major Government schemes, HS2 plays its part in helping to ease the pressure on public finances. Rephasing delivery of some parts of the programme until those pressures are less severe will help us do this without jeopardising the transformational benefits this once-in-a-lifetime project provides.

We welcome the Government's firm commitment to delivering the railway from London Euston to Manchester Piccadilly and the East Midlands. This fits squarely with the Prime Minister's commitment to grow the economy, one of his five priorities. Better connections between our major cities attracts investment and boosts growth, creating new jobs and opportunities in the Midlands and the North. Regional leaders have been clear that transport investment, including HS2, is central to their regeneration plans. The extra capacity on existing lines that HS2 provides and improved journey times to other regions will help transform regions like the West Midlands and Greater Manchester.

Importantly, HS2 is kickstarting growth before a single train has started running. This year we announced that businesses in the West Midlands have already won £1.7 billion worth of work on HS2. The 2022 Commonwealth Games in Birmingham benefited the wider region by about £450 million, but in the same calendar year, over £800 million worth of HS2 contracts were awarded to local businesses. There will be plenty of opportunities for businesses to replicate this kind of success over the coming years.



HS2 project overview: Chair

It is not just the HS2 supply chain that is creating opportunities today in the West Midlands. The region is a case study for how better connectivity attracts investment and boosts growth. Companies like HSBC, Deutsche Bank and PwC have either relocated to the city recently or expanded their operations, citing improved transport connections among their reasons. A new creative quarter in Digbeth is springing up next to our Curzon Street station. Steven Knight's new film studios and a cutting-edge BBC broadcast centre have already been announced. I'm confident similar success will follow in other HS2 station destinations such as Crewe and Manchester once construction is underway.

Staying focused on the prize that high-speed rail offers is important as we confront the challenges of a busy period of civil engineering work. With more tunnels to bore and bridges to raise, maintaining a close and collaborative relationship with our supply chain is crucial. Made up of thousands of companies, big and small, from every corner of the United Kingdom, the supply chain is stepping up to deliver one of the most complex pieces of engineering our country has ever embarked on.



Staying focused on the prize that high-speed rail offers is important as we confront the challenges of a busy period of civil engineering work."

This period of peak construction on Phase One also means we'll never be as disruptive to communities along this part of the route as we are now. Our commitment to respecting people and places is more important than ever and working with our supply chain we are continuing to find new ways to minimise the impact of construction on local people.

Innovating and raising the bar for the infrastructure industry has been a hallmark of this unique project and will continue to be as we move construction of the railway north to Crewe and Manchester in the coming years. It's an important part of our legacy, but it doesn't tell the whole story. HS2's impact will go far wider, creating opportunity and prosperity throughout our country, changing Britain for ever.

Sir Jon Thompson

Chair, High Speed Two (HS2) Ltd

HS2 project update: Chief Executive Officer



Mark Thurston, Chief Executive Officer.

“Our workforce continues to grow and more than 28,500 people are now helping to build HS2.”

Six years into our construction programme, HS2 has huge momentum. Our achievements so far leave me full of praise for our people and proud of the progress we’re making. Our momentum is driving us through peak construction on Phase One, where Britain’s new high-speed railway is beginning to take shape.

Seeing our tunnels and bridges being built is exciting for everyone involved in this transformational project; they will be symbols of a better-connected Britain. Our workforce continues to grow and more than 28,500 people are now helping to build HS2.

Rephasing construction

Like almost every area of government, we are playing our part helping the public finances during this period of global inflationary pressure. Rephasing delivery for certain elements of the programme until these pressures ease is the responsible thing to do and does not affect the Government’s commitment to building HS2 in full between Euston and Manchester and the East Midlands.

The changes include rephasing the construction of the route between the West Midlands and Crewe and the expected completion date of the railway in London from Old Oak Common to Euston. In addition, some Phase One works north of Birmingham will not be mobilised as originally planned as part of the process to manage cost pressures. I know this may create uncertainty for communities living along these parts of the route as the start date or continuation of works moves to a different timeline.

We will keep people informed how the deferral of works will affect them and our Helpdesk is available 24 hours a day to respond to any direct queries.

Phase One between Birmingham Curzon Street and Old Oak Common continues apace and we’re due to complete most of our civil engineering work over the next couple of years, providing a blueprint for future phases and lessons we can share with the construction and infrastructure sectors.

HS2’s legacy covers all aspects of the programme’s design and delivery: from designing out carbon emissions produced by our stations and the machinery we’re using to build them; from putting people first in the design of our state-of-the-art trains to making sure our rolling stock supply chain takes on board new talent; from route design that minimises HS2’s impact on local communities to carrying out unprecedented environmental works to make the railway blend into the natural landscape. We are setting new standards for others to follow.

Safety is one of our core values and we are guided every day by our overarching philosophy to be Safe at Heart. Our refreshed Health and Safety Strategy continues to make safety our top priority during a period of intense construction activity. We were deeply saddened when an employee working for a company in our supply chain died following an incident onsite in April 2023. We are working with our construction partner and the relevant authorities to understand the cause of the incident.



HS2 project update: Chief Executive Officer

Recruiting apprentices and boosting growth

As a former apprentice, it's pleasing to see more than 1,200 apprentices join HS2 and we're well on our way to meeting our target of 2,000. Our recruits come from different backgrounds and communities and they all recognise the opportunity our project provides to launch their career or change direction and learn new skills.

HS2 is supporting economic growth across the UK and there are more than 3,000 unique businesses in the supply chain, making the railway a truly national endeavour. Over £23 billion has been contracted into the supply chain and there will be more business opportunities on Phase One over the coming years and then on to future phases as work intensifies north of Birmingham.

We're launching our sixth tunnel boring machine (TBM) this summer at Bromford in Birmingham, an important part of completing the first phase of the railway. It will join TBMs already deep underground in London and Buckinghamshire and follow the completion of the one-mile twin tunnel under an ancient woodland at Long Itchington Wood, Warwickshire.

Two TBMs, Florence and Cecilia, will be close to finishing their 10-mile journey under the Chilterns by the end of the year. The tunnel breakthrough will be a momentous achievement for everyone involved.

We carried out a giant box 'slide' over the M42 in Warwickshire last Christmas, moving a pre-constructed bridge into place to minimise disrupting road users – and we'll repeat a similar feat near Kenilworth this year. Using cutting-edge techniques like these are a hallmark of how we're building HS2.

Championing innovation

For us, innovation comes as standard. Alongside our construction partners, we're pioneering advances in diverse areas including clean construction. I'm tremendously proud that we now have 19 diesel-free construction sites as we work towards our target of making all HS2 sites diesel-free by 2029. In addition, our Innovation Accelerator programme is coming up with new ways to reduce HS2's impact on local communities, such as a new spoil carrying conveyor that is cutting lorry movements in west London.

Doing things differently does not stop at our site gates. We'll onboard our new Rail Systems Alliance, a collaborative delivery model designed to bring out the best from our contractors. Pooling expertise and spreading risk will also deliver better value for money for the taxpayer.

The latest concept designs for HS2's trains will be released in the autumn, providing a glimpse into the future of modern travel. It will be a symbolic step showcasing the look and feel of the operational railway.

We're making good progress with the hybrid Bill to extend the line from Crewe to Manchester. The legislation is in the Committee Stage in the House of Commons and we're depositing Additional Provision 2 this summer.

The excitement of what is to come will not distract us from our responsibilities today. We're relentlessly focused on the cost and schedule of the programme and how we deliver HS2 is as important as what we deliver. This is why we won't forget our responsibilities to local communities: respecting the people and places where we are building HS2 is at the forefront of our minds.

This will be my final Corporate Plan as Chief Executive of HS2 Ltd. The next 18 to 24 months will see the project move into an exciting new stage. I have agreed with the board that someone else should lead the organisation and programme through what will be another defining period for HS2.

In closing, I want to thank the new Rail and HS2 Minister, Huw Merriman, for being a supportive voice and critical friend of the project. I also want to wish Sir Jon Thompson the very best as our new Chair and thank everyone involved with HS2 for their hard work and dedication to building Britain's future. It's a privilege to lead them.

Mark Thurston

Chief Executive Officer, High Speed Two (HS2) Ltd



Building Britain's new railway

Phase One: We are prioritising building HS2 between the West Midlands and our London superhub at Old Oak Common. Services are scheduled to run between Birmingham and our temporary London terminus by 2033. We will then extend the railway to HS2's new station in Euston.

Phase 2a: We have started laying the ground to extend HS2 from Birmingham to Crewe. We're focusing on the scheme design, acquiring the land we'll need for the railway and some early works, such as environmental activities.

Phase 2b: We are moving ahead with the legislative process to take HS2 to Manchester, including two new stations in the city centre and at Manchester Airport.

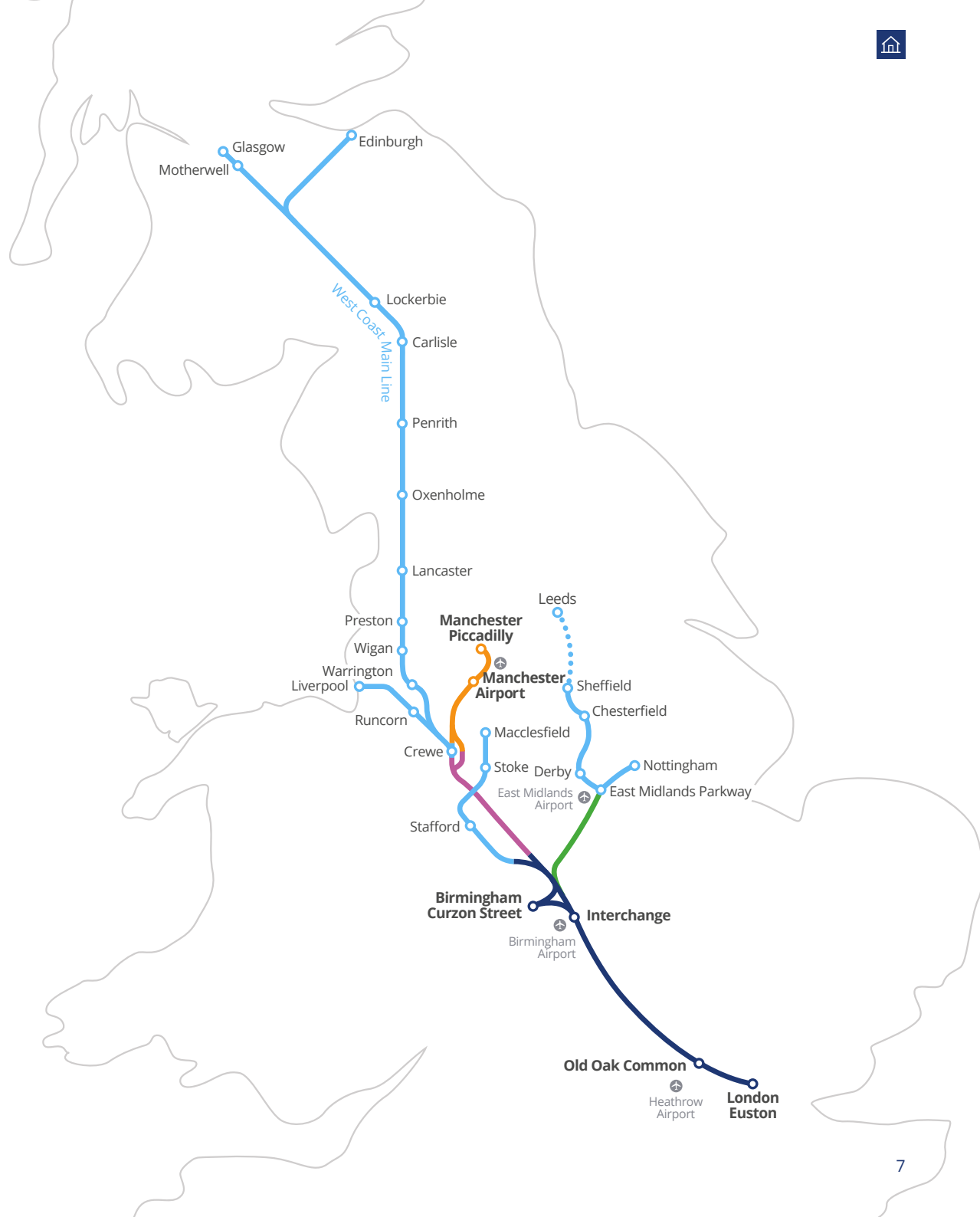
HS2 East and beyond: We are carrying out land and property safeguarding on the proposed route between the West and East Midlands. The Government is looking at the most effective way to take HS2 trains to Leeds.

Key

- Destinations served by HS2
- HS2 Phase One
- HS2 Phase 2a
- HS2 Phase 2b Crewe - Manchester
- HS2 East
- Potential HS2 services on existing network

The Government is looking at the most effective way to run HS2 trains to Leeds and to the North West and Scotland.

Based on current indicative train service specification.





Who we are – and our strategic goals

High Speed Two (HS2) Ltd is a non-departmental public body, wholly funded by the Secretary of State for Transport and sponsored by the Department for Transport. We are responsible for developing and promoting Britain’s high-speed rail network, HS2.

The programme is a once-in-a-generation investment in our transport infrastructure and involves building a dedicated line for long-distance, zero carbon travel linking London, the Midlands and the North with connections to Scotland. HS2 will

improve rail connectivity, increase capacity on the existing network for local, regional and freight services and boost economic growth. We are procuring and bringing together a UK-wide supply chain of designers and contractors to deliver billions of pounds worth of contracts.

The taxpayer is making a major investment in HS2, which is being designed for 120 years’ service. The long-term benefits of the railway extend far beyond the new services we’ll run and are captured in the project’s seven strategic goals. These set out HS2’s ambition to be a catalyst for economic growth, boost opportunities for all, promote prosperity and

help to combat the climate emergency by providing sustainable, climate-resilient rail travel.

HS2 benefits include supporting skills, training and jobs; improving health and safety; and setting new standards for our future rail customers. We’re already delivering against our strategic goals: we are supporting more than 28,500 jobs, promoting nature recovery through HS2’s Green Corridor and cutting carbon emissions in major construction. We’ll continue to realise HS2’s benefits across the lifetime of the project.



Catalyst for growth

HS2 will be a catalyst for sustained and balanced economic growth across the UK.



Skills and employment

HS2 will create opportunities for skills and employment.



Capacity and connectivity

HS2 will add capacity and connectivity as part of a 21st century integrated transport system.



Health, safety and security standards

HS2 will design, build and operate a railway which improves industry standards for health, safety and security.



Value for money

HS2 will deliver value to the UK taxpayer and passenger.



Sustainability and respect

HS2 will create an environmentally sustainable solution and deliver respectfully to people and places.



Customer experience

HS2 will set new standards in customer experience.



