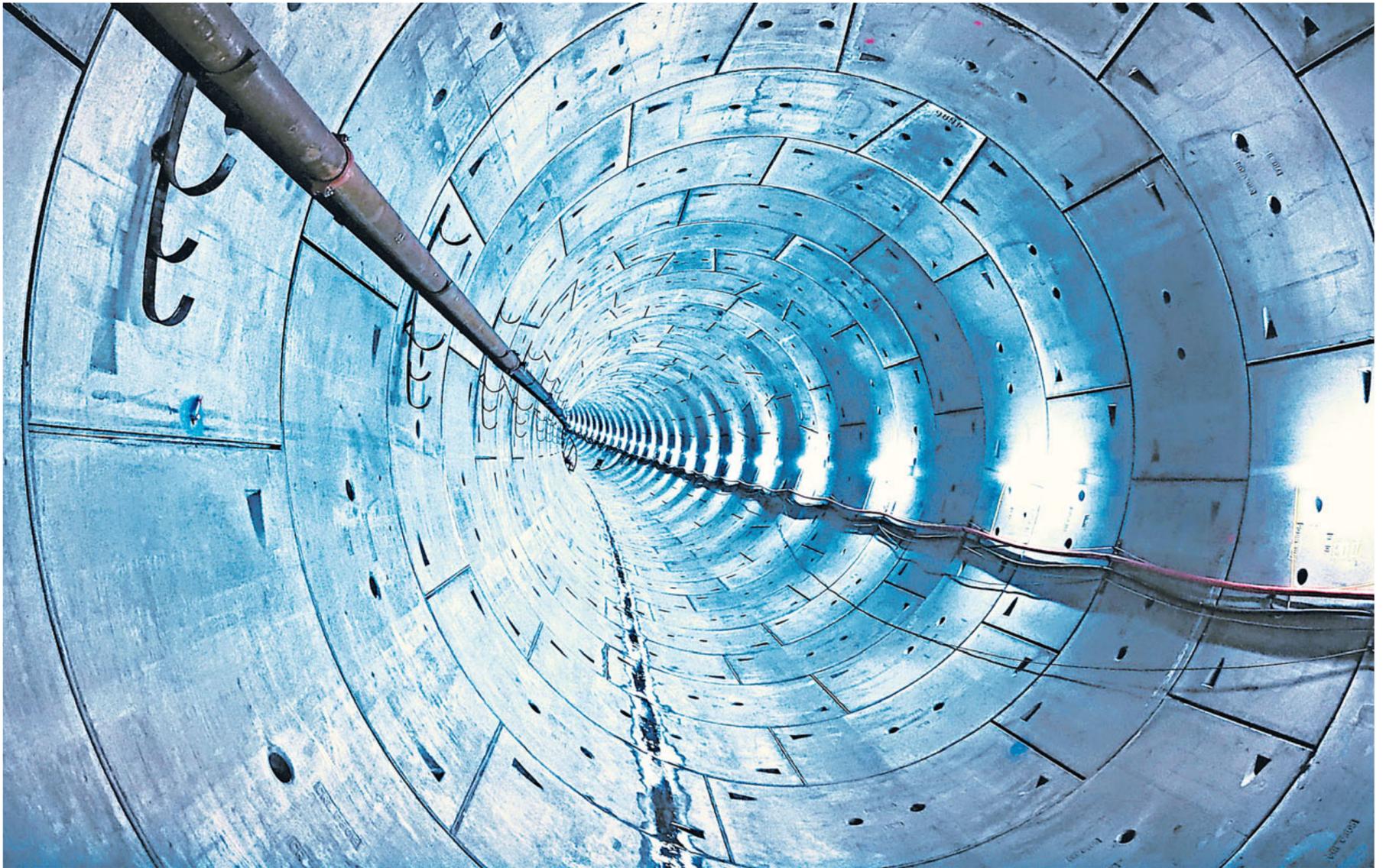


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 RECRUITMENT EXHIBITION



# Fast-track to the transport of the future

Thousands of engineers will need to be recruited for rail projects in the pipeline, including Crossrail 2 and HS3, as Paul Bray finds out

Until recently, if you wanted a first-hand account of building a major railway line hundreds of miles across the UK you would have had to track down a latter-day Brunel or a Stephenson.

