HS2

Getting the best out of Britain

Department for Transport

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High Speed Two (HS2) Limited,
Two Snowhill
Snow Hill Queensway
Birmingham B4 6GA

Telephone: 08081 434 434

General email enquiries: HS2enquiries@hs2.org.uk

Website: www.gov.uk/hs2

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HS2

Getting the best out of Britain

Image: HS2 Ltd

Chairman's Foreword

Britain faces a paradox.

London is one of the greatest global cities. It will remain so, but we have to ensure that it does not become a victim of its own success. At the same time, whilst regional economies in the rest of the country have real strengths such as world class universities and research centres, as well as highly skilled manufacturing clusters and cutting-edge technologies, productivity still lags behind that of London and the South East. The danger is that those areas that already feel left behind will become even more so in the modern digital world.

The challenge, as the Government and others have clearly recognised, is: how do we bridge the gap?

Accessibility, or the lack of it, is one of the keys to resolving this national paradox.

The transport network around London has given the city easy access to the skills, products, professional services, and markets needed to succeed in the modern economy. But poorer connectivity between and within the Midlands and the North has made it more difficult for regional economies there to create that critical mass and realise their full potential.

HS2 will play a critical role in correcting that imbalance, particularly as it is fully integrated with the strategies for both Northern Powerhouse Rail and Midlands Connect.

A combination of more capacity and better connectivity will improve accessibility and, therefore, productivity in both regions – at the same time as helping to ease the pressure on London.

This report shows how. It is based on a series of workshops we held up and down the country. Each workshop brought together representatives from business, local authorities and universities, and I am grateful to all those who took part for their commitment and insight.

Two things struck me during the process. Firstly, the latent talent that exists in this country and, secondly, the increasingly strategic way these issues are being approached. The Government's Modern Industrial Strategy clearly reflects these priorities, as do the local economic strategies being developed up and down the country. Both will be increasingly vital to open the supply chains and market opportunities for British businesses in a post-Brexit world.

HS2 will itself offer significant opportunities to those supply chains and, through the new High Speed Rail Colleges at Birmingham and Doncaster, will leave a lasting impact on the UK skills base. Its longest lasting legacy, though, will be helping that process of joining up the dots between where we are now, and where we could get to as a country – the process of rebalancing the national economy to get the best out of each and every part of Britain.

David Higgins
Chairman
High Speed Two (HS2) Ltd

Acknowledgements

HS2 Ltd held a series of roundtable discussions with businesses, trade and sector bodies, universities, local authorities and Local Enterprise Partnerships during 2017. The evidence gathered from those discussions has informed this report, providing evidence and feedback to understand the role that improved transport connectivity can play in helping to raise levels of productivity and growth in sectors and places across Britain. The roundtables brought together participants from a range of sectors, including manufacturing, digital, professional and business services and higher education, as well as from local government. The discussions were hosted in London, the East and West Midlands, the North West, Yorkshire and the North East of England. In addition to the roundtable discussions, HS2 Ltd engaged bilaterally with businesses, trade bodies and local authorities.

We are grateful to all those who attended these roundtable discussions and in particular to Greater Birmingham and East Midlands Chambers of Commerce, Tech North, Sheffield City Region Local Enterprise Partnership, Leeds City Council and Wigan Council for their help in organising and hosting discussions.

Executive Summary

Britain has many strengths. In London it has a genuinely global city, and outside the capital it has cities and businesses that are centres of excellence and global leaders in:

- financial and professional services;
- creative industries;
- digital technology;
- high-tech engineering;
- automotive production;
- aerospace;
- research and development;
- pharmaceuticals;
- chemicals;
- environmental technologies and renewable energy;
- university education;
- the formation of small businesses; and
- tourism.

These represent considerable and growing assets, on which the country can build as it prepares to exit the European Union. To make the most of them, however, we will need to tackle those issues which have been identified as potential barriers to future growth outside the South East.

As the Government and others have recognised, to succeed in the future, Britain needs a more balanced, more productive economy. We need to get the best out of Britain. We need to become more productive as a whole – and HS2 can help do that. This report sets out how HS2 can help and, indeed, is already beginning to do so.