Phase One construction milestones

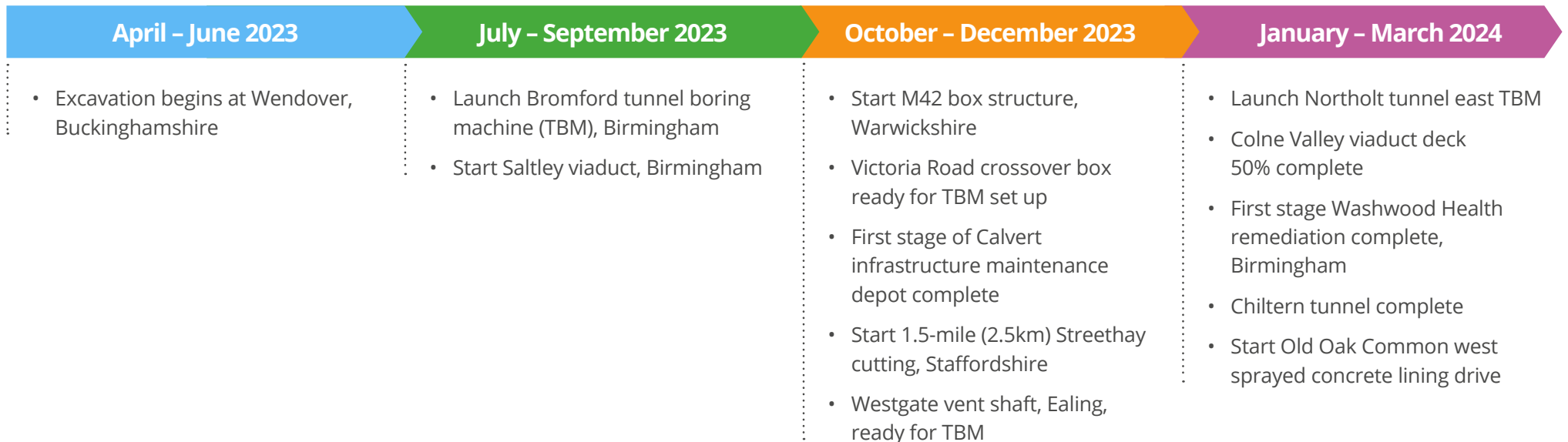
We are hitting milestones on the project as our work progresses through peak construction. We are focused on maintaining momentum and we will start and complete key aspects of HS2’s critical Phase One infrastructure in the next 12 months.

Major construction is taking place along the route between our flagship station sites at Curzon Street in Birmingham and Old Oak Common in west London. We are building structures that will support high-speed rail services well into the 22nd century.

During 2023 – 2024, tunnelling will begin in Birmingham as we start to build the 3.5-mile Bromford tunnel between Water Orton in Warwickshire and Washwood Heath to the east of the city.

Our construction partner Align is set to complete 50% of the deck for the UK’s longest rail bridge in the Colne Valley outside London. The 2.1-mile viaduct will be one of HS2’s iconic structures.

We remain on target to complete the 10-mile Chiltern tunnel, the longest on the HS2 network. Our two tunnelling machines set off from the south portal at West Hyde, Hertfordshire in summer 2021 and are poised to break through at South Heath, Buckinghamshire in spring 2024.



Part Two

Building the best railway 2022 – 2023

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Image: Pre-cast tunnel segments laid out ready for use by the tunnel boring machine.



Snapshot of our progress for 2022–2023

We reached project milestones both above and below the ground during the first 12 months of HS2's peak construction period.

The railway's main works structures, such as twin-bore tunnels in Northamptonshire and Buckinghamshire, are well underway – and we've completed HS2's first major tunnel at Long Itchington, Warwickshire, preserving an ancient woodland.

We are pushing ahead with cleaner construction and now have 19 diesel-free sites, which are helping us to cut carbon emissions and reduce noise. We're also fulfilling our goal to help train the next generation of infrastructure professionals and welcomed our 1,200th apprentice to the project.

Milestone moments in 2022–2023

June 2022



Construction starts on HS2's first 'green tunnel' at Chipping Warden, Northamptonshire.

July 2022



The first tunnel 'breakthrough' on HS2 after a one-mile journey under Long Itchington Wood, Warwickshire.

October 2022



The work to build 13 miles of tunnels under London begins as the first tunnelling machine sets off from West Ruislip.

Snapshot of our progress for 2022–2023

December 2022



Ten HS2 work sites become diesel-free, cutting carbon emissions across the project. The total is now 19.

December 2022



The longest 'box slide' in the world takes place as a 12,600 tonne bridge for HS2 is moved into place over the M42 in Warwickshire.

January 2023



More than 1,200 apprentices are now working on HS2 – well on the way to the target of 2,000.

January 2023



First five-metre tall viaduct pier completed in Birmingham at Curzon No 3 viaduct.

February 2023



Tunnellers pass the five-mile halfway point on HS2's longest tunnel under the Chilterns.

March 2023



Second tunnel breakthrough at Long Itchington Wood, Warwickshire.



At a glance: Phase One early works complete

Three early works contractors completed the vast programme of ground preparations along the 140-mile Phase One route between the West Midlands and London.

- Area South – CSJV (Costain Group Plc, Skanska Construction UK Limited).
- Area Central – Fusion JV (Morgan Sindall Construction & Infrastructure Ltd, BAM Nuttall Limited, Ferrovial Agroman (UK) Limited).
- Area North – LMJV (Laing O'Rourke Construction Limited, J Murphy & Sons Limited).

3

joint ventures awarded early works contracts.



27 million

square metres of land handed over by LMJV.



5,593

archaeological trial trench investigations by Fusion JV.



40,000

human remains excavated at St James's Burial Ground, Euston.



60 million

hours worked.



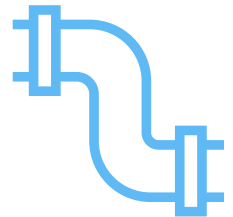
21,000

utilities crossed by CSJV and 34,000 metres of communications and electric ducts installed.



12,350

metres of pipes diverted and 56,240 metres of cables installed by LMJV.



CSJV

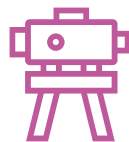
Fusion JV

2,300

people employed at peak by CSJV.

2,000

people employed at peak by Fusion JV.



7,000

locations for ground investigations.



230,000

environmental surveys to protect wildlife like badgers, barn owls and water voles by Fusion JV.



53

new wildlife habitats created by LMJV.



8,000

great crested newts relocated by Fusion JV.

Phase One progress summary 2022 – 2023

We continued to make significant progress building Britain’s new high-speed railway as we moved into HS2’s peak construction phase. During 2022 – 2023, work was underway at more than 350 sites as we pushed on with building the tunnels, viaducts, bridges and cuttings that will allow us to operate zero carbon rail services and kickstart regional economic growth.

The scale of this unprecedented construction programme is reflected in the fact that we clocked up nearly 60 million hours in 2022, an increase of more than 40% on the previous year.

We hit milestones along the Phase One route between the West Midlands and London, including our first tunnel breakthrough at Long Itchington in Warwickshire. Our tunnel boring machine (TBM), named Dorothy, finished the one-mile dig under an ancient woodland in July 2022. Workers removed the TBM’s cutterhead and shield and moved them back to the launch portal overnight to minimise disrupting local people. The gantries were moved back through the tunnel and the machine was reassembled and relaunched to build the second twin tunnel in November 2022. We achieved the second breakthrough – and completion of the tunnel – in March 2023.

Moving south along the line, two 2,000-tonne TBMs that we launched in summer 2021 passed the halfway point of their 10-mile journey under the Chiltern Hills. Diving to almost 300 feet (90 metres), they are building twin tunnels with an internal diameter of 30 feet (9.1 metres) that will take trains travelling at up to 200mph under an Area of Outstanding Natural Beauty. We’ve also made good progress building the 38 cross-passages that will link the north and southbound tunnels and the structure’s five ventilation and access shafts.

Our first tunnel in London is also underway. A second pair of TBMs was launched in October 2022, excavating and building the western end of the 8.4-mile (13.5km) Northolt tunnel. The tunnel will connect HS2’s new station at Old Oak Common to West Ruislip, where trains heading out of London will surface. The machines are expected to spend 22 months underground before resurfacing at the Greenpark Way vent shaft in Ealing.

Construction of our first cut-and-cover or ‘green’ tunnel began at Chipping Warden, Northamptonshire in mid-2022. The one-and-a-half mile tunnel will help the high-speed railway blend into the landscape, as it will be planted with trees and shrubs, to help reduce noise. It is one of five green tunnels we are building on Phase One.



The moment of breakthrough by the tunnel boring machine at Long Itchington Wood.



Pre-cast concrete segments being craned into place for the green tunnel at Chipping Warden.

Phase One progress summary 2022 – 2023

The rail bridges we are building on the London – West Midlands route are starting to take shape as some of HS2’s iconic structures become a reality following detailed planning, refinement and engagement with local communities. The foundations for the two-mile Colne Valley viaduct, the UK’s longest rail bridge, are now complete. About one kilometre of the superstructure has been built, with a giant launching girder placing precast concrete deck segments on either side of the supporting piers.

We achieved a world first at the end of 2022 when we moved a bridge 165 metres into place over the M42 in north Warwickshire. The 12,600-tonne structure was built at the side of the motorway during the preceding six months and a 450-strong team worked over Christmas to move it into place in an impressive 40-hour operation.



Dominique, HS2’s launching girder, placing pre-cast concrete sections into position for the Colne Valley viaduct.

Phase One progress summary 2022 – 2023

In January 2023, workers completed the first pier for the Curzon No 3 viaduct, one of a series of bridges that will take HS2 trains in and out of central Birmingham. The five-metre-tall structure was poured using a lower carbon concrete mix containing granulated blast-furnace slag, a by-product from the steel industry.

Several smaller structures have been built over the line itself, including a bridge that will take the new East West railway over HS2 at Aylesbury, Buckinghamshire. We've also built a 90-metre tunnel to relocate a traction substation for the London Underground at Euston, making way for the new HS2 station in the capital.

We've expanded our logistics operation to support the ongoing works, including a huge precast concrete yard and training centre in Kingsbury, Warwickshire, which opened in summer 2022 and supports about 1,000 jobs.

We've also built and commissioned a 1.7-mile network of conveyors to take excavated material from our works at Old Oak Common station and the London tunnels to our logistics hub at Willesden Euroterminal. The conveyors will remove an estimated one million lorry movements in west London.

We remain in the range of target dates to launch HS2 services between Birmingham and Old Oak Common in the early 2030s. As we push ahead with construction, we're continuing to cut our carbon footprint using innovative techniques, efficient design and low carbon construction practices: we've reduced carbon emissions by 29.6% against our 50% baseline target as we build cleaner, greener infrastructure and set new standards for future projects.



A viaduct support at Curzon Street, Birmingham.



Pre-cast concrete segments laid out ready for use on the Thames Valley viaduct.

Part Three

Building the best railway

2023 – 2026

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Image: An operative walking through a tunnel at Chalfont St Peter crossover box.

Phase One main works

The main works construction of Phase One covers the railway's major civil engineering schemes from bridging structures to deep-dive tunnels. Main works officially started three years ago, in September 2020, and we are making significant progress along the 140-mile route between the West Midlands and London.

Phase One is divided into four sections and the main works in each section are being delivered by integrated project teams (IPTs). The IPTs comprise HS2's main works joint ventures, design joint ventures and HS2 Ltd, the client organisation. The model is well established and allows us to work efficiently, manage costs, remain accountable and share best practice across our construction partners.

Following the Government's transport funding announcement in March 2023, we are prioritising our work on the opening stage of the network. We are maintaining strong momentum as we build the high-speed link between Birmingham Curzon Street and HS2's London superhub at Old Oak Common. The forecast date for initial services between Birmingham and Old Oak Common remains in the range of 2029 to 2033.



Rebar installation.

Phase One main works

Fradley, Staffordshire to Long Itchington Wood, Warwickshire: Balfour Beatty VINCI

Balfour Beatty VINCI (BBV), our main works contractor for the northern section of Phase One, is continuing to make significant construction progress, with much more to come. However, some planned activities between Curdworth in North Warwickshire and Handsacre in Staffordshire will not be mobilised as originally planned as we manage cost pressures.

On that particular section of the route, there will still be an expected 80% increase in activity this year as we progress through peak construction. BBV will continue as planned with works that are underway and affect major assets like critical utilities, A-roads, motorways and the conventional rail network. This means works around the A38 at Streethay, and works to create a box bridge underneath the West Coast Main Line, near Lichfield Trent Valley, are unaffected by the rephasing.

The route section requires major earthworks, including embankments and cuttings, to form the 'level' ground we need for HS2. Most of the works will go ahead as planned as BBV continues to hit project milestones in the next few years.

Elsewhere on the northern section of Phase One, we will continue to build on our achievements to date, as we construct some of the railway's most prominent local structures.

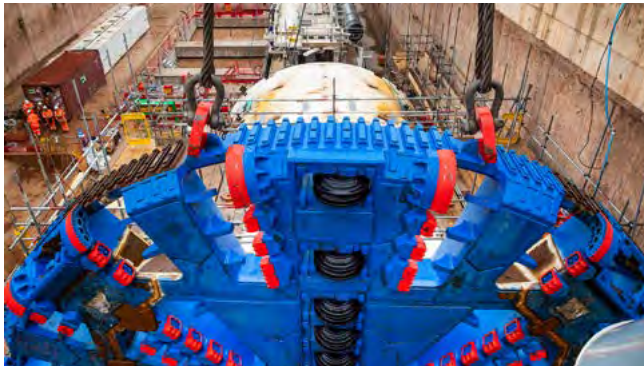
Segments are rolling off the production line at a vast precast concrete yard in Kingsbury, Warwickshire. It was built to make almost 3,000 segments that will be needed for the network of viaducts that will take trains in and out of Birmingham.



The Curzon Street station work site in Birmingham.

Phase One main works

Fradley, Staffordshire to Long Itchington Wood, Warwickshire: Balfour Beatty VINCI



A tunnel boring machine cutting head being craned into position.

The team based at BBV's Curzon Street site in Birmingham city centre have been casting the piers supporting the Curzon No 3 viaduct. Standing five metres high, the first of the V-shaped structures was completed in January 2023 and the team are now working on assembling the first deck span of the viaduct.

BBV has also started working on the piers for the Water Orton viaducts, located to the east of the M42. Some 18 metres high, the giant structures will eventually support a pair of viaducts that will carry HS2 trains over the River Tame and a network of existing transport links. These will take about three-and-a-half years to complete.

Meanwhile, the joint venture is preparing to launch its second tunnel boring machine (TBM) in the summer.

Built by Herrenknecht in Germany, it will create one of the three-and-a-half mile Bromford twin tunnels, just outside Birmingham.

To cut costs and waste on the project, BBV will reuse Dorothy, its first TBM, to build the second tunnel at Bromford. The machine recently completed mile-long twin tunnels under Long Itchington Wood, protecting the ancient woodland and habitats above. Engineers are dismantling, transporting, reassembling and commissioning it, ready for the second Bromford tunnel bore launch in early 2024. BBV expects the first TBM to breakthrough in summer 2024 and the second in early 2025.

At Long Itchington Wood, we will maintain our delivery momentum, building on the completion of the twin-bore tunnel under the wood in March 2023. Back in December 2022, the Secretary of State for Transport, Mark Harper, visited the tunnel to see the progress at first hand and meet a group of HS2 apprentices.

The next steps involve building a cut-and-cover or 'green' tunnel near the south tunnel portal, which the team has now started. This is where BBV's works meet those of EKFB JV. The 17-metre structure will further help the railway to blend into the landscape and is due to be completed by the end of 2025.

BBV has also been making good progress on a green tunnel further north, at Burton Green, near Kenilworth. Work began on the foundations in 2023

and a 200-metre porous portal was completed in the spring. The structure has a series of vents to reduce the noise of high-speed trains coming in and out of the tunnel.

The team are now focused on building the rest of the 700-metre tunnel. The process of excavating a cutting, building the diaphragm walls to support the tunnel, adding a concrete roof and backfilling it with soil ready for planting will take up to four years. Planted with native trees and shrubs, it will provide a new landscape for the local community, connecting with existing footpaths and the Kenilworth Greenway.

Earthworks projects are also progressing on this section of route. With projects including the Beechwood embankment at Balsall Common, the Grand Union canal embankment near Long Itchington, and Pool Wood embankment in Solihull, BBV will move about 50 million cubic metres of material over the next six to seven years.

To help it achieve these technical and logistical feats, the joint venture uses 'My Contribution', a scheme that lets employees share ideas on ways to improve its processes. More than 900 ideas have been submitted, covering topics including environmental protection and digital technology. Of these, more than 200 have been implemented, creating an estimated £64 million of project savings.