Today, you can simply ring someone like Mike Lyons, West Midlands programme director for phase one of High Speed Two (HS2), the fastest and most technologically advanced railway ever built in Britain.

Costing a cool £56 billion, it will whizz passengers between London and Birmingham and on to Manchester and Leeds at speeds of up to 225mph, halving many current journey times.

"You could catch a train in Birmingham and be changing on to a Crossrail train to London's Docklands in less than 45 minutes," says Mr Lyons. "The connectivity benefits are huge."

Construction of phase one, 140 miles of track between London and Birmingham, is expected to

begin next year and be completed by 2026. Phase two – Birmingham to Leeds and Birmingham to Manchester – is aiming for completion in 2033, and "HS3", linking Leeds and Manchester, was given the green light in last month's Budget.

"Working on a brand new railway like this is a dream come true," enthuses Mr Lyons. "It's an order of magnitude bigger than anything else I've ever been involved with, and its legacy will last for generations – not just in boosting the UK economy but in developing new engineering capability and skills."

HS2 is setting the bar high. "We're aiming to use station designs chosen from prestigious international architecture competitions," says Mr Lyons.

"We'll be making unprecedented use of BIM (Building Information Management) technology to minimise design problems, and we'll be challenging our supply chain to help us find the most innovative solutions during the

construction phase. That's quite an unusual approach."

The scale of the challenge is prodigious. Most of the route is virgin territory and numerous tunnels and bridges will be required to minimise gradients, including a 10-mile tunnel at Amersham and two 2.5-mile viaducts.

Each tunnel will penetrate a different geology, from Chiltern chalk to Mercia mudstone; in total, a staggering 125 million tonnes of material will be shifted during phase one – 90 per cent of it being reused along the route.

The project will eventually employ around 25,000 workers, including thousands of engineers. "We're starting a period of rapid recruitment, peaking in 2018-19," says Mr Lyons. "My team will double in the next year. Starting with a blank canvas we've been able to recruit from a really broad base of skills and sectors. We're deliberately casting our net wide to bring in as much experience and diversity as possible."

Civil and mechanical engineers

It's an exciting time and it stretches the industry into technical territory we wouldn't normally enter

On track Crossrail 2 got the go-ahead, along with HS3

will sit cheek by jowl with specialists in noise reduction, environmental impact, water management, power supply and telecoms.

"We've also got a roads expert who's been able to liaise with Highways England to find integrated solutions that fit with our plans for HS2," adds Mr Lyons. HS2's engineers often leave their desks to visit communities along the proposed route. "It's quite unusual but they really enjoy it," says Mr Lyons. "It takes them beyond their technical world. We like people who like to be challenged."

HS2 is by no means the only challenge facing the UK rail industry. "It's the busiest time I can remember in my 34-year career," says Andrew Boagey, a member of the Institution of Civil Engineers' transport expert panel.

He reels off a list. Crossrail is about to be started out and Crossrail 2 has been given the Chancellor's nod. London Underground has

the Northern Line extension to Battersea and the Barking Riverside spur. A new diesel/electric InterCity Express Train is in development. In-cab signalling is replacing line-side signals. And electrification requires significant remodelling of bridges and track.

"It's a very exciting time and it stretches the industry into technical territory we wouldn't normally enter," says Mr Boagey. "People's careers are going further and up-skilling is hugely important. All the professional institutions are working hard to ensure there are good career pathways within rail."

As with HS2, the recruitment net is being cast wide. "Military engineers have an onus on safety and delivery that's directly transferable to rail," points out Mr Boagey. "So do petrochemical engineers who understand major projects, designing to a price, etc."

"The fatigue stresses experienced by an offshore oil platform can be very similar to those on a railway bridge. And the process-driven,

safety-critical approach of aerospace transfers extremely well to rail."

Even "routine" maintenance is often anything but, as Mr Boagey explains. "Railways have hundreds of time-critical activities where if the work is below par the line can't reopen. That represents a real challenge."

"I had replaced whole bridges in a weekend eight times by the time I was 30," he adds. "It's a unique and exciting experience that few other industries can match. You have to adapt your approach and methodology all the time in rail. And there can be a sudden element of drama that's quite compelling: a derailment, a flood, a tree on the line."

Competition for skills between contractors, construction companies and major employers such as Transport for London and Network Rail creates a healthy internal market, according to Mr Boagey. "There are good rewards for those who show they can succeed," he says.

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