By adding badly needed new capacity, increasing the frequency and reliability of connections, and substantially reducing the journey times between and within regions in the Midlands and the North, as well as to and from London, HS2 will improve productivity by:

- helping to create the critical mass of skills, services and access to the supply chains and markets that both individual cities and small and medium-sized enterprises (SMEs) need to succeed and grow by replicating the London effect;
- making it more attractive for graduates to stay in the cities and towns of the Midlands and the North because regional growth will result in a wider range of jobs and long-term careers;
- putting in place the infrastructure for existing economic hubs such as Birmingham, Manchester and Leeds to access the talent pool they need to grow by releasing capacity on the existing rail network, and to replicate the London commuting model;

- laying the foundation for Northern Powerhouse Rail and Midlands Connect to further improve connectivity in the future;
- freeing up capacity on the existing rail network that could be used to run additional freight services;
- creating the context for businesses currently located in London to relocate or expand in less expensive, and therefore globally competitive, locations outside London to the benefit of both;
- transforming access to Birmingham, Manchester and Heathrow airports, making it easier for businesses throughout Britain to access the international markets that will be so important post-Brexit;
- making the North and Midlands a more attractive location for overseas companies wanting to invest in Britain;
- transforming the ability of our leading research and development centres and universities to connect to cutting-edge manufacturers in high-tech engineering, the automotive and aerospace industries, amongst other sectors;
- helping our legal, accounting and banking sectors to remain globally competitive by basing themselves in more cost competitive locations while retaining access to clients and markets in London;
- reducing the time it takes for start-up businesses outside London to connect with investors, venture capitalists and mentors in the capital, so giving them the reliability and accessibility they need to develop long-term relationships.

In this way, HS2 will help address potential barriers to future growth outside the South East, for example:

- our productivity rates are lower: it takes a UK worker five days to produce what an equivalent in the US, France and Germany produces in four[i];
- whilst SMEs in Britain employ the majority of the private sector workforce, we remain nearer the bottom of the international rankings for the percentage of start-up businesses that grow to more than 10 employees after three years[ii];
- some cities find it difficult to hold on to graduates with the result that, for instance, 30% of firms in Manchester identify a lack of staff or skills as one of their top three challenges to growth[iii];
- start-up firms outside London can find it difficult to access equity investment and venture capital; and
- outside London and the South East, relatively poor connectivity and congestion deter the face-to-face collaboration that research and development and innovation depend on, as well as the access to the national and international markets, extended supply chains and professional services SMEs need to grow.

Productivity within the Midlands Engine and Northern Powerhouse regions varies almost as much as between the regions and devolved nations of the UK[iv]. HS2 will help address those imbalances by spreading the benefits of better connectivity beyond those places with dedicated HS2 stations by working with Northern Powerhouse Rail and Midlands Connect to integrate its services with regional and local transport connections. That is in line with the Government's recently announced commitment of £300 million to futureproof HS2 so that it can be used as part of the Northern Powerhouse Rail network and to support Midlands Connect ambitions[v].

With that better transport connectivity, our cities and regions will be free to concentrate on developing their own, distinct specialisms and strengths, whilst simultaneously easing the pressure on London by freeing up extra capacity on existing commuter lines into the capital.

Salthouse Dock, Liverpool

Image: HS2 Ltd

In the North West, therefore, HS2 will help close the productivity gap by:

- easing increasing levels of crowding on rail links into Manchester both through the extra capacity it will itself provide, as well as the potential to more than double evening peak seats compared to today's services from Manchester Piccadilly towards Crewe and Stoke-on-Trent on the existing network[vi];
- more than halving journey times between the North West and the West Midlands, so opening up new markets and new possibilities for collaboration and innovation, as well as increasing the reach of towns and cities such as Crewe, Wigan, Preston and Warrington;
- helping Manchester and Liverpool take advantage of their cost competitiveness to attract office-based, high skilled jobs. Relocating a 50 person skilled legal back office centre from the City of London to Liverpool could achieve annual savings of £1 million[vii];
- making it easier for people to enjoy the North West's 'quality of life' advantage – and, therefore, making it easier both for firms to attract and retain the talent they need and for tourists to access the area;
- making it easier for Manchester's digital cluster and Liverpool's cluster of digital gaming businesses to access venture capital in London, and vice versa;
- shrinking the distance between the region's advanced manufacturing sector and its supply chain, as well as the universities and research centres on which it depends;
- improving access to and from the Cheshire Science Corridor with its strengths in scientific research in life sciences, chemical engineering, and energy and environmental technology[viii]; and
- making Cumbria more accessible to visitors from the South East and the Midlands for weekend trips, so helping to fill vacancies during the quieter spring and autumn 'shoulder seasons'.