Phase One main works

Long Itchington Wood to the Chiltern tunnel: EKFB

The 50-mile rural section of Phase One between Warwickshire and Buckinghamshire is taking shape as we move through peak construction.

Eiffage, Kier, Ferrovial Construction and BAM Nuttall (EKFB) joint venture has been preparing the ground for 81 bridges, 15 viaducts and three 'green' tunnels that will take high-speed trains through the heart of England.

This year, it will start building several of the most significant structures in its section, including the innovative 'cut-and-cover' tunnels that will reduce HS2's noise impact on local communities and pioneering low carbon viaducts in Buckinghamshire.

The most advanced of the structures is the Chipping Warden 'green' tunnel in Northamptonshire. EKFB is digging into the landscape to create a cutting for the twin tunnel and will then build the double arches that will take trains through the area. To date, the joint venture has completed over 200 metres of the M-shaped structure using precast concrete segments. The method uses fewer materials, cuts costs and reduces embedded carbon emissions. Once it is complete, workers will 'backfill' the arches with earth before they landscape the area with thousands of native trees and shrubs, recreating hedgerows and field boundaries on top of the tunnel.



Green tunnel land being prepared for pre-cast concrete segments installation.

Phase One main works

Long Itchington Wood to the Chiltern tunnel: EKFB

EKFB is also making progress with its second green tunnel at Greatworth, Northamptonshire. At 1.5 miles long, it will be the longest tunnel of its type on HS2.

Once the necessary consents are in place, the team will begin excavation work for a similar structure at Wendover, Buckinghamshire.

Progress is also being made on railway bridges, including the 880-metre-long Thame Valley viaduct. EKFB has designed its large, prefabricated concrete piers and beams to be slotted together like a giant Lego set. The so-called modular approach speeds up assembly and reduces the structure's carbon footprint by a third.



The first pre-cast segments for the Thame Valley viaduct at a factory in Kent.

The first concrete segments will arrive onsite in the summer of 2023 and construction is due to take about two years.

Two other significant viaducts are being built nearby at Wendover Dean and Small Dean, Buckinghamshire. Here, EKFB will employ a double-composite technique used on the TGV railway in France, sandwiching steel girders between two layers of reinforced concrete to create a strong yet lightweight hollow span. The innovative design, which is being used in the UK for the first time, will halve embedded carbon.

Piling for the 450-metre Wendover Dean viaduct is now complete and the first steelwork section was delivered in the spring. Our contractors will move the first steelwork section into place later this year, repeating the process five times in total, with the final launch in summer 2024. Once this is complete, the concrete deck will be poured and the approach embankments will be built in 2025.

The slightly shorter viaduct at Small Dean will be built in a similar way, but with the entire 350-metre deck built on a launch embankment and moved into place over a road and railway. The operation is planned for summer 2024.

EKFB is also tasked with building 47 embankments and 28 of a total of 70 cuttings needed to keep the railway level as it crosses the country between London and Birmingham.

The joint venture moved 16 million cubic metres of material. It aims to beat the total in 2023 as works continue on embankments and cuttings. These include some of the longest on HS2 – notably the 2.5-mile Barton to Mixbury cutting, Oxfordshire, and the Calvert cutting in Buckinghamshire, which will be 2.1 miles long.

To keep construction traffic off local roads, EKFB has built a hard-surfaced haul road running the length of the route. Railheads at Quainton and Calvert have already received more than 1 million tonnes of construction materials, with thousands more deliveries by rail expected in the next three years. About 99% of excavated material will be reused onsite.

A three-year campaign of tree-planting will begin at the end of 2023. EKFB will plant about 3.3 million native trees to reduce the visual impact of the railway and boost biodiversity as part of the HS2 Green Corridor.

Phase One main works

South Heath to West Ruislip: Align

Align, a joint venture of Robert McAlpine, VolkerFitzpatrick and Bouygues Travaux Publics, continues to make strong progress on a technically challenging part of the route that includes building a 10-mile twin-bore tunnel as well as the UK's longest rail bridge.

Foundation works for the 2.1-mile Colne Valley viaduct, an iconic structure that will carry HS2 passengers between the outskirts of London and the Chiltern tunnels, were completed in January 2023.

Supporting piers for the viaduct are now being cast over the top of each set of piles. Weighing about 370 tonnes, they are cast using special formwork. The first of the more complex, V-shaped piers designed to bear the load over water was completed in April 2023 and the final pier is expected to be built by the middle of 2024.

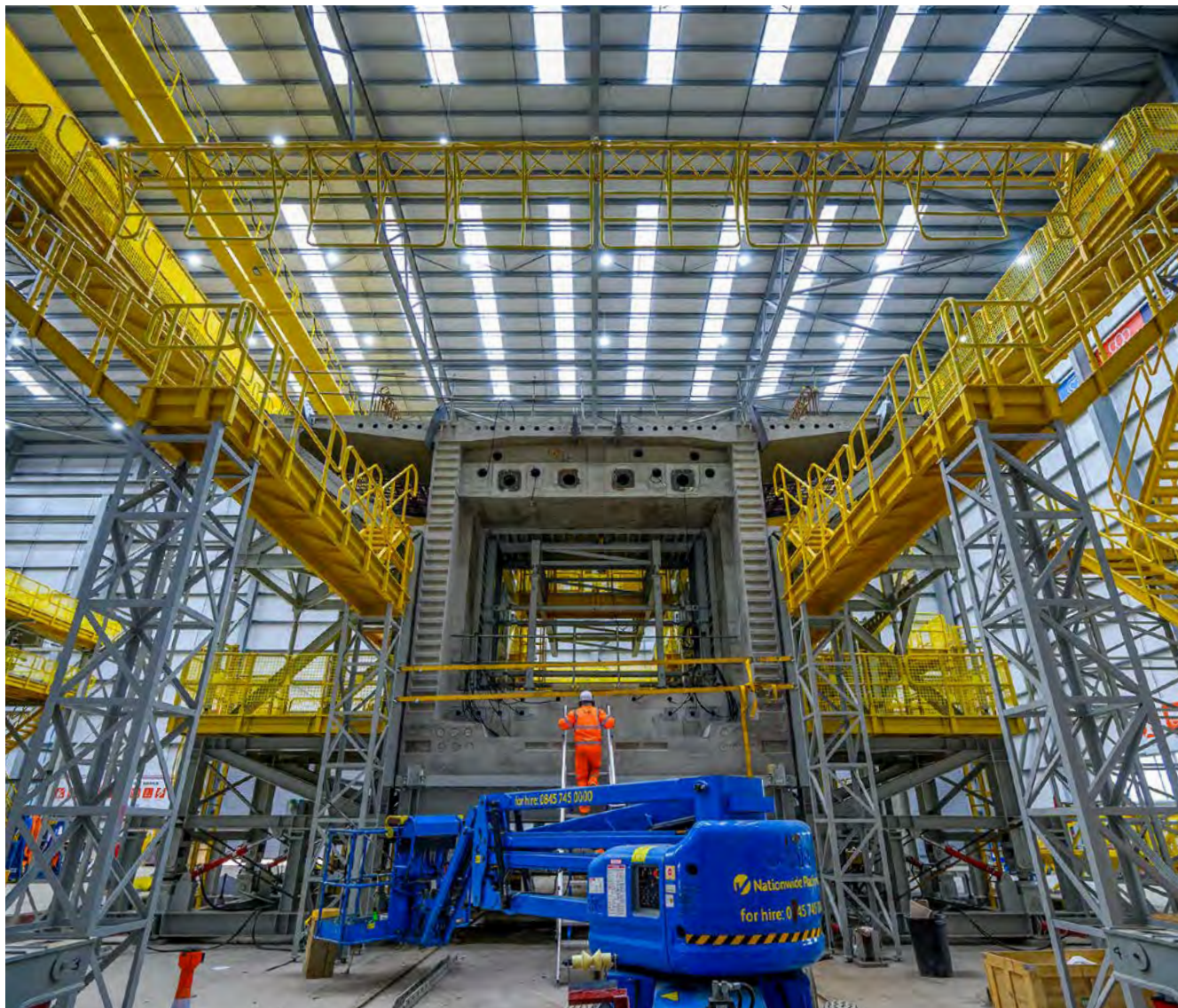
Meanwhile, a giant launching girder has been steadily placing the concrete segments that will form the viaduct's deck. The 160-metre-long machine is the only one of its kind operating in the UK. It launched from the north embankment in May 2022, moving from pier to pier building the deck, using a cantilever approach to balance the structure. By the spring of 2023, more than 240 segments had been placed, each one unique to allow for the gentle curve of the viaduct.



Dominique, the pre-cast concrete launching girder for the Colne Valley viaduct.

Phase One main works

South Heath to West Ruislip: Align



A casting cell in the viaduct pre-cast factory at the South Portal site.

Align has cast more than a third of the total of 1,000 segments at a purpose-built factory at the nearby south portal site. The team is continually working to improve production at the factory, where the segments are match-cast against each other to ensure a perfect fit when they are erected to form the viaduct deck.

The final segment will be produced by the end of 2024, with the superstructure expected to be complete the following year.

Beneath the nearby Chiltern Hills, two tunnel boring machines (TBMs) are well over the halfway point of their journey building the network's longest tunnel under an Area of Outstanding Natural Beauty. The TBMs have passed the first three of the tunnel's five ventilation and access shafts and are expected to break through at the north portal in early 2024.

All five of the shafts have now been excavated and Align and its subcontractors are building the large basements alongside the shafts that will contain ventilation equipment and provide emergency access to the tunnels. These will be complete in 2025, with headhouses built on top.

Phase One main works

South Heath to West Ruislip: Align

A separate team is working on the 38 cross-passages that will link the twin tunnels. Their equipment includes remotely controlled excavators to break out of one tunnel and excavate up to 20 metres to reach the second. Each passageway is waterproofed and given two layers of concrete lining, then completed with a safety door from Bolton supplier Booth Industries.

Work is also underway on a porous structure at the south portal that will reduce the noise of the trains passing in and out of the tunnels. The portal team and cross-passage workers operate alongside two crews of 17 people who operate each of the TBMs. Working round the clock to maintain progress, the TBM crews pilot and maintain the giant machines, named Florence and Cecilia. They oversee the excavation of material as well as placing and grouting the concrete segments that line the tunnels. The segments are produced onsite.

As the TBMs soften and bore through the chalky soil, they create a slurry that is pumped down the tunnel to be processed at Align’s slurry treatment plant, the largest in Europe. The processed material is being used to create a vast chalk grassland – the biggest single landscape and habitat creation project in HS2’s Green Corridor programme. It is also reducing the project’s carbon footprint by cutting road haulage and waste treatment activities.

Align has now placed almost two million cubic metres of the mineral-rich material. Once works are complete in 2025, it will dismantle the buildings it has built at the south portal and create a chalk grassland there too.



Engineers meeting in the tunnels at Victoria Road.

Phase One main works

West Ruislip to Euston: Skanska Costain STRABAG

In line with our direction from the Government, we have revised our construction timetable in London as we prioritise the Birmingham – Old Oak Common section of Phase One.

Rephasing the programme means our construction partner Skanska Costain STRABAG (SCS) is pausing some planned works in London. However, we are pushing ahead with major tunnelling operations including the 8.4-mile Northolt tunnel, the second longest on the network. The tunnel will connect Old Oak Common station and West Ruislip, where HS2 trains will briefly surface before heading into the Cophthall ‘green’ tunnel in Hillingdon.

We launched our 2,000-tonne tunnel boring machines, named Sushila and Caroline, at West Ruislip in October 2022. They are progressing to Greenpark Way, Ealing as they build the western section of the tunnel. They will bore for a little under two years before they are dismantled and lifted to the ground through the shaft.

Two further TBMs will build the 3.4-mile eastern section of the Northolt tunnel. They will set off from HS2’s Victoria Road crossover box site, near Old Oak Common station, and work towards Greenpark Way. They are scheduled to launch in January 2024, completing their journey in 2025.

Work on headhouses and ventilation shafts for the Northolt tunnel at South Ruislip, Mandeville Road, Greenpark Way and Westgate in Ealing is ongoing.



Tunnel boring machines set up for use in London.

Phase One main works

West Ruislip to Euston: Skanska Costain STRABAG

Old Oak Common to Euston

SCS is pausing some planned works between Old Oak Common and Euston as part of the rephasing of the project. The start of work on the 4.5-mile Euston tunnel, scheduled for 2024, has been deferred although SCS will continue to prepare the TBMs, placing them in the Old Oak Common box, for future operations.

Construction of the Atlas Road logistics tunnel is continuing as planned following the launch of our third London TBM, called Lydia, in April 2023. SCS will use the tunnel – stretching for 853 metres, or about half a mile – to deliver building materials, including thousands of segment rings, to the Euston tunnel north portal. Running between HS2’s Atlas Road site and Old Oak Common, the logistics tunnel will also be used to remove spoil.

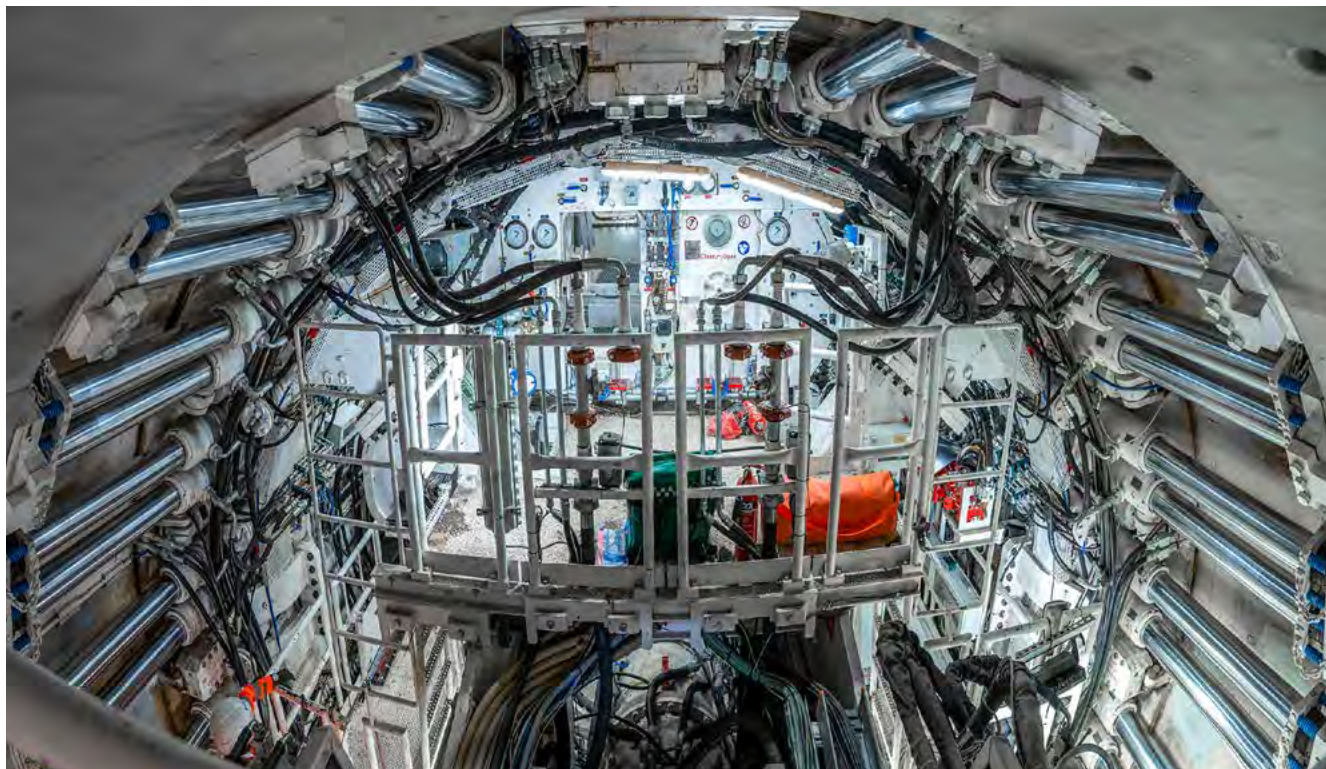
Four structures will be built to provide ventilation and emergency access to the 4.5-mile Euston tunnel between Euston and Old Oak Common. As part of the rephasing, work on headhouses and vent shafts at Adelaide Road in Camden and Canterbury Road in south Kilburn are being brought to a safe stop. We will remove any temporary traffic management, like road closures, and hoardings where it is safe, during the pause in work.

As with all changes to our programme, we will keep local people and businesses up to date with the latest information using our website, notifications and newsletters.

Euston approaches, headhouses and vent shafts

The Euston approaches connect the Euston tunnel’s south portal to Euston station and include the part of the tunnel that runs south of the A4201 Parkway Road.

While we’re deferring some works in this area, we’ll continue to carry out several activities including the extension of Granby Terrace bridge and utility diversion works for Hampstead Road bridge and Granby Terrace bridge. Our teams will also carry out the interim completion of the Euston scissor box and the cavern shaft area.



The internal operating unit of a tunnel boring machine.

HS2 stations

Curzon Street station



An architect's planned image of Curzon Street station.

“The station is set to be net zero in operation and will have solar panels to create sustainable power.”



A progress shot of work at Birmingham's Curzon Street site.

We are preparing to start main works construction at Curzon Street, HS2's state-of-the-art station in the heart of Birmingham.

It's a landmark moment in the development of the 25-acre site, which has been prepared by early works contractor Laing O'Rourke Murphy joint venture (LMJV). During excavations, archaeologists uncovered the world's oldest railway roundhouse, designed by Victorian rail pioneer Robert Stephenson – an ever-present reminder of Birmingham's key role in the development of national transport infrastructure.

Now Curzon Street is set to become a key destination and thriving departure point once again as part of Britain's new high-speed railway.

The seven-platform station will sit under an elegant arched roof, measuring more than 20,000 square metres. While the design is inspired by Victorian railway stations, it's also forward-looking. In particular, Curzon Street has been designed to achieve an 'excellent' BREEAM certification, an industry-recognised standard for buildings that reduce energy usage and materials waste and minimise their impact on the natural environment.

The station is set to be net zero in operation and will have solar panels to create sustainable power. Ground source heat pumps will help to heat the station, which will be lit with efficient LED lights.

HS2 stations

Curzon Street station

The first stage of the two-stage design and build contract for Curzon Street is expected to conclude later this year, subject to agreement of an affordable target price.

Foundation works are expected to begin by the start of 2024. With about 2,000 piles to construct, these works will continue well into 2024. Once complete, the concrete slab that will form the basis for the station’s ground floor concourse can be poured in 2025, with works on the façade taking place in 2026.

Construction is scheduled to be complete in time for Phase One services to start between 2029 and 2033.

The project will create more than 1,000 jobs in its main works phase. This is part of a transformative investment in the West Midlands, with contracts worth £816 million awarded to local companies in 2022 alone – almost twice the economic value delivered by the Commonwealth Games.



A visualisation of the new Curzon Street station with the old building in the background.



An imagined view of Curzon Street station from Millennium Point.

The new station will help to improve the surrounding area. The design features four new public spaces, including two squares and a promenade. Continuing the investment, Birmingham City Council intends to spend £724 million on regeneration through its Curzon Investment Plan.

Taking place over three decades, the scheme is set to create several new neighbourhoods across almost 150 hectares, including up to 4,000 homes and 36,000 jobs. HS2’s Birmingham terminus will offer seamless connections to the local transport network including buses and the Midland Metro with a tram line running alongside and under the station.

“
The design features four new public spaces, including two squares and a promenade.”

HS2 stations

Interchange station



An artist's impression of Interchange station.

“
Interchange sits in the top one per cent of new buildings in the UK for its eco-friendly credentials.”

We are preparing to start main works at Interchange, our station near Birmingham Airport and the National Exhibition Centre. The station will be a catalyst for growth in Solihull, putting commuters within 38 minutes of London and 37 minutes of Manchester.

Interchange will sit in the heart of Arden Cross, a new mixed-use development that will deliver up to 3,000 homes and 557,500m² of commercial space, supporting thousands of jobs. Through our collaboration agreements with Arden Cross, the Urban Growth Company, Solihull Metropolitan Borough Council and the DfT, we are working closely with local stakeholders to maximise the benefits of HS2 in the area.

Interchange was the first railway station in the world to receive an 'outstanding' BREEAM certification, a measure of the sustainability for new and refurbished buildings. This puts it in the top one per cent of new buildings in the UK for its eco-friendly credentials.

The station will use air source heat pumps to regulate the temperature and a rainwater harvesting tank will reduce its demand for mains water.

HS2 stations

Interchange station

There will be two 415-metre long ‘island’ platforms, offering four platform faces, as well as two central high-speed through lines for non-stopping services.

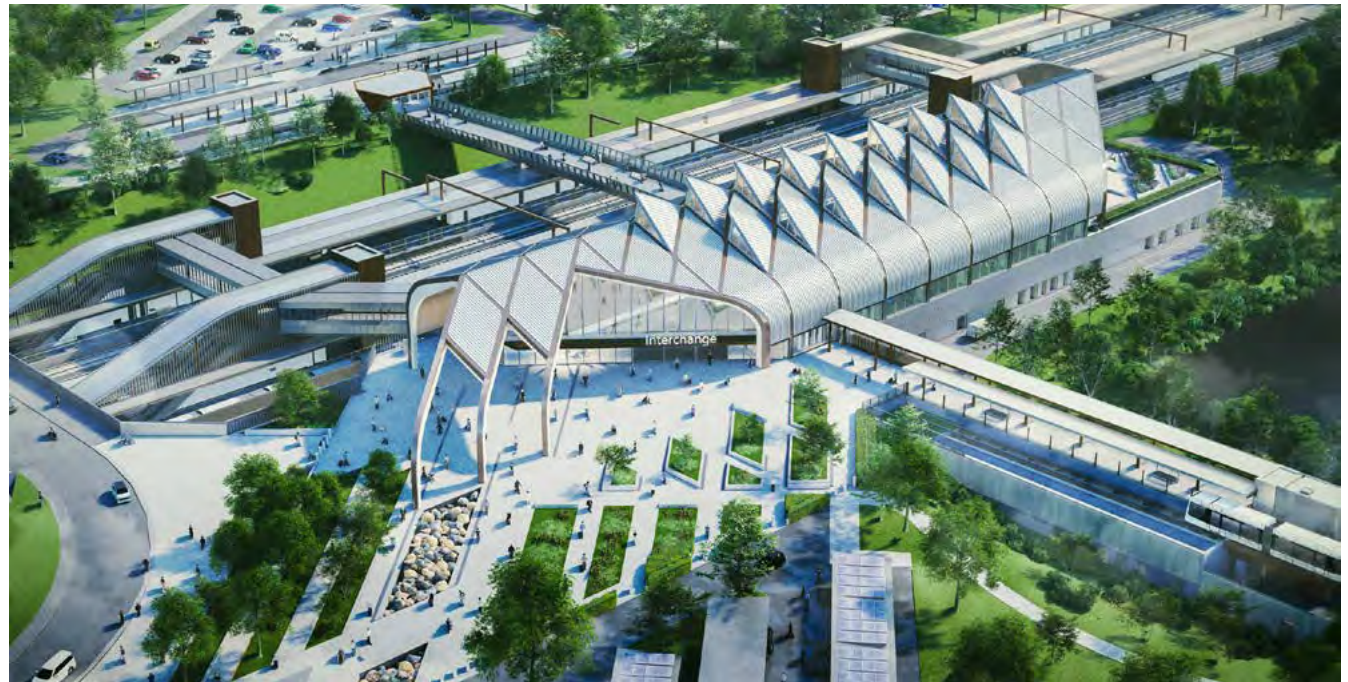
An automated people mover will connect Interchange with the NEC, Birmingham Airport and Birmingham International station. In total, public transport options will bring 1.3 million people within reach of the station.

The 150-hectare site sits in a triangle of land between the M42, A45 and A452. We have already made significant progress in the area, including the building of a modular bridge over the M42, as part of a remodelled road network that will facilitate access to the new station.

“There will be two 415-metre long ‘island’ platforms, offering four platform faces.”

Main construction works on this world-class transport hub are expected to start in 2024 and be completed by the end of 2027. Laing O’Rourke has been awarded the contract for these works, which will support around 1,000 jobs over the next five years.

We are now working to agree a target price and programme for the station as part of a two-stage design and build contract process, with Stage One expected to conclude later this year.



Aerial visualisation of Interchange station.



Visualisation of the automated people mover.

HS2 stations

Old Oak Common station



A visualisation of Old Oak Common station.

Construction is well underway on HS2's London superhub at Old Oak Common – the largest new station ever built in the UK.

Balfour Beatty VINCI SYSTRA (BBVS) joint venture has made significant progress excavating the underground station box, which will house six 400-metre platforms for HS2 trains. A further eight platforms will be built to serve the conventional rail services that will use the station in west London. Old Oak Common will be HS2's temporary London terminus while we progress a more affordable scheme design for Euston.

Rail and HS2 Minister Huw Merriman visited the site in November 2022 to turn on the conveyor system that will carry an estimated 1.5 million tonnes of spoil from the site to the Willesden logistics terminal. From here, it will be transported by rail to be reused around the country. The conveyor will remove the need for one million lorry movements on local roads, cutting emissions and reducing traffic disruption.

The 850-metre-long station box is so large that BBVS and its subcontractor, Expanded, have divided it into three sections: west, central and east.

HS2 stations

Old Oak Common station

Workers poured the base slab in the west box in spring 2023, marking the start of platform construction. BBVS expects to complete the foundations and diaphragm walls that will support the central box by the summer.

In the second half of the year, the east box is due to be handed over to SCS JV, which is preparing to launch a tunnel boring machine from the site for the Euston tunnel.

Once the box is completed in 2026, the station building and conventional platforms can be built. The foundations for these are already under way, with more than 1,600 piles to complete.

Meanwhile, there is much work to do to ensure that existing rail lines are integrated with the new station. BBVS has demolished the redundant Wycombe Line bridge over Old Oak Common Lane to make way for the station.

The joint venture will begin building new Great Western Main Line bridges over Old Oak Common land and the Central Line. This will be integrated with works on the conventional railway, with the tracks being progressively moved on to the new bridges in phases over the coming years.

BBVS must also divert several utilities to make way for the new station. In the past year, it has built

eight micro tunnels running 175 metres under the Great Western Main Line to prepare for the works. By the end of the year, it will complete the utilities protection zone it has built, backfilling the area and completing a retaining wall. This will allow utility diversions to begin.

Piling began in December 2022 for a shared accommodation building to be used by future station staff. The roles will be among the 56,000 jobs forecast to be brought into the area as part of the Old Oak and Park Royal Development Company masterplan, of which the station is a key element.



A view of the Old Oak Common site with the sun setting over London.



Work has started on the platforms of Old Oak Common station.

HS2 stations

Euston station



An artist's impression of how Euston station could look when it's open.

“
The station remains one of the network’s most complex design and construction challenges.”

London’s first intercity trains ran out of Euston in the 1830s, connecting the capital to Curzon Street in Birmingham. Two hundred years later, Euston will be the central London terminus for HS2 and is key to achieving the full benefits of the railway, providing about three times the capacity of Old Oak Common.

The station will have subsurface platforms dedicated to HS2 services and our works include direct connections to the London Underground. The new station will free up capacity on the West Coast Main Line and be a catalyst for urban regeneration in Camden.

The station remains one of the network’s most complex design and construction challenges and we are taking a fresh look at our design to make sure it offers best value for money for the taxpayer and achieves our ambitions for passengers and local people.

We are deferring full construction for the next two years and will address cost issues with the revised design, including concerns raised by the National Audit Office in March 2023. We now aim to carry out main works at Euston so it will be open in time to serve the Phase 2b route to Manchester.

HS2 stations

Euston station

Old Oak Common station will serve as HS2's temporary terminus in London while we complete Euston.

Some critical works will continue in Camden including construction of a new traction substation for the London Underground. The building in Stephenson Way will have three storeys above ground and three below ground. It is needed to house technical equipment and a vent shaft for the Northern Line.

We will also complete staff office facilities and the Construction Skills Centre at the Maria Fidelis school site, reinstate the eastern part of the Euston Road central reservation and complete the interim taxi rank in Euston Square Gardens East.

We will make sure the Euston construction site remains secure and maintained and traffic management and environmental monitoring will continue. We are working with the local community and stakeholders to look at ways we might be able to use areas of the site while the work is paused.



The traction substation tunnel at Euston.

HS2 trains

Developing our designs

Our British-built, bullet-style trains will be some of the fastest, quietest and most sustainable in the world, running on zero carbon electricity.

We signed the £2 billion rolling stock contract with Hitachi-Alstom JV for 54 trains in 2021. They will be built at factories in Derby, Crewe and County Durham.

We will service and maintain the fleet at Birmingham's new Washwood Heath maintenance depot for an initial 12-year period.

The first train will be made available to HS2 Ltd to support dynamic testing of the high-speed infrastructure in 2028.

Designs take shape

We've been working with Hitachi-Alstom over the past year to develop a world-class train design. The work is split into three stages, covering concept design, preliminary design and detailed design.

In December 2022, we finished the concept design stage, with all modelling assessments completed. This process included advanced developments to define how the trains will function and integrate with other railway systems, such as signalling and electric systems, to deliver our operational concept.



Visualisation of an HS2 train – designed in Birmingham, built in Britain.

HS2 trains

Developing our designs

Achievements during the first 12 months of the contract include building initial mock-ups of the train interior and driver’s cab. These feature the passenger interior including seats, tables, luggage, bike storage, toilets and on-board catering facilities. Work has also started on developing the colour, materials and finishes for the train interior.

Hitachi-Alstom is prioritising accessibility, working with the Inclusive Design Group at the University of Cambridge’s Engineering Design Centre to make sure the design is safe, inclusive and works for all passengers.

Our rolling stock team has worked with Alstom, stakeholders and rail user groups to test the initial train design. We’ve hosted a wide range of focus groups to trial different parts of the train, liaising with passenger representatives, groups for people with disabilities and operational staff.

By involving rail users, we’ve gathered valuable feedback on the initial design that will ensure our trains are fit for the future. The rail industry has also been represented with the West Coast Partnership Development, First Group and Trenitalia asked for their views.

We want to be the first high-speed railway in Europe to create ‘step-free’ access from street to seat and our ambition is to transform the customer experience. We’ve been working with rail passengers using focus groups and we’re analysing a large amount of data to make improvements in the next stage of design. A new set of mock-ups is set to be produced in about a year as we continue to engage with passenger groups.

Since mobilising HS2’s joint project teams last year, we’ve also made progress on developing processes and ways of working with Hitachi-Alstom JV to support how we manage the contract in the best way.

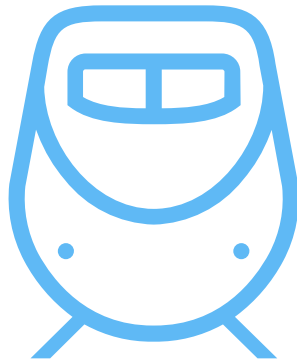
Over the next two years, we’ll complete the preliminary design and detailed design, leading to the final train design that we will take into manufacture. These stages include final design of the train interiors and passenger-facing systems on the train.



The exterior of the Hitachi factory where some of the new HS2 trains will be manufactured.