In the North East, therefore, HS2 will help close the productivity gap by:

- helping the region achieve its target of 70% of new jobs being "better" to offer improved career opportunities for skilled people in the North East[ix];
- making it easier for businesses across the region to connect both to each other and to other manufacturing plants, suppliers, universities and research centres in the city regions of York, Nottingham, Derby and Birmingham, as well as encouraging better connectivity to new sources of finance, particularly in London;
- helping the collaboration needed to drive the developing knowledge based industries in the region, in particular the software technology, gaming and creative businesses based in Newcastle, the growing number of software companies in Sunderland and DigitalCity on Teesside[x];
- helping Newcastle and the rest of the region maximise their success in using its lower cost base to attract shared service activities[xi];
- helping the SME sector in the Tees Valley region grow its role in supplying products and services to major manufacturers, not just in the region, but throughout Britain;
- making it easier for the advanced manufacturing, automotive and medical industries in the region to connect to universities and research collaborators, as well as partners, clients and markets in the region, and the rest of Britain; and
- better connecting the region's exporters, who make a major contribution to UK exports[xii], to markets abroad by cutting the journey time from Newcastle to Heathrow Airport by around 1 hour and 20 minutes.

Sunderland Software City

Image: MAKE it Sunderland

In both the Leeds City Region and South Yorkshire, HS2 will raise productivity by:

- integrating with Northern Powerhouse Rail to ease the combination of congestion and poor connectivity across the region. This has been a contributory factor to a vicious circle in which, because companies can find it difficult to access the skills they need, they then find it difficult to grow sufficiently to provide the number of high skilled, high income jobs the region needs;
- HS2 will directly provide additional capacity, as well as freeing up capacity on existing lines such as that between Leeds, Wakefield and Doncaster[xiii]. HS2 will improve connections from Leeds and Sheffield to the Midlands, and Transport for the North is exploring options to make use of the HS2 line for faster services between Leeds, York and Newcastle;
- building on the growing specialisms across the region whether it is: York's food research sector[xiv], alongside its traditional rail expertise[xv]; the University of Sheffield's Advanced Manufacturing Research Centre[xvi]; or Leeds' significant success in attracting and growing professional and financial services, which includes being home to the UK's fastest growing legal sector[xvii];
- helping both the significant SME sector in the region and its growing technology and digital companies access growth finance in London – whether it is firms specialising in health technology, Big Data and FinTech in Leeds, or businesses with expertise in data management, analytics and telecommunications in Sheffield and Rotherham[xviii];
- helping Leeds South Bank succeed as one of the largest regeneration initiatives in Europe[xix];
- making Yorkshire as a whole more accessible to tourists from the Midlands, the South East and London, and to international visitors; and creating a virtuous circle in which, because the region's graduates believe they can build and sustain a successful career in Yorkshire, they choose to stay – so providing the skills companies need.

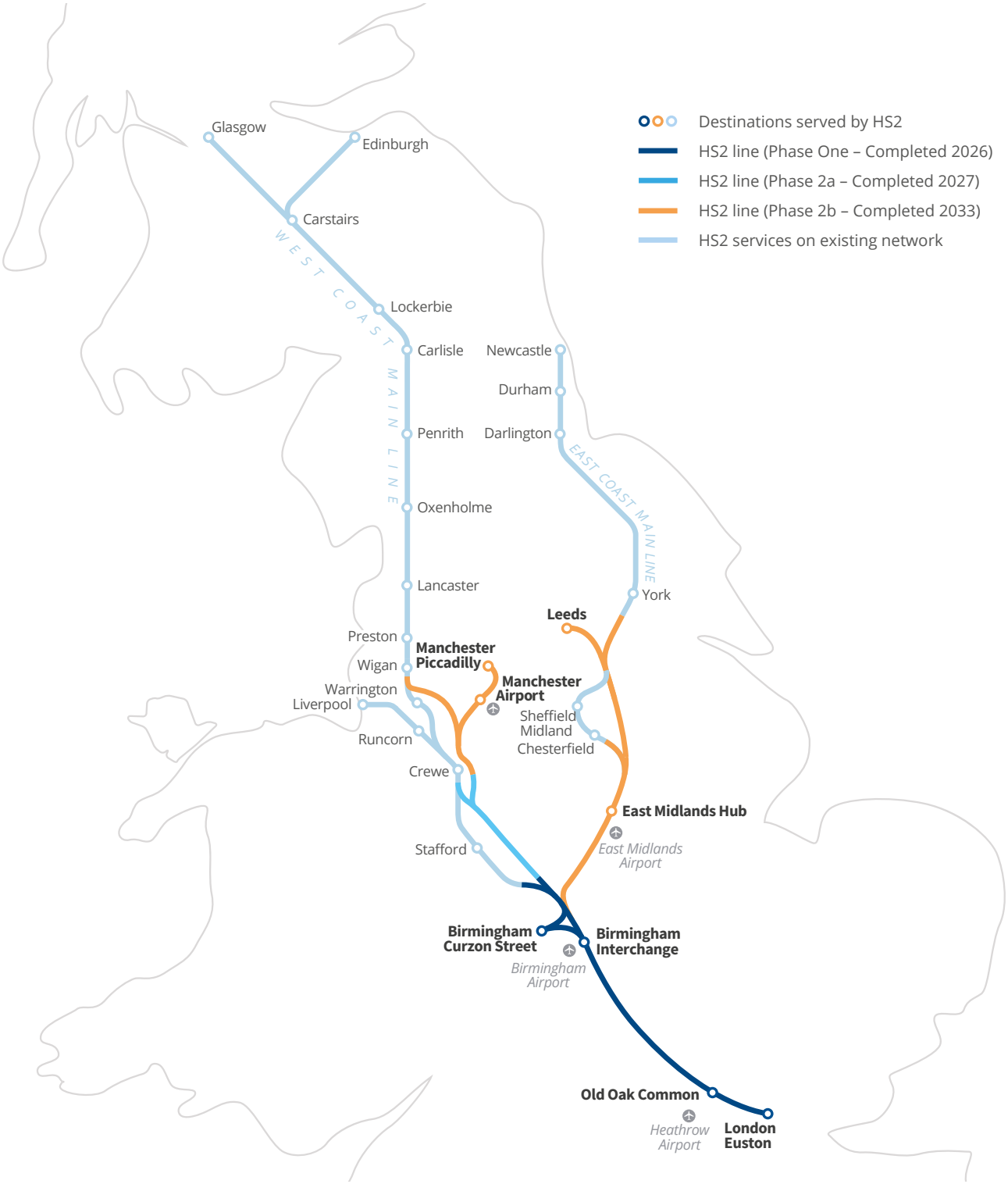
In the Midlands, HS2 will help the region achieve its target of raising productivity to the national average by 2030[xx] by:

- reducing the journey time between the East and West Midlands from over an hour on heavily congested routes[xxi] to 20 minutes, making it easier for the region to operate as a single economic unit;
- more than halving the journey time from Birmingham to Manchester and Leeds, as well as to other destinations in the North, making collaboration easier – such as that between the aerospace clusters in Derby, Birmingham, Wolverhampton and Coventry, and those in Lancashire, Cheshire and Scotland;
- helping Nottingham – one of the UK's six Science Cities[xxii] – to maximise its research and science base and Leicester to grow its developing digital tech sector[xxiii];
- adding substantial new capacity and freeing up extra capacity on existing commuter lines into Birmingham as well as to and from London, so helping the city build on its developing role as a financial, banking and professional services centre which has already attracted HSBC UK[xxiv] and Deutsche Bank[xxv] to the city;
- helping deliver the higher levels of knowledge exchange between universities and technology businesses in the region that has been identified as critical for success[xxvi];
- helping increase skill levels in the region by making it more attractive for graduates to stay as well as creating a bigger catchment area for the region's employers; and
- expanding the catchment areas for Birmingham and East Midland airports, allowing them to offer a wider choice of international destinations for global businesses based in the Midlands, such as Rolls Royce, Jaguar Land Rover, Toyota and JCB[xxvii].

Britain is fortunate, both in having London as its capital city and in having so many centres of excellence in the Midlands and the North.

The key is how to maximise these assets for the future and, in the process, increase our national productivity. By delivering a step change in capacity, reliability and connectivity, HS2 can help achieve that national goal; help to get the best out of Britain.

HS2 Network Map



Reduced crowding on trains

Improved reliability

Increased frequency of services

100 cities and towns could benefit from new or improved rail connections

Directly link eight of the UK's 10 largest cities

Transform connectivity across Britain supporting regional economies and rebalancing of the UK economy

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Image: Advanced Propulsion Centre UK

1 INTRODUCTION

The Government has set out its vision for a Modern Industrial Strategy that will back Britain's strategic strengths and tackle our underlying weaknesses. The strategy aims to ensure that people across the regions share in the benefits of British business success.