HS2 trains

54
trains.



2,500
jobs supported by
train contract.



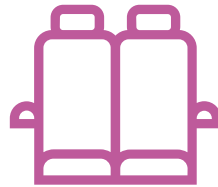
Zero 
carbon

electricity to power trains.

£157 million
a year pumped into the economy
through HS2's supply chain.



200-metre trains with about
500 seats



432

bodyshells will be
manufactured for
the fleet.

Built in Derby, Crewe
and County Durham.

Maintained in Birmingham.



Low-noise
pantograph collects power
from overhead line.



200-metre

trains can be 400 metres long with about
1,000 seats when coupled together.

Regenerative
braking and exterior designs
minimise noise.



Rail systems

Our rail systems team is responsible for 17 separate main contract packages across eight categories, starting with the track. Four main construction contracts will be let, supported by a dedicated supply chain providing slab, rail, switches and crossings.

Our overhead catenary system package will be built using a system based on the French national railway design, upgraded to our speeds. As part of the mechanical and electrical systems contracts, one main package will manage all the second-tier specialist contractors installing systems such as lighting, ventilation and fire control. We are already supplying tunnel cross-passage door frames to the main works contractors, although the main contract package will cover the installation of the doors.

The power contract will connect us to the grid and provide high-voltage connections, while our telecoms contracts are split into the main ‘backbone’ system, with a smaller contract to deliver facilities including station and passenger wifi. Our signalling and traffic management systems will be delivered through the command and control systems function.

We will have a contract in place to build the network integrated control centre and rolling stock maintenance depot at Washwood Heath, Birmingham. During the following two years, the train systems will also be developed and finalised, supported by the train sub-system suppliers as they come on board.

Another key activity will be systems integration between the rolling stock and other rail systems packages to make sure our designs are consistent ahead of manufacture and before the start of integrated testing activities on our infrastructure.

First contract award

We’ve awarded the first major rail systems contract, for track switches and crossings for Phase One and Phase 2a, to voestalpine Turnout Technology UK Ltd.

Switches and crossings are moveable sections of rails that guide trains from one track to another and allow them to cross paths, operating smoothly, reliably and safely at speeds of up to 225mph. The £210 million contract includes design, manufacture and delivery of about 180 switches and crossings for the route between London and Crewe. It includes about 77 rail expansion devices for tracks on viaducts and bridges – and about 70 lower-speed switches and crossings for the depots at Washwood Heath and Calvert, Buckinghamshire.

To reduce costs and improve performance, the tracks, switches and crossings will mainly be set on to concrete slabs, or slab track, rather than ballast commonly used on the UK rail network. This allows for more services and less maintenance.

The remaining systems contracts are expected to be awarded in 2024.



A worker at Booth Industries, Bolton.



A visualisation of the Washwood Heath depot.

Rail systems

Integration

HS2 is the most complex railway programme in Europe in terms of its scale, operation and technology and we need to make sure our trains, rail systems and infrastructure work together seamlessly. Challenges include integrating the new high-speed network with the conventional rail network, ensuring smooth operations across signalling systems and managing the size of the project.

Our trains, stations, tunnels and systems comprise multiple contracts delivered by different parties and we need to manage the interface between all these components of the railway meticulously.

All our rail systems package contractors who will work in tunnels, shafts and along the line will be brought together under HS2's Rail Systems Alliance. The 10 contracts will be managed together in a collective environment. The Alliance has been designed to manage the interfaces between all parts of rail systems and resolve any conflicts in the programme. All members will collaborate on design, access, resources and logistics to achieve common goals for cost and schedule.

Successful integration involves identifying and bringing together all the systems, processes, organisations and people we work with to make sure the railway is safe, built to the correct standards and approved by our regulator.



A visualisation of a disguised cutting showing how HS2 trains will be 'hidden' when they run.

We have taken advice and knowledge from other major programmes and consulted industry experts. This has helped us to understand the complexities of managing numerous railway systems contracts, developing the Rail Systems Alliance and working with the major civils and stations contracts we've already awarded.

Our strategy will allow us to continually improve our integration culture and that of the supply chain, third parties and external stakeholders. During the past 12 months, we've introduced the Programme Integration Unit, bringing together expertise to help manage any issues, integrate the various contracts and promote best practice.



Phase Two

Phase Two will extend HS2's zero carbon services from the West Midlands to Manchester, significantly cut journey times to destinations both on the network and beyond it and spread the economic benefits of the railway to the North.

The dedicated high-speed line will also free up capacity on the existing network and create opportunities for additional local and regional rail services.

Phase 2a

The 36-mile Phase 2a route passes through a mainly rural area of Staffordshire and Cheshire East. The major civil engineering schemes feature 65 bridges, 36 embankments, 17 viaducts, two tunnels and a maintenance base. The work will provide supply chain opportunities for local businesses and support 6,500 jobs.

In line with the Government announcement, we are rephasing construction as we prioritise building the Birmingham – Old Oak Common section of Phase One. Construction of main works is being paused north of Fradley, Staffordshire. We will use the time to develop the scheme further and look at the potential for further cost efficiencies.

We are working with our supply chain to carry out our programme revisions and we will tell local communities how the changes affect them. We encourage anyone to contact our Helpdesk if they have any queries or concerns.

The Government is clear HS2's West Midlands – Crewe section will be built following the rephasing of construction. This will allow us to build the railway in full between Manchester Piccadilly and London Euston. Once complete, HS2 services will join the existing rail network to provide direct services to towns and cities including Liverpool, Manchester, Preston, Carlisle and Glasgow. Crewe provides connections to North Wales and Shrewsbury.

We have completed some early environmental works on Phase 2a. We will continue work on three utility diversions at Chorlton in Cheshire East and near Ingestre and Tolldish Lane, Great Haywood, both Staffordshire. Similarly, our land acquisition programme is not affected and we will push ahead with the compulsory purchase powers provided in the Phase 2a legislation to make sure we secure the land we need to build HS2.

Details about the appointment of a design and delivery partner for Phase 2a will be announced in due course.

We plan to launch Phase 2a civils procurement in Q1 2024 with awards projected from Q3 2025.



Phase Two

Phase 2b

The High Speed Rail (Crewe – Manchester) Bill is progressing through Parliament and we're continuing to work on a robust strategy to deliver the scheme subject to Royal Assent.

The 38-mile section of the route is key to transforming journey times for customers in the North and realising the full benefits of HS2.

A journey between Manchester and Birmingham will take just 41 minutes compared with 1 hour 27 minutes today. The travel time between Manchester and London will also be cut drastically to 1 hour and 11 minutes compared with 2 hours and 5 minutes.

The Bill had its Second Reading in June last year, and a select committee has been set up to hear petitions. Committee members made a tour of the route in February 2023 to familiarise themselves with the proposed sites.

The Committee is in the process of hearing petitions against both the Bill and the first Additional Provision, which was deposited in Parliament in July 2022. This is a set of proposed amendments to the Bill design and includes removing the Golborne Link from the scheme, reducing the overall cost of Phase 2b.

We deposited a second Additional Provision in July 2023, while starting a public consultation on the Environmental Statement and Supplementary Environmental Statement accompanying the Additional Provision, and commencing a petitioning period.

While the Bill progresses through Parliament, we are planning and preparing for the start of construction, which is expected to begin from 2026.

Plans for the Crewe – Manchester route include 18 viaducts, two new stations at Manchester Airport and Manchester Piccadilly and two twin tunnels including an eight-mile tunnel in Manchester. The aim is for services on the new line to be operational between 2035 and 2041.

HS2 East

The Government is continuing to develop plans for HS2 East, a new high-speed line connecting the West Midlands and the East Midlands. It will allow HS2 to serve Nottingham and Sheffield, via Derby and Chesterfield.

We are working with Network Rail to develop advice on the plans, in conjunction with work by Network Rail to electrify the Midland Main Line. This work will be used to inform future decisions by the Government on progressing the scheme, including how HS2 East can support ambitions for economic growth in the East Midlands and South Yorkshire.

Our advice and support to the Department for Transport on these issues will include identifying the most effective sequencing of relevant investments and how to integrate HS2, Northern Powerhouse Rail and other rail investments including supporting the study on the most effective way to run HS2 trains to Leeds.



Part Four

Delivering the best way

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Image: Aerial view of the Colne Valley viaduct works.

HS2 supply chain

Levelling up and boosting growth

We have awarded contracts valued at £23.7 billion – including 55 in excess of £10 million – as the project drives economic activity across the UK supply chain.

To date, we've spent £16.7 billion with more than 2,100 tier 1 suppliers as we work to mitigate the inflationary pressures buffeting the infrastructure sector.

The most significant contract awards in 2022 include £370 million to Laing O'Rourke Delivery Limited to build Interchange station in Solihull and £316 million to TK Elevator for our stations' lifts and escalators.

There were 77 active procurements with contracts valued at a total of £8.4 billion as of April 2023. Of the highest value active procurements (over £25 million), we expect 11 to be awarded in 2023 and 17 in 2024.

Our active pipeline of procurements includes key contracts such as railway systems packages between the West Midlands and Crewe. An additional £5.1 billion of contracts are in our pipeline in the pre-procurement stage.

Responding to market volatility

The UK construction industry continues to be hit by the sort of market volatility not seen since the 2008 financial crisis. We are seeking to reduce the effects of rising prices by developing the way we work with the extended supply chain.

We take a strategic and sustainable risk-based approach to sourcing crucial resources through the Supply Chain Collaboration Hub, a partnership between HS2 Ltd and the Phase One main works and stations contractors. The hub allows us to see the most critical categories of spend, reaching far below tier 2 suppliers, in response to global market forces.

We've carried out 'deep dives' to map the supply chain and uncover key risks and opportunities to improve performance and efficiency. To date, £1.5 billion of contracts have been mapped to tier 5, allowing us to respond quicker to market shocks.

Collaboration is vital to success. We share programme-wide market intelligence and commodity-based demand and supply information with our contractors and the wider supply chain. Our work in this field, on a project of HS2's size and lifecycle, is ground-breaking in UK construction.



HS2 staff member leading a workshop for local businesses about working with HS2.

The hub tracks commodity price changes, allowing our contractors to mitigate cost and supply risks through different buying strategies. A tracking tool monitors monthly cost fluctuations and risks, so contractors can proactively engage with industry, make 'best for programme' decisions and secure best value for money including for electricity, steel, fuel and lime.

HS2 supply chain

Levelling up and boosting growth

The hub has also supported suppliers to become more sustainable and resilient and promoted their development through events and e-learning, in conjunction with the Supply Chain Sustainability School. The hub's positive impact includes reducing costs and it was shortlisted for five industry awards in 2022, winning the Institute for Collaborative Working's Industry Collaboration Award.

Mapping the HS2 supply chain

HS2's interactive geographical supply chain map has been improved to provide deeper insights into the range of companies and organisations, of all sizes, taking advantage of opportunities with the high-speed railway.

The name and location of each supplier is mapped, with users and stakeholders able to filter information by specific regions or constituencies. This offers a 'live' picture of how our construction spend is distributed across the country, provides MPs with regional and local statistics to drive advocacy for the project, and highlights unrepresented areas where we can work with Local Enterprise Partnerships (LEPs) and growth hubs to drive participation. There are now about 3,000 unique suppliers across the UK.

In March 2023, we introduced an innovative learning programme to strengthen sustainability skills and drive 'greener' performance across the supply chain.

Engaging with SMEs

We are committed to building a diverse supply chain with SMEs at its heart. Thousands of HS2 contract opportunities are indirect so our contractors must ensure procurement is fair, transparent and competitive, and maximises openings for SMEs.

Since 2017, we've hosted an annual Meet the Contractor event. The last event saw over 500 organisations join one-to-one meetings with tier 1 contractors, of which 77% were SMEs. We've also run Meet the Bidder events to engage the market.

A comprehensive range of [online supplier guidance](#), including FAQs, procurement pipelines, subcontractor and contractor details provide SMEs with support in identifying and winning work. [CompeteFor](#), a brokerage platform where all our subcontract opportunities are advertised, provides a 'one stop shop' for smaller businesses to access opportunities connected to HS2.

We regularly host, present and exhibit at external events, encouraging businesses along the route to get involved with HS2. Over 50 events were delivered or supported in 2022.

Since 2020, we've engaged with over 3,700 local businesses, primarily SMEs, and we continually develop relationships with trade associations, chambers of commerce and LEPs to attract small businesses.



HS2 staff member leading a workshop for local businesses about working with HS2.

HS2 supply chain

Levelling up and boosting growth

Some of the businesses helping to build HS2

1. Duo Group, Exeter

Duo Group has over 200 employees working across five offices and manufacturing facilities across the UK, specialising in mineral processing and construction. The company is engaged in several major pieces of work, the key contract being the multi-year remediation work to allow construction of the Washwood Heath depot, Birmingham.

2. Blackwell Earth Moving Services, Colchester

Since 2012, the company has provided earthmoving as a professional services sub-consultant to all sections of HS2, supporting the development and Parliamentary stages of the scheme. In 2018, it became the earthworks strategic partner for EFKB, seeing £30 million capital investment, with over 400 jobs created at peak to move 15 million cubic metres of earthworks using 300 to 350 items of heavy machinery.

3. Talkwire, Melksham

Wiltshire-based IT and telecommunications specialists, Talkwire has been working with main works contractor BBV to provide connectivity to several key construction sites over the last three years. New sites including Long Itchington and Kingsbury, Warwickshire – previously remote brownfield sites – have been mobilised using the latest IT systems installed by the firm.



Locations of companies around the UK benefiting from working with HS2.

HS2 supply chain

Levelling up and boosting growth



GCN Tipperhire Ltd.

4. RSK Group, Helsby

Cheshire-based RSK is a global leader in the delivery of sustainable solutions across over 175 environmental, engineering and technical services businesses, and employs over 8,000 people. The company has been part of the HS2 journey since the beginning and is supporting Phase 2b.

5. GCN Tipperhire Ltd, Northamptonshire

GCN Tipperhire Ltd was a two-man team transporting aggregate materials to our sites. Additional work from main works contractor EKFB saw it grow to 10 staff and invest in six of the most carbon-efficient lorries. They are also cutting our carbon emissions by collecting materials from railheads and transporting them to HS2 construction sites.



AOC Archaeology.

6. DAWSON-WAM, Belfast

A specialist civil engineering and piling firm, DAWSON-WAM undertakes both small and large-scale civil engineering and piling projects for residential, commercial and public authorities with budgets ranging from £10,000 to £20 million. It is involved in several HS2 sites, including working with SCS main works contractor to install micropilings to support the London tunnel boring machines.

7. AOC Archaeology, Edinburgh

Over 150 staff now work for AOC Archaeology Group, which has a £10 million turnover. Part of the Connect LLP joint venture with fellow Edinburgh company CFA and Northern Ireland-based IAC, the joint venture was involved in digs at over 40 sites along Phase One, completing £35 million of work to preserve archaeological finds.



Dr Kieran Mullan MP at CLD Systems.

8. Siltbuster, Monmouth, South Wales

Siltbuster is the UK's leading provider of onsite water treatment and waste water processing solutions. Few HS2 sites are without at least one Siltbuster. Assembling, designing and testing at their headquarters in Monmouth, the firm is an important part of HS2 site work with our joint ventures, supporting our environmental commitments.

9. CLD Systems, Cheshire

Cheshire-based CLD Systems supply materials to HS2 contractors working on Phase One between London and Birmingham. As our Phase 2a programme of works expands into Cheshire, the team has secured further contracts to supply physical security around the sites where preparatory works are now taking place.

HS2 supply chain

Levelling up and boosting growth



Draper brothers, directors of Draper Civil Engineering.

10. VolkerLaser, Worcester

Specialists in waterproofing and treating concrete structures, VolkerLaser is involved in a number of key parts of the HS2 project. This includes the work on the green tunnels with EFKB, the protection of the vent shafts on the Chiltern tunnels and supporting the move of the M42 Marston Box bridge with BBV.

11. Draper Civil Engineering, Rugby

Family-business Draper Civil Engineering reported its highest ever growth after a series of back-to-back contracts from HS2's construction partners. Supporting archaeologists on Birmingham's most complex excavation programme led to repeat contract awards, the workforce expanding to 100 people and crucial civils works at Curzon Street station.



Caroline Wardell of Wardell Armstrong.

12. Wardell Armstrong, Stoke-on-Trent

The environmental, engineering and mining consultancy has expanded after repeatedly winning work on the project. It now has 13 offices across the UK, and a workforce of over 500 with over 100 working on HS2 in its ecology, archaeology, heritage, hydrogeology, health and safety and engineering teams.

13. DataScope, Deeside, North Wales

Software logistics experts DataScope has won work across HS2, launching an integrated logistics platform for several joint ventures including Align, SCS and BBV. It has also secured a range of products and systems for BBVS and Mace Dragados, including access control and logistics, and delivered a health and safety platform for SCS.

Skills, employment and education

HS2 is already playing a crucial role in levelling up, creating economic growth, supporting thousands of jobs and boosting productivity across the UK supply chain. Before high-speed services begin, the zero carbon rail connections offered by HS2 are kickstarting vast regeneration opportunities across the Midlands and the North.

The project is helping people to learn new skills and build careers in the construction and transport sectors. Women, people from ethnic minorities and people with disabilities are taking advantage of new opportunities on offer with HS2.

Our education programme is vital to leaving a skills' legacy, inspiring the next generation by highlighting the diversity of jobs and skills required to build the railway and showcasing the benefits of working in the wider infrastructure sector.

Working with our partners

We have formed partnerships with schools, specialist employment support services and charitable groups. Our work with students who have special educational needs and disabilities has been recognised as best practice and we've also run more than 400 science, technology, engineering and maths (STEM) workshops in schools along the route, reaching over 23,000 students. We are continuing to boost skills in engineering and construction and are helping to develop professionals working in linked jobs such as IT, project management, credit control, health and safety, and conservation. Our construction sites are creating work for transport managers, planners, architects, surveyors, telecoms engineers and security guards.

In December 2022, we passed the milestone of recruiting 1,000 apprentices to work on HS2. Over 1,200 apprentices have joined HS2 to date, putting the project on track to meet its target of providing 2,000 apprenticeships. Career pathways are supported in over 40 different apprenticeship types, with education and training provided by colleges and universities.

At the heart of our approach is the HS2 Job Brokerage service, which allows us to better connect with diverse, disadvantaged and under-represented groups. Working with locally-based Job Brokerage Partners, HS2 and the supply chain, we provide



A student from Stoke Co-op Academy working on a tunnel as part of STEM workshop with BBV and Smallpiece Trust.

fast-track training programmes across the Phase One route between the West Midlands and London, helping people into jobs.

The online HS2 Jobs Board has posted more than 4,225 jobs and apprenticeship opportunities from our construction partners. Launched in January 2021, it allows people to search for vacancies by region or specialism. Our legacy team works with the supply chain to make sure all their roles are advertised.

We continue to monitor our labour and skills requirements to make sure HS2 leaves a legacy for the UK. Our 'Building Skills to Deliver HS2' report sets out the measures we have put in place and our 'Halfway there to building the skills to deliver HS2' document highlights our skills, employment and education achievements.

Skills, employment and education

Case study

New opportunities for unemployed people

There have been over 3,200 jobs starts by people who were previously workless. Our specialist training academies and fast-track job training programmes, run with further education colleges, councils and enterprise partnerships are all playing a part in the drive to get people into work. We offer free training and progress to paid work trials to find out whether jobs match people’s career aspirations.

Dale Spencer, 58, of Castle Vale, Birmingham, was made redundant from his job repairing office equipment. He’d been out of work for six months and heard about contractor BBV’s Skills Academy in Birmingham through the Shaw Trust. After completing his training, Dale moved into a paid work trial and credits his line manager for believing in him and offering him a permanent role in logistics.



Newly-trained workers and apprentices who have been part of a training academy.

Skills, employment and education

Case study

Apprentice Jessica is recruiting new talent for HS2

Being able to earn, learn and gain nationally recognised qualifications attracted our 1,000th apprentice, Jessica Miles, to build her future with HS2.

Jessica, aged 30, of Cockfosters, North London, worked in retail fashion and although she wanted a career in human resources, she didn't have the qualifications or experience.

Joining our main works construction partner Align in 2022 on a two-year Level 5 HR Consultant apprenticeship, she combines work with study at West Herts College. Jessica said: "I'm working on the biggest infrastructure project in Europe, helping to recruit a talented workforce to deliver the amazing construction challenges I see in front of me every day. I'm not just building my career but helping thousands of others too, and we're all working together to deliver this once in a lifetime project."



Rail Minister Huw Merriman and HS2's 1,000th apprentice Jessica Miles.

How HS2 is supporting local communities

We've awarded £13.4 million to 236 grassroots projects in communities disrupted by the construction of HS2, benefitting the environment and enhancing people's quality of life.

The HS2 Community and Environment Fund (CEF) and the Business and Local Economy Fund (BLEF) total £45 million for Phase One, between the West Midlands and London, and Phase 2a, linking the West Midlands and Crewe. In July 2022, we passed a programme milestone of funding 200 projects as we continue building a legacy of improving community facilities, enhancing local environments and supporting local businesses.

On Phase One, we've funded a total of 230 projects worth £13.3 million since applications opened in March 2017. The Phase 2a programme was launched in March 2021 and six projects have been awarded £139,579 to date.

During 2022 – 2023, £1.7 million was allocated to 33 projects including 17 projects in priority areas. Over the past six years, these areas have either received a lower-than-average level of HS2 community and business funding, or the projects are within one kilometre of the route.



HS2's community and environment fund has donated over £9,000 to the Manor Park Sailing Club in King's Bromley. The funds paid for an insulated clubhouse roof.

How HS2 is supporting local communities

Funds have been awarded to a diverse range of grassroots and community-led projects in rural and urban areas. They include restoring a section of a canal in Lichfield, Staffordshire, setting up a radio station in Buckinghamshire and supporting social clubs and lunch clubs for older people in Camden, Uxbridge and South Ruislip.

The average award is £58,000 but they vary in size. For example, Shavington-cum-Gresty Parish Council, Cheshire received £9,780 for conservation and environmental works and Birmingham City Council was awarded £210,140 for enhanced lighting and pathway finding around Digbeth.

The funding programme is designed with all phases of HS2 in mind and an additional allocation for the Phase 2b route from Crewe to Manchester will be launched once legislation to build this section of the railway is approved.

Key

- HS2 Phase One
- HS2 Phase 2a
- HS2 Phase 2b Crewe – Manchester
- HS2 East
- ● ● Stations



Communities along the route which have benefited from HS2 support.

How HS2 is supporting local communities

Mapping HS2's community benefits

1. Southam in Bloom

Total award: £10,000

Southam in Bloom makes this Warwickshire town brighter, creating floral displays in and around the town. The project replaced old planters, provided new floral displays and saw native and pollinator trees, plants and bulbs planted in local parks and community areas.



Southam in Bloom.

2. Old school church hall restoration

Total award: £75,000

The old school church hall in Newton Purcell, Oxfordshire, is the only community space available for year-round events. The restoration and upgrading project includes kitchen facilities, a new roof, guttering and windows. Improved heating has reduced running costs.

3. Wellbeing at Windward Way

Total award: £74,724

Making greater use of green areas within Smith's Wood, Solihull, is improving people's wellbeing and benefitting the wider community. Specialist staff trained in outdoor education, primary education and mental health are helping manage the spaces, making them safe community areas.

4. Harefield Cricket Club

Total award: £57,541

Improvements to Harefield Cricket Club's facilities included upgrading the clubhouse pavilion and grounds, replacing cladding and doors to improve access to the outside area and installing an awning and patio heaters. Damaged border fencing was repaired and new boundary boards erected.

5. Chacombe village hall

Total award: £43,909

Chacombe village hall in Northamptonshire has been brought up-to-date with an extension to the front of the building, providing an enhanced reception area and new toilets.

6. Shenstone Tennis Club

Total award: £62,836

The 'Light Up Shenstone Community Tennis Courts' project saw the Staffordshire club's dilapidated and dangerous courts resurfaced for the community to enjoy.

How HS2 is supporting local communities

7. #Queenbee

Total award: £9,780

#Queenbee celebrated the late Queen's Platinum Jubilee with a conservation and environmental focus. Activities included growing wildflowers, building bug houses, beekeeper visits and community conservation craft workshops, while a #Queenbee commemorative community art garden was also built in Shavington-cum-Gresty, Crewe.

8. Bengali Workers' Association

Total award: £67,952

The association's Older People's Project brings together over-50s from the Regent's Park and St Pancras and Somers Town areas of Camden for weekly activities to improve health and wellbeing, reduce isolation, loneliness and exclusion, and develop skills.

9. Water Orton Bowls Club

Total award: £51,612

Modernising the North Warwickshire-based crown green bowls club saw new toilet facilities installed for people with disabilities.

10. Little Chalfont Nature Park paths project

Total award: £32,000

A new entrance and paths for people with disabilities makes Little Chalfont Nature Park, Buckinghamshire, more accessible to wheelchairs, bicycles and pushchairs in all seasons. New benches and signs encourage the community to enjoy the park.

11. Positive activities and mentoring in Solihull

Total award: £38,400

Mentoring and sports activities for youngsters aged 11 to 16 are aimed at those involved in, or at risk of becoming involved in, crime and anti-social behaviour. Young people gain new life skills, make new friends and develop personal action plans.

12. Denham Way Playing Fields

Total award: £75,000

Improved play facilities in Maple Cross, Hertfordshire, feature an outdoor gym, multi-use games area, skate park and floodlit tennis courts. The pavilion has been refurbished, with new pathways and biodiversity measures added.



#Queenbee Project.



Community engagement

Respecting people, respecting places

As we continue to deliver HS2, we know that planning and construction works create disruption for many communities along the path of the railway.

We are now engaging with local people between Manchester and London. On Phase One, residents and businesses are being affected by main works construction at more than 350 sites stretching from the West Midlands to London. The pattern will be repeated as early works are delivered longer term along the Phase 2a route connecting the West Midlands and Crewe. We are also working with communities on the Phase 2b route to Manchester as the legislation for this section of the railway progresses through Parliament.

Respecting people, respecting places

Our refreshed community engagement strategy, ‘Respecting people, respecting places’, continues to shape our work and brings to life our commitment to respect all the diverse communities that are being affected by the construction of HS2.

Our ‘In your area’ webpages help us to tell people about any developments on the construction programme that could affect their lives. We also send regular email updates to more than 20,757 subscribers, backed up by newsletters and maildrops. In the last year, we carried out 3,756 engagement activities about HS2, reaching more than 56,000 people. Since 2018, we’ve held 10,185 engagement activities and engaged with 152,717 people. There have been over 330,509 visits to our 18 local community websites across the route.

As we enter the second year of peak building work, we are understandably receiving an increase in calls about construction-related issues that are having an immediate effect on people. These concerns need to be answered quickly and we are committed to resolve urgent construction enquiries and complaints in two working days. We received 308 urgent construction enquiries and complaints last year and responded in two working days in all cases.

We received 1,147 total complaints in 2022 – 2023. This compares with 1,637 for the same period the previous year, a decrease of 30%. We resolved 99% of these complaints in 20 working days or fewer – and 99% were concluded at the first stage of the complaints process. No complaints were escalated to the Parliamentary and Health Service Ombudsman.

We provide an advocacy support service to help local people who need additional or specific help in communicating with us. To date, we have supported 84 people. We also offer tailored help to people with specific needs and where thresholds in place do not provide enough protection from our construction works. To date, we’ve supported 230 households.

The independent Residents’ Commissioner and Construction Commissioner challenge us to improve how we work with local people and they hold us to account. We now provide more advance warnings for significant roadworks and have changed site lighting in response to several enquiries in different locations.

Community engagement

Respecting people, respecting places

Case study

On the road in local communities

Working together with the people directly affected by HS2 is fundamental to the success of our 'Respecting people, respecting places' strategy. Communities in more remote locations must be able to speak directly to our engagement teams to understand the impact of our works in their local areas.

In spring 2022, main works contractor EKFB recognised the need for a mobile visitors' centre to access rural communities between Great Missenden, Buckinghamshire and Southam, Warwickshire.

The vehicle is equipped with facilities to display HS2's route, local project information and jobs and business opportunities with the new railway. So far, community engagement teams have visited over 50 locations, meeting 1,400 people.



EKFB's mobile visitor centre visiting Brackley.



Championing equality, diversity and inclusion

We want to recruit, nurture and retain the infrastructure sector’s most talented people regardless of their background, promoting a culture of dignity and respect. It’s only by doing this that we will be able to fulfil our corporate mission to build the best railway, in the best way.

Our ambition is to raise standards for equality, diversity and inclusion (EDI), challenge and change traditional views of the industry and remove any unnecessary barriers for people. Under-represented groups, in particular, need to feel safe and welcome at HS2 so everyone can thrive and achieve their ambitions.

We are committed to ensuring everyone working for us embeds EDI concepts into recruitment and working practices.

There are three key EDI focus areas at HS2.

- Setting the standards for the supply chain and leading by example in promoting the right culture, policy and behaviours.
- Adding our procurement, EDI and skills, education and employment requirements into contracts for our supply chain.
- Taking a progressive approach to safety and inclusion on our construction sites.

Our commitment to EDI and the results we’re delivering saw us become the first organisation in the UK to attain ‘Platinum’ status from external accreditors Clear Assured in 2021. We’ve also been recognised as a Disability Confident Leader.

Celebrating difference, valuing everyone

EDI is part and parcel of life at HS2, making the railway a place where we celebrate differences and value everyone. It is reflected in the way we recruit people and monitor staff progression and pay gaps. We don’t just monitor based on gender – we also track on race and disability. We aspire to improve EDI practices across the industry, leading by example and setting high expectations of our extensive supply chain.

Our corporate workforce diversity targets are significantly above industry averages. We have a 38% female workforce compared with the industry average of 21% for infrastructure and 23% for construction. Our ethnic minority representation is 24% set against the industry average of 6% for infrastructure and 14% for construction. We use our EDI data to shape our thinking and decision-making on progression, performance management, recruitment and staff engagement. We use insight to understand where we can get better so that we push boundaries and retain our Clear Assured ‘Platinum’ status.

We have eight Staff Networks which support our EDI work, raising the importance of inclusivity. Our networks run an ambitious programme of events and work with the business to ensure our approaches to EDI are authentic and evolve.

Our EDI approach governs the way we work with local people along the route but we’re always looking to find innovative ways to engage with people and businesses from diverse backgrounds. We take particular care when we support the most vulnerable community members so they are aware of the ways HS2 may affect their day-to-day lives.

Championing equality, diversity and inclusion

Building an equal, diverse and inclusive supply chain

It is important that our principles apply across our complex supply chain as it's in this way that we can exert significant positive change. EDI is embedded in every stage of our procurement process, including pre-qualification questionnaires, invitations to tender and contract mobilisation, and it's also a key part of contract management. Our supply chain has gender and ethnicity workforce diversity above industry averages thanks to award-winning approaches to promoting skills, education and employment across HS2.

We've welcomed more than 1,200 apprentices from diverse backgrounds to the project and more than 3,200 people who previously were not in work have secured jobs on HS2. We actively encourage diverse-owned local businesses to seek opportunities with us.

We recognise the importance of ensuring our supply chain combats modern slavery and we promote the inclusive design of the railway, our stations and trains. The progress made by our supply chain is reported each year in our EDI Annual Report.