By creating a step change in the mobility of goods and skills, High Speed Two (HS2) will help regions develop their specialisms and strengths and realise more of their potential. As part of a broader package of local connectivity and wider infrastructure measures, HS2 will be central to the Modern Industrial Strategy, acting as a catalyst to narrow the gap in economic performance between UK regions.

The strengths of Britain's sectors and industries are clear. We have outstanding firms and clusters in every part of this country. However, the UK falls behind on international comparisons of productivity. On average, workers in France, Germany and the United States produce around as much in four days as UK workers do in five[1]. The level of UK productivity in the second quarter of 2017 was below its level before the onset of the global financial crisis in 2007. Productivity would now be a fifth higher had it continued growing in line with its pre-crisis trend[2].

Crucially, our economic success is still too unbalanced and focused on London and the South East. Productivity in London was 32% higher than the UK average in 2015. In the regions of the North and Midlands productivity ranged between 10% to 15% below the UK average[3]. City regions in the Midlands and the North are home to world class universities and highly successful businesses. Improving transport links within and between these city regions will help the Midlands and the North to secure the same degree of scale and success as their counterparts in the South East.

Decades of industrial policy and regional support have benefited specific locations and companies but region-wide imbalances in productivity remain. The productivity gap between the best and worst performing regions in the UK has increased since 1997 (Figure 1). To raise our national productivity, it is crucial that we enable areas outside the South East to realise their potential. HS2 has an important part to play.

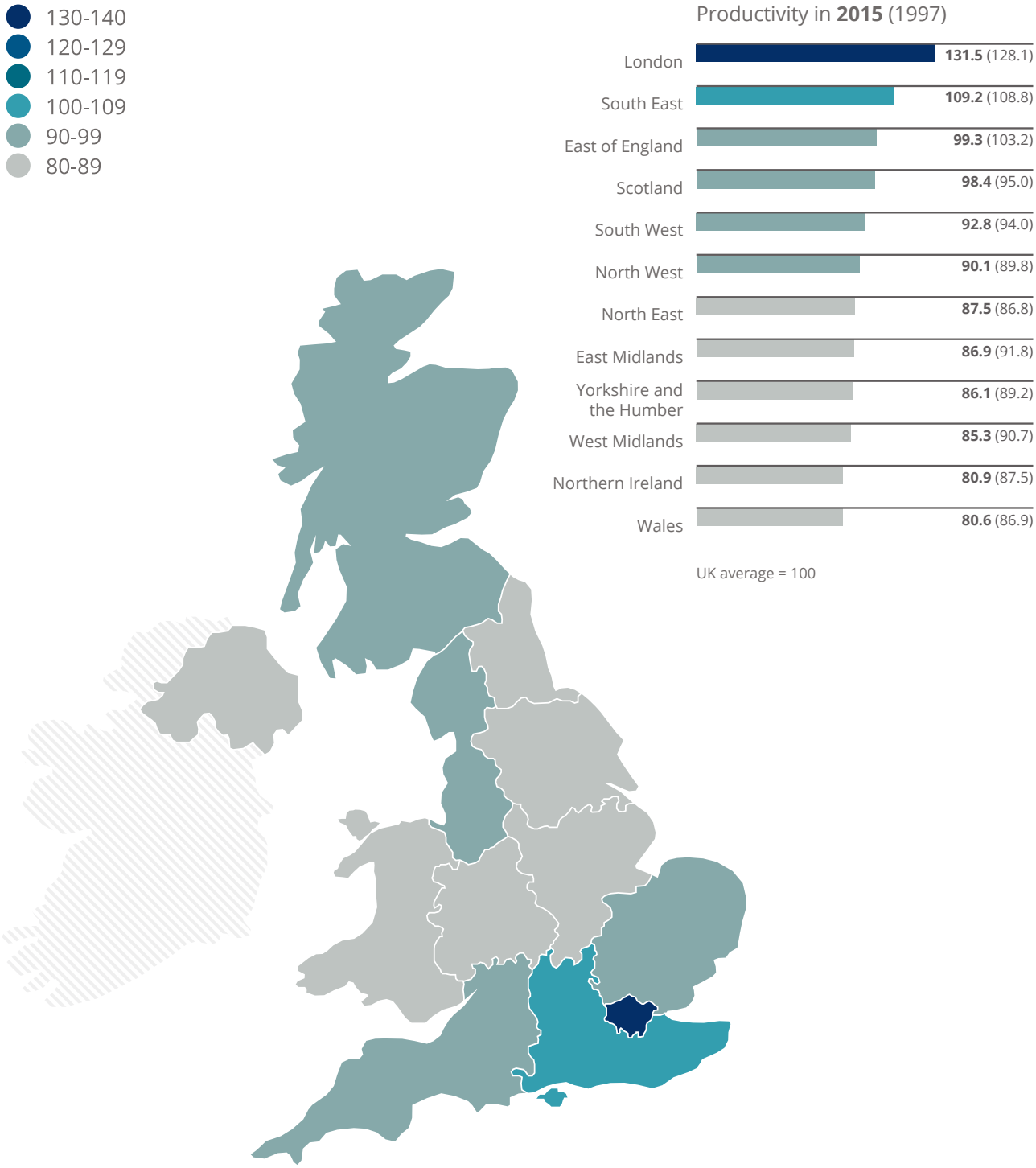
One reason for the unbalanced nature of regional growth in the UK is that relatively poor transport connectivity compared to London and the South East limits the ease of access of many businesses in the Midlands and North to markets and skills elsewhere. Feedback from roundtable discussions with businesses in these regions suggests that relatively poor connectivity has:

- **made it harder to collaborate with their supply chains;**
- **hindered collaboration on research and innovation;**
- **restricted the talent pool they can draw on;**
- **limited access to finance, support networks and mentorship for small and growing businesses; and**
- **made it more difficult to access new customers and markets in regions across the UK and internationally.**

HS2 offers faster, more frequent and more reliable travel between key cities and areas of the UK and will increase capacity on our congested railways. HS2 will directly link eight of the UK's largest 10 cities, running services to more than 25 stations across Britain and integrating with the rest of the rail and transport network. Over 300,000 passengers a day are expected to travel on HS2 services. HS2 will also release capacity on the conventional rail network for new local and regional services, offering the potential to more than double seats during evening peak hours compared to today's services from Manchester Piccadilly towards Crewe and Stoke-on-Trent and from Leeds towards Wakefield[4]. HS2 will offer the high levels of reliability and punctuality that international high speed networks routinely deliver[5]. By creating a step change in the mobility of people, skills and knowledge between cities and areas across Britain, HS2 offers the potential to lessen region-specific barriers to growth. This will help local places to develop the distinctive strengths of their local economies.

Fig. 1 Productivity in the regions and devolved nations of the UK in 2015

Source: Office for National Statistics. Map shows gross value added (GVA) per job filled in 2015. Table shows GVA per hour worked.



Improved access to the fast-growing finance, professional and business services sector in the West Midlands will support the growth of Manchester's digital cluster. Nearly 300 companies in the finance, professional and businesses services sector are headquartered in Birmingham[6]. The sector employs around 100,000 people in the city of Birmingham[7]. HS2 will more than halve rail journey times between Birmingham and Manchester city centres from 88 minutes currently to 40 minutes when the HS2 network is completed in 2033, with two direct and reliable HS2 services every hour in each direction. There is a potential parallel with science and technology firms in Oxford and Cambridge, which already benefit from good rail connections to London's business services hub. As the business cluster in Cambridge has grown, its access to London's many sectors and international links has enabled Cambridge-based businesses to reach a diverse set of UK and global customers[8].

Paradise development concept, Birmingham

Image: Paradise PR

Image: Martine Hamilton Knight

Sustainable Chemistry Research Centre, University of Nottingham

The eastern leg of Phase Two of HS2 will connect the West and East Midlands, Yorkshire and the North East, improving links between Local Enterprise Partnership (LEP) regions that are home to around 11 million people. Connecting some of the UK's best universities and research centres in the East Midlands, with advanced manufacturers in the West Midlands, Leeds, South Yorkshire and the Tees Valley, will create the potential for greater research collaboration to strengthen the competitiveness of British manufacturing. HS2 will bring the UK's fastest growing legal sector in Leeds, employing over 8,000 people in law firms ranging from international players to highly specialised niche practices[9], within 50 minutes' journey time of Birmingham[10] and within half an hour's journey time of the East Midlands.

The Burbo Bank Offshore Wind Farm in Liverpool Bay

Image: Andrew Paterson / Alamy Stock Photo

By substantially reducing journey times, HS2 will bring British businesses closer to international airports. HS2 services will call at dedicated high speed rail stations at Birmingham Airport and Manchester Airport. A new station at Old Oak Common in West London will allow HS2 passengers to connect to frequent direct rail services to Heathrow Airport. The station will be served by direct trains from all HS2 destinations, providing faster and easier access to Heathrow from across the Midlands and the North[11]. East Midlands Airport and Leeds Bradford Airport will be accessible via onward connections from HS2 stations. As well as improving access to global markets, HS2 connections to airports will help encourage foreign direct investment into the Northern Powerhouse and Midlands Engine regions.

With better transport connectivity, each place will be free to concentrate on developing its specialisms and strengths – whether agri-tech in York, life sciences and pharmaceuticals in Cheshire, low carbon energy in Liverpool, the nuclear and energy industry along Cumbria's coast, aerospace in Lancashire or software design in the North East[12].

Closing gaps in economic performance is not only about tackling imbalances between London and the South East and the Midlands and the North. Productivity within the Midlands Engine and Northern Powerhouse regions varies almost as much as between the regions and devolved nations of the UK[13]. HS2 will act as the backbone of the UK's rail network and integrate with regional and local transport connections to spread the benefits of improved connectivity beyond those places with HS2 stations:

- **The Midlands Connect Strategy outlines the vision for the Midlands to become an engine for growth by improving transport connectivity between towns and cities in the region and spread the growth that HS2 unlocks across the Midlands[14]. Six HS2 stations will serve the Midlands Connect area[15] and these will sit at the centre of intensive growth corridors.**
- **Transport for the North, working with business and civic leaders, is developing proposals for a Northern Powerhouse Rail network that can meet the needs of people and business, transforming connectivity between the key economic centres of the North[16]. Considerable progress has been made in developing Phase 2b of HS2 to support the aspiration of Transport for the North for better connectivity between cities across the North.**

To realise the full potential of HS2 as a catalyst for growth, it is important that investment in Britain's new high speed rail network is accompanied by complementary policies and investments in the productive potential of local and regional economies. This is already happening. The Northern Powerhouse and Midlands Engine are targeting investment in skills, innovation and transport to create a thriving environment for businesses to flourish. Local authorities and Local Enterprise Partnerships are gearing up for HS2 and developing growth strategies to maximise the benefits of HS2 in their areas. These HS2 local growth strategies have already been completed for the West Midlands and Old Oak Common. Phase Two places are currently working on similarly ambitious proposals to support growth across the Midlands and the North[17].

With these complementary investments in places, local areas will be able to reap the benefits that HS2 offers by being part of a well-connected network of cities and regions that can supply the skills, knowledge and markets that are vital to their economic success. In this way, HS2 offers our cities and regions the opportunity to be more than the sum of their individual parts.

As Britain prepares to exit the European Union, by creating new market and supply chain opportunities within the UK, and improving access to international gateways to help create new trading relationships for British business, HS2 can make a vital contribution to helping British business succeed in a post-Brexit era.

"HS2 is a game changer for the Midlands. Not only will it put Birmingham at the heart of a new national network, it will bring regions closer together and open up new avenues for our local businesses to trade with each other in skills and products; all of which will improve connectivity, boost productivity and help rebalance the national economy."