Across the supply chain, we lead on an innovative approach to link EDI with health and safety procedures. Our workforce speaks many languages, comes from different races and religions and it comprises multiple sexual orientations. We need to ensure our health, safety and wellbeing policy is inclusive and accessible for everyone. We embed EDI at site level, asking our workers what a safe and inclusive construction site looks like to them. Through site tours, talks and interviews, we've listened to the concerns voiced by our workforce, who work in high-risk activities. Training and campaigns on inclusivity have delivered a positive change on our sites with better health and safety engagement.



Three HS2 apprentices visiting the Old Oak Common site.

Championing equality, diversity and inclusion

Case study

Making HS2 services accessible for everyone

We are working with young people from the Braidwood Trust School for the Deaf, Birmingham, to better understand the challenges faced by rail passengers with hearing loss.

We hosted field trips on trains and at stations to allow pupils to show us the obstacles they face. From audio announcements about platform changes to the lack of visible information in toilets, the young people recorded ways we can improve rail travel. They also helped us to make a short film capturing their experiences.

Phil Bailey, deputy head at Braidwood, said: “Deafness is a hidden disability, but our pupils have shown they have powerful voices and how important it is that we all listen. Our children need to be part of the world, whether it’s a hearing world or a deaf world, and this opportunity to influence change is important.”



Students from Braidwood Trust School for the Deaf visiting HS2.

Championing equality, diversity and inclusion

Case study

Equality in HS2's supply chain

Having achieved Clear Assured 'Platinum' status for our EDI work, we've encouraged HS2's supply chain to hit the same high standards.

Our main works construction partner Balfour Beatty VINCI (BBV) was awarded the Clear Assured 'Gold' standard in October 2022 for its commitment to EDI. It scored highly across a number of categories including 'Finding Talent', 'Policy and Procedure', 'Assessing Talent' and 'Retaining Talent'.

It was praised for its transparent approach, delivering training programmes and working with third-party suppliers. Lucy Jones, HR director at BBV, said: "We hope it sends a clear message to those thinking about a career in the construction and infrastructure sectors that we are committed to creating an inclusive workplace for everyone."



HS2 apprentices.

Environment

We are designing and building the most sustainable high-speed railway in the world, minimising our impact on the environment wherever we can and investing in nature recovery along the route of HS2. Our collective work represents Europe’s biggest environmental programme and our vision is clear: HS2 will provide zero carbon rail travel for a cleaner, greener future.

HS2 is a catalyst for UK economic growth but we must make sure we reduce our carbon footprint as far as we can during construction and when services are operational. We’re building a railway that will last for 120 years: it must be resilient to climate change and help us to cut emissions from transport.

Cutting carbon emissions

We’re already reducing carbon emissions with new materials and construction techniques and we’re using cleaner and greener energy and technologies. HS2’s trains will provide zero carbon travel for millions of passengers. The network will provide a sustainable alternative to car journeys and domestic flights from day one of operations in the early 2030s.

Our aim is to make the railway net zero for construction and operation from 2035. Our Net Zero Carbon Plan highlights what we’ve achieved so far and what more we need to do. The plan sets out our journey to HS2’s ‘destination net zero’ when emissions from the network will be offset by those we remove. We’ll review our targets constantly as we progress to 2035.

We are redefining traditional construction methods for major infrastructure projects, challenging targets to cut carbon emissions from materials including concrete and steel, cutting the use of diesel on our construction sites and speeding up the pace of change across the industry.



An electric crawler crane at Old Oak Common station, south Kilburn, London.

Environment

We are making progress to our target to cut emissions from HS2 by 50% in 2030. Our target for March 2023 forecast a reduction of at least 28% against our Phase One baseline. We have beaten this and achieved a 29.6% carbon reduction across Phase One.

In 2022, we launched HS2's Diesel-Free Plan setting out how we'll stop using diesel on all HS2 sites by 2029. We now have 19 diesel-free sites and we're rating all construction locations from diamond to bronze so we can track their progress in eliminating diesel and reducing emissions.

Here are some of the ways we're cutting emissions produced by construction.

- A clean air gas engine replaces diesel generators with ultra-low emission engines in welfare units and standalone units.
- The 'EcoNet' system controls and reduces energy output from key appliances, reducing power demand by 30%.
- Fully-electric renewable energy powers monitors for noise and air quality, site security cameras and site briefing areas.
- Hydrogen technology trials.

In December 2022, we submitted HS2 data to the Carbon Literacy Project and we aim to achieve silver accreditation for our commitment to cut emissions and work with local communities. We've adopted the Science Based Targets initiative goals and put carbon performance into our supplier relationship management scorecard.

While our Net Zero Carbon Plan sets out our future ambitions, our shorter-term priorities include signing up to the World Green Building Council, which is committed to transforming the construction sector to make it net zero and sustainable. We're also aiming to become net zero for Scope 1 and 2 carbon emissions: these cover the emissions we create directly, for example, by using vehicles, and those we create indirectly, for example, from the electricity or energy we buy for our construction sites.



GeoPura workers checking hydrogen cylinders, Victoria Road.

Environment

Case study

Harnessing Formula 1 technology

Technology developed for Formula 1 motorsport was used to dramatically cut fuel consumption, carbon emissions and improve air quality at our Euston Approaches site.

A tower crane which would normally be powered by a 500kVA diesel generator, lifting loads of up to 24 tonnes, was driven by one less than half that size. The smaller 200kVA generator's power difference was bridged by pairing it with an energy storing flywheel system. The flywheel, housed in a vacuum chamber, virtually eliminates energy-sapping resistance from contact with the air.

The technology used surplus power during the crane's low-load periods to charge the flywheel. The stored kinetic energy was then released to support the generator when the crane requires maximum power for heavy loads. The technology was originally used in F1 and the Le Mans 24-hour motor race. In one month, the system more than halved diesel consumption on a tower crane, saving 4.8 tonnes of carbon emissions – equivalent to the average monthly CO₂ emissions of 40 family cars.



Euston Approaches.

Environment

Creating HS2's Green Corridor

Our routewide Green Corridor programme is designed to benefit nature and people as we pursue two key goals.

First, we are seeking to minimise and mitigate the environmental impact of HS2, taking a landscape approach to create bigger, better and more joined up habitats, sensitively designed to blend into the local area. Our contractors are encouraged to develop further environmental improvements through ongoing design.

Second, we provide support and funds to improve local environments. Our work goes beyond the project's boundaries and we collaborate with, and invest in, our stakeholders' environmental projects.



A site engineer checking planting as part of the Green Corridor work.

Planting native species

We are in the process of planting and maintaining seven million trees and shrubs along the Phase One railway to help HS2's track, bridges, embankments and infrastructure blend into the natural environment. Our planting strategy includes more than 40 native species, like hazel, hawthorn, oak, blackthorn and silver birch, and is a key part of HS2's Green Corridor initiative. During 2022 – 2023, we successfully planted 180,000 trees and shrubs, taking the total planted so far to over one million.

An [online mapping tool](#) is being developed that allows people to see how construction is affecting ancient woodlands and the planting we are carrying out to reduce HS2's impact on these irreplaceable habitats. The tool has been developed initially with stakeholders including Natural England, the Forestry Commission and The Woodland Trust.

HS2's design continues to be revised to reduce the railway's impact on the natural world. For example, the area of ancient woodlands that we originally reported would be lost has reduced by 8.4 hectares since the Environmental Statement was published, from 29 hectares to 20.6 hectares, representing a 29% reduction.

New wildlife habitats

As part of our environmental programme, we will create more than 33 square kilometres of new wildlife habitat. We're making good progress and have already created more than 120 new wildlife habitats, which cover over 330 hectares (3.3 square kilometres).

There are new wetlands, heathlands and meadows and we've built new 'homes' for wildlife including 2,000 bat boxes, either in our mitigation sites or nearby woodland. About 150 hibernacula, or underground chambers, and 65 reptile basking banks have been made for reptiles and amphibians like frogs, newts and lizards.

Over 160 barn owl boxes and 29 artificial badger setts have also been built and we've successfully moved thousands of newts to new locations.

Environment

Case study

South Cubbington Wood

New wildlife habitats are thriving around South Cubbington Wood, Warwickshire with bluebells, red campions, grasslands and ponds creating a revived landscape.

Over the last two years, early works contractor Laing O'Rourke and J Murphy and Sons has planted 60,000 trees including oak, hazel, birch, holly and hawthorn. Seven new ponds now attract swallows and swifts and are home to newts, frogs and insects. There are also refuges and basking banks for reptiles while bat boxes and fruit trees will provide potential new roosts for bats. The bluebells and campions have grown from wild seeds that were in soils that we moved in 2020.

In total, about 17 hectares of habitat have been created and are being maintained including over six hectares of broadleaved wood linking South Cubbington Wood and the River Leam corridor. The area includes about two hectares of ancient woodland soils that we moved to join up South Cubbington Wood and Weston Wood.

Main works construction partner Balfour Beatty VINCI joint venture and its environmental team are also planting about 12 hectares of woodland near South Cubbington Wood and a further 18 hectares across the wider Cubbington area.



A pond constructed near South Cubbington Wood – part of our wildlife regeneration project.



Environment

Additional funding for biodiversity and woodland creation

Funds are available to communities, groups and individuals to boost local biodiversity projects. In 2022, we launched a £2 million Biodiversity Investment Fund to help create or enhance wildlife habitats along the Phase 2a route between the West Midlands and Crewe and we'll unveil the successful applications in 2023. An additional £850,000 environment and landscape enhancement fund is available in Cheshire East.

Funding worth £5 million is allocated through HS2's Phase One Woodland Fund to help landowners create native woodlands and restore ancient woodland within 25 miles of HS2. An additional £2 million fund for Phase 2a is managed by the Forestry Commission.

The Government has launched the England Woodland Creation Offer (EWCO) to support woodland creation and tree planting across England. We have worked with the Forestry Commission and Defra to merge the HS2 Woodland Fund with the EWCO, which we believe will benefit wider national aspirations for woodland planting and ensure our funding is best used.

Many existing ancient woodlands are declining in their quality due to a lack of poor management and the presence of invasive non-native species. Rather than being just focused on planting, our Woodland Fund is unique as it provides grants to support the restoration of ancient woodlands.

The restoration element of our grant will be retained and will continue to be made available through the remaining part of the fund. Work to establish the Phase 2a Woodland Fund has now started and will soon be in place to help support landowners wishing to create woodland habitats and woodland restoration.

Biodiversity performance

We are creating rich, biodiverse and better linked landscapes along the railway to leave a legacy for future generations. Our work involves protecting and enhancing the natural world, creating opportunities for wildlife-rich habitats to thrive.

HS2's Environmental Sustainability Vision aims to:

- secure biodiversity gains on Phase One and Phase 2a, moving beyond no net loss; and
- seek to achieve a 10% net gain in biodiversity on the Phase 2b western leg.

We use a complex metric to map our biodiversity performance. The metric is used to calculate the baseline biodiversity value of individual sites and forecast their future biodiversity value. The method we use is based on consultation with the Department for Environment, Food and Rural Affairs (Defra) and Natural England. Data is subjected to independent assurance, or checks, and it is shared with the independent Ecology Review Group, whose members include Natural England and local authorities, as well as nature conservation non-governmental organisations and charities such as the Wildlife Trusts.

In March 2023, Defra published a new version of the biodiversity metric (version 4.0), which will be used for future assessments of biodiversity performance. We are working with Natural England to consider our approach to aligning with this new metric. We will be publishing our biodiversity position in HS2's Environmental Sustainability Progress Report 2022 – 2023 later this year.

Water resources

Exceptionally dry weather in 2022 increased pressure on water supplies and we boosted the resilience of public water supplies along the route and improved water recycling. For example, at the Phase One south portal tunnel site in the Colne Valley, we built a treatment plant to recycle and reuse water, mainly for the machines building the Chiltern tunnel. During dry summer months, we reduced consumption, increased our use of recycled water and encouraged water saving at HS2 sites.

Some local people were concerned the Colne Valley viaduct and the Chiltern tunnel would affect a major aquifer and the supply of drinking water to a large area. Construction of the structures is advanced and the aquifer has not been affected, demonstrating that our measures and monitoring are working properly.

Environment

Reporting on environmental sustainability

We provide a detailed breakdown of the progress we're making cutting carbon emissions, promoting nature recovery and other environmental topics in our annual Environmental Sustainability Progress Report (ESPR).

Our third report, covering 2022 – 2023, is published later this year, providing an in-depth update on the work we are carrying out along HS2's Green Corridor and in climate change, community experience, the historic environment and responsible consumption and production. The ESPR is prepared with reference to Global Reporting Initiative (GRI) Standards, the world's most widely used framework for sustainability reporting.

Case study



A demonstration of how our work has helped improve Newyears Green Bourne and the River Colne, © Align.



Our work has seen Newyears Green Bourne realigned, with its banks smoothed out and replanted to attract wildlife, © Align.

Breathing new life into rivers

As part of the Colne Valley viaduct works, our contractor Align has enhanced and improved the chalk river habitats of the Newyears Green Bourne (NYGB) and River Colne.

The NYGB was a steep banked, featureless river while the River Colne had deteriorated. The NYGB has been realigned to vary its direction and flow and the Colne has had berms, or edges, added downstream and shallow landforms, known as riffles, were created upstream to vary the riverbed environment and water flow.

The habitats will develop over time and increasingly attract and support a broad range of species. They will also improve water quality to ensure that aquatic species including fish and invertebrates thrive. This will also lead to benefits for other wildlife along the riverbanks and provide suitable habitat to support otters, water voles and birds like kingfishers.



Health, safety and security

Safety is one of our core values and goes to the heart of our mission to build the best railway, in the best way. We're guided every day by our overarching philosophy to be Safe at Heart.

The intensity of the construction programme can be expressed in terms of the hours worked on the project. During the past year, this increased significantly from 47 million hours to 60 million hours and more people are now working in 'high risk' environments. Our risk profile continues to change as the programme evolves, presenting our teams with new risks including lifting and working at height. Existing risks also remain as the different phases of HS2 move through the different construction stages.

We were deeply saddened when an employee working for a company in our supply chain died following an incident onsite in April 2023. We are working with our construction partner and the relevant authorities to understand the cause of the incident.

We work closely with our supply chain, health and safety leadership forums and working groups to identify, understand and manage all risks to our workforce and the people who live and work near our sites. Our refreshed Health and Safety Strategy continues to put safety at the heart of HS2 during a period of intense construction activity.

Health and safety performance

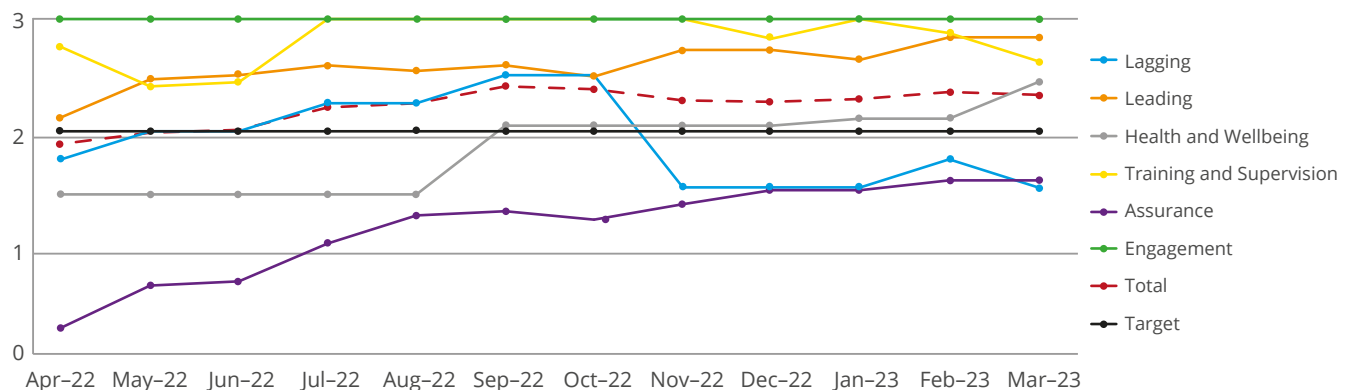
We achieved a final index of 2.46 in our Health and Safety Performance Index (HSPI) for 2022 – 2023, exceeding our target of 2.20. An index of 2 and above is classified as 'performing well'.

Safety-related incidents are in line with the number of hours worked. We track our Lost Time Injury Frequency Rate (LTIFR) to benchmark our performance with other projects. Our LTIFR was 0.16, an increase from 0.11 the previous year.

The graphic below shows the HSPI scores by each measure and the total for 2022 – 2023.

Four HSPIs were on or above target for 2022 – 2023: Training and Supervision; Engagement; Health and Wellbeing; and the Leading indicator, specifically effective use of hazard profiles to manage proactive assurance and mitigation.

However, more incidents have occurred in the reporting period with the increase in scale and evolving nature of our work, including one significant injury when a worker fell from height in November 2022. They are making a recovery and we must apply learnings to prevent future occurrences.



Note: Health and wellbeing is measured on a quarterly basis only, whereas all other indicators are measured on a monthly basis.

Health, safety and security

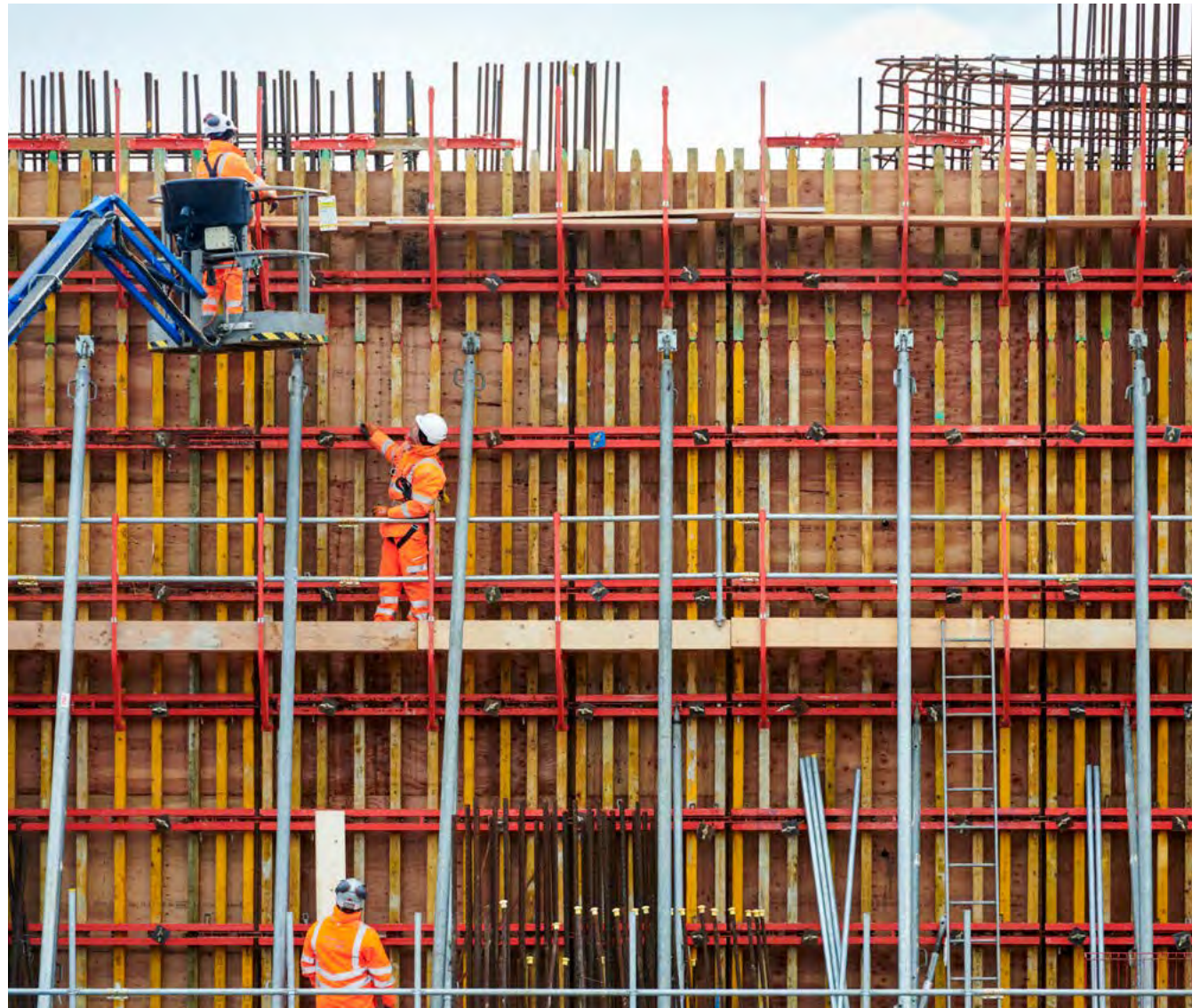
This falling incident affected our key lagging indicator, Injury Weighted Index (IWI), which had improved during the year. The IWI HSPI finished the year at 1.80 and did not meet the 2.20 target. The IWI gives a ‘severity’ weighting to each incident and counts all incidents rather than just those that result in a formal report under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR).

The other HSPI target we missed was for assurance findings not being closed by the supply chain within 28 days. During the year, this improved each month, demonstrating behavioural change.

A review with the supply chain and wider industry looked at evolving our HSPIs and aligning our targets so we can achieve safer working, improve our performance and create the right behaviours. The revised HSPIs were approved at the Health, Safety and Security Committee in February 2023.

Health, safety and wellbeing achievements

We must always be clear about our priorities, challenges, the opportunities to improve performance and our overriding duty to keep everyone safe and well. We’ve refreshed our Health and Safety Strategy and Safe at Heart principles, reviewed our progress against our seven Safe at Heart risk focus areas and mapped future improvements in our Health and Safety Operational Plan.



Engineers at Kingsbury demonstrating safe working at height practice.



Health, safety and security

The winners of our first Safe at Heart Inspiration awards were announced in May 2022, while the competition to find inspiring examples of best practice was launched at our third Safe at Heart leadership conference in May 2023. The conference also showcased our journey so far and shared future challenges with HS2 leaders and the wider industry.

We conducted our first safety culture survey using the Health and Safety Executive's industry-recognised safety climate tool. About 5,000 people took part, with our supply chain and corporate functions developing action plans including improving reporting of accidents and near-misses. Our second survey, in 2023 – 2024, will measure our progress in developing a strong safety culture year-on-year.

We also launched our Construction and Safe at Heart Learning Legacy challenge, reinforcing the links between strong health and safety standards and robust construction delivery performance. The final submissions will be published on our Learning Legacy Hub in August 2023.

Occupational health

Health matters as much as safety and we are driving new standards for occupational health and wellbeing on HS2 and the wider industry.

We are developing our Health Exposure Monitoring System to better understand workforce health issues, reduce exposure to the top five causes of long-term occupational ill health and lower the cost of tackling ill-health in construction.

Keeping health at the top of designers' minds alongside safety is a priority. We're enhancing our 'health in construction – design by decision-making' tool to help designers measure and evaluate impacts of designing out health risk at source.

Two research projects are helping us to better understand and address fatigue in construction and psychological safety. Northumbria University is examining factors that influence fatigue, including types of work and shift patterns and impact on incident risk, to develop robust data to address these areas. Main works contractor Skanska Costain STRABAG is examining psychological safety with Lancaster University. Psychological safety lets people feel able to contribute ideas and voice concerns.

We support the wellbeing of our workforce using proactive interventions in line with public health priorities. A new asset-based governance structure means safety, health and wellbeing leadership teams can concentrate on health and safety risks, issues relating to civils works, stations and rail systems, future phases, land and property, and design. We are relaunching a programme-wide leadership forum to provide strategic focus and drive good practice, effective risk management and learning.

Security and protester activity

During our peak construction years, we will continue to reduce the risk of illegal protest, violence and crime against HS2 and its workforce, using incident management arrangements to ensure we respond effectively to challenges.

A route-wide injunction prohibits illegal activity on HS2 land along Phase One and Phase 2a and we're already seeing illegal protests, costs and delays reduce. Removing illegal trespassers is always driven by safety concerns and our operations are led by specialist security teams and safety professionals. Our 'prevent' strategy involves acquiring land well in advance of construction, focused security patrols, engaging with local people, better information sharing and seeking improved legal outcomes. This minimises the chances of protesters and HS2 colleagues getting injured.

Our strategy for safely evicting illegal protesters was used over several months in a complex operation at Cash's Pit, a small wood near Swynnerton, Staffordshire. Our approach reduced the support we needed from the emergency services and the effect on the works schedule. It also provided a blueprint for future operations.

In cyber security, there have been no significant data and information breaches and we work closely with IT colleagues to protect our information.

Innovation at HS2

We are continuing to break new ground and win awards for our innovative approach to building the high-speed railway. We're delivering UK industry 'firsts' in technology trials and extending our innovation portfolio.

This year more than 200 live projects have delivered savings of over £250 million and 1.5 million tonnes of carbon dioxide equivalent (mtCO₂e).

Our strategy is to build an innovation cluster that continues to evaluate and implement the great ideas that are coming from our network of partners, our supply chain, about 20 UK academic institutions, entrepreneurial start-ups and local schools.



Engineers charging electric plant.

HS2 Innovation Accelerator, a partnership between HS2 Ltd, Connected Places Catapult and Innovation Birmingham grows from strength to strength. It is focused around HS2's key innovation challenges – productivity, the environment and the circular economy – and we added a further two cohorts in 2022. We've now developed 25 businesses.

The accelerator has attracted more than £110 million of third-party venture capital and created more than 400 new jobs in the UK. Diversity is an important part of successful innovation and via the accelerator we encourage under-represented sectors to become part of the transport infrastructure supply chain. A quarter of the founders and CEOs we have worked with in the accelerator are female and more than 20% of participants are from BAME backgrounds. Both statistics are well above the industry average.

Our strong relationship with the Infrastructure Industry Innovation Partnership (i3P) has seen us share lessons with key national organisations including National Highways, Network Rail and the Environment Agency. Additionally, we've worked with the UK Rail Research and Innovation Network and the UK Collaboratorium for Research,

Infrastructure and Cities (UKCRIC) academic groups to run key projects with universities, developing new ideas and opportunities. Here are some of our achievements.

- We've worked with the University of Birmingham to use advanced modelling techniques to schedule our service. This will ultimately drive the operations of the rail service.
- We've built a project team with Loughborough University to develop and trial low carbon sprayed concrete. The project is being commercially assessed by our supply chain partners to revolutionise how we develop elements of the project.
- We've carried out the first semi-autonomous trial of 'big yellow plant' in the UK with Caterpillar. We are working with our colleagues in National Highways to feed our learnings into the Connected Autonomous Plant Project being driven by the Department for Transport's Innovation Board.

Innovation at HS2

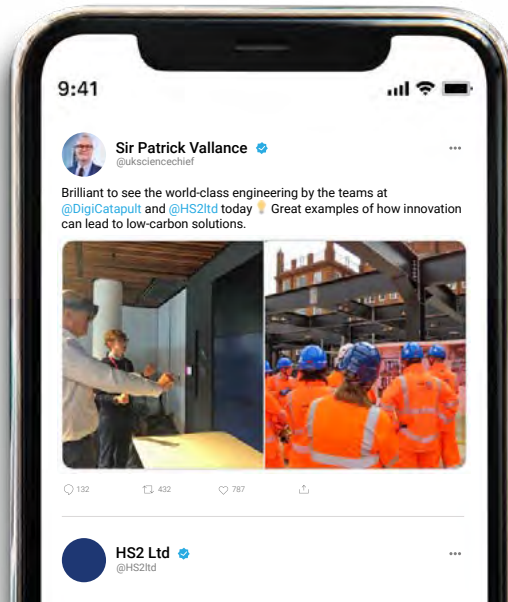
Case study

Innovation leadership

The Government's Chief Scientific Adviser Sir Patrick Vallance and his team visited our London innovation sites in October 2022.

We showcased our innovation leadership role and how we prioritise, test and deliver new ways of working to other UK projects and sectors.

Via the i3P network, our innovation portfolio has been made available to clients and regulated Government bodies so they can learn from HS2 and pick up best practice.



Sir Patrick Vallance visiting Old Oak Common.

Innovation at HS2

Awards for innovation

Our approach continues to be recognised by industry in awards programmes.

We were recognised for leadership at the TechFest 2022 awards, which recognise innovative ideas across the construction and infrastructure industry.

Awarding HS2 the Technology Leader Trailblazer accolade, the judges commended 'great examples of collaboration within HS2's supply chain to identify and develop innovation'.

- BCIA Industry Innovator of the Year, ALICE Technologies, and HS2 main works contractor partnered on an innovation project for Phase One. The Align team ran a pilot with ALICE to test its schedule for its viaduct substructure and look for improvements. In just six weeks, they managed to replicate three years of planning.
- Construction engineering specialist Keltbray bored up to 25 metres into the ground and added hollow tube piles on Mace Dragados' site at Euston. The pipes now carry cold flowing water to and from the building above to act as a heat exchange for a heat pump. This innovation won the Productivity Initiative of the Year for the HIPER pile at the 2022 British Construction Industry Awards.



HS2 receiving the Technology Leader Trailblazer accolade.

Part Five

Our performance

Key performance indicators 2023 – 2024

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Image: A rebar cage being worked on at Old Oak Common station.



Key performance indicators 2023 – 2024

The table below presents our key performance indicators (KPIs) for 2023 – 2024, as agreed with the DfT.

In accordance with the Framework Document, progress against our KPIs will be regularly assessed and shared with the Government’s Rail and HS2 Minister.

Our progress will also be reported publicly in the Annual Report and Accounts 2023 – 2024.

	Theme	2023/24 KPI
1	Safety, health and wellbeing performance	Maintain a Health and Safety Performance Index (HSPI) score of ≥ 2.20 .
2	Safety, health and wellbeing performance	Loss Time Injury Frequency Rate.
3	Phase One progress	Delivery Into Service (DIS) Target Date (initial services from Birmingham to Old Oak Common) maintained.
4	Phase One progress	Achieve the key Phase One delivery milestones for 2023/24.
5	Phase 2a progress	Be ready to appoint Phase 2a Design Delivery Partner in Q3 2023/24.
6	Phase One Cost	Current Observable Cost (Tangible Risk) below Target Cost for Phase One.
7	Annual budget	Year End outturn not to exceed 2023/24 delegated budget and to be no more than 2.5% below Supplementary Estimate unless otherwise agreed with DfT.
8	Environmental performance: biodiversity	Phase One: achieve a 2% improvement in our biodiversity no net loss position on our journey to the delivery of no net loss at final design stage of Phase One.
9	Environmental performance: biodiversity	Phase 2a: achieve a 2% improvement in our biodiversity no net loss position on our journey to the delivery of no net loss at final design stage of Phase 2a.
10	Environmental performance: carbon emissions	Forecast 31% reduction in carbon emissions against the carbon baseline for Phase One and Phase 2a by end of March 2024.
11	Community experience	Resolve 80% of urgent construction queries and complaints within two working days of them being reported to the HS2 Helpdesk.
12	Equality, diversity and inclusion (EDI)	Achieve EDI workforce diversity for HS2 Ltd employees of at least 40% women and 23% ethnic minority representation.

HS2

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