Paul Faulkner, Chief Executive,
Greater Birmingham Chambers of Commerce

Image: Spaces Images, Jia He / Blend

2
THE CHALLENGE

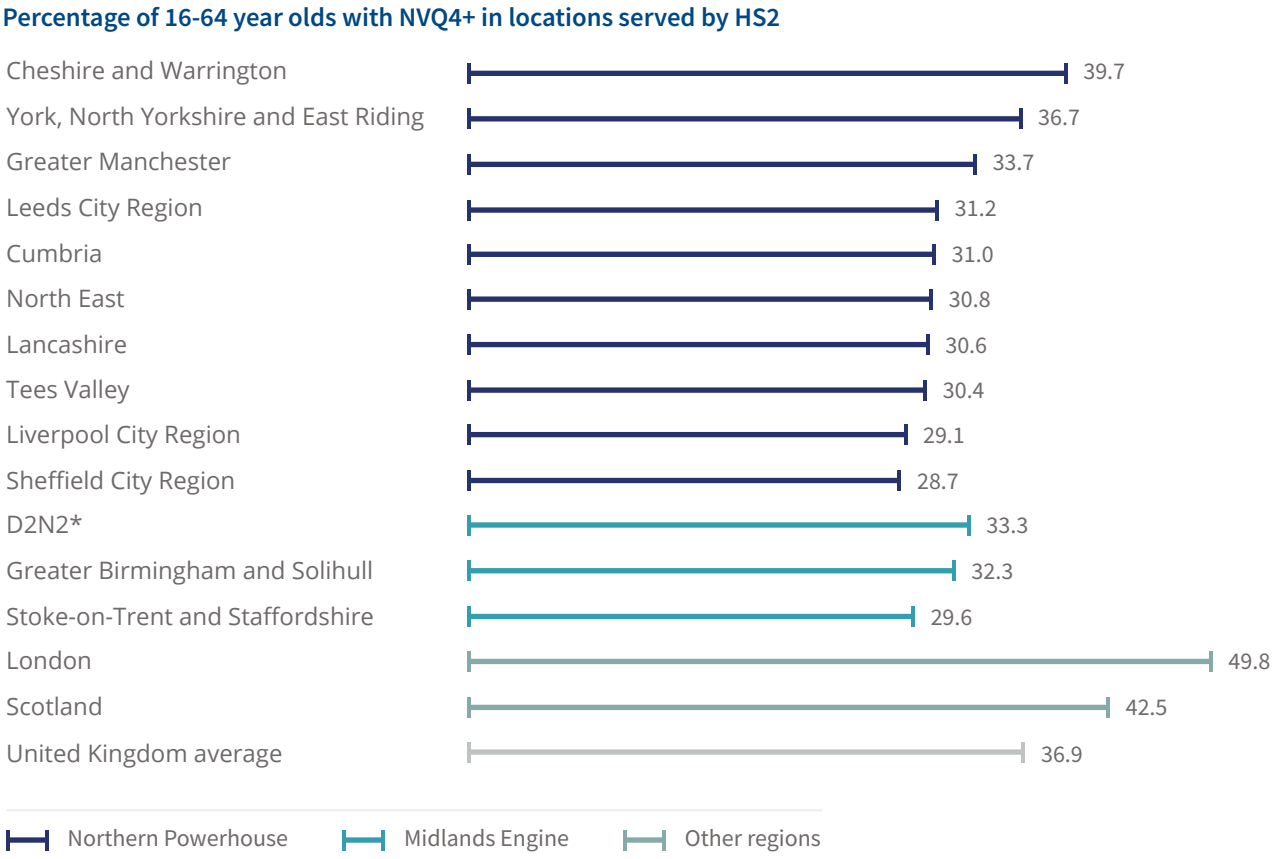
The UK economy has grown steadily in recent years and now has record rates of employment[18]. However, delivering long-term prosperity will require the UK to close its productivity gap with other major economies. Faster rates of productivity growth will allow faster growth in wages and underpin the competitiveness of British businesses in global markets to deliver higher living standards. The Government's Modern Industrial Strategy has made raising productivity and driving growth across the country its central objective[19].

Within the UK there are large disparities in productivity and economic performance – the most productive area of the UK is almost three times more productive than the least[20]. It is essential to tackle the underlying causes of our underperforming regions. Only then can British businesses across the UK succeed.

Our cities and regions in the Midlands and North struggle with lower levels of skills. Among the Local Enterprise Partnership (LEP) regions that form the Northern Powerhouse and Midlands Engine, only Cheshire and Warrington and York, North Yorkshire and East Riding have levels of high skills (degree equivalent or higher) comparable to the UK average (Figure 2). In the city regions of Birmingham, Manchester, Leeds and Sheffield, much less of the working age population have degree level qualifications (less than 35%) compared with London (around 50%).

Fig. 2 Share of working age population with NVQ4+ qualifications, 2015

*Source: Office for National Statistics. *D2N2 is LEP for Derby, Derbyshire, Nottingham and Nottinghamshire.*



Levels of investment also vary substantially across the UK. Investment per head of population in fixed assets such as plant, machinery, equipment and buildings in the North of England, which is dominated by investment by the private sector, lags behind the rest of England.

This regional investment gap increased between 2008 and 2012[21]. Investment in research and development is substantially lower in regions outside the South East and East of England (Figure 3) and this lower level of spending on innovation is reflected in a 'technology gap' in the North, with fewer patents per employee than the average for England[22].

The Midlands and the North also attract lower levels of inward foreign direct investment (FDI) than London and the South East (Figure 4), reducing the scope for local businesses to benefit from exposure to the skills, technologies and working practices that inward investors often bring.

Fig. 3 Research and development spending per head, 2015

Source: HS2 Ltd calculations based on Office for National Statistics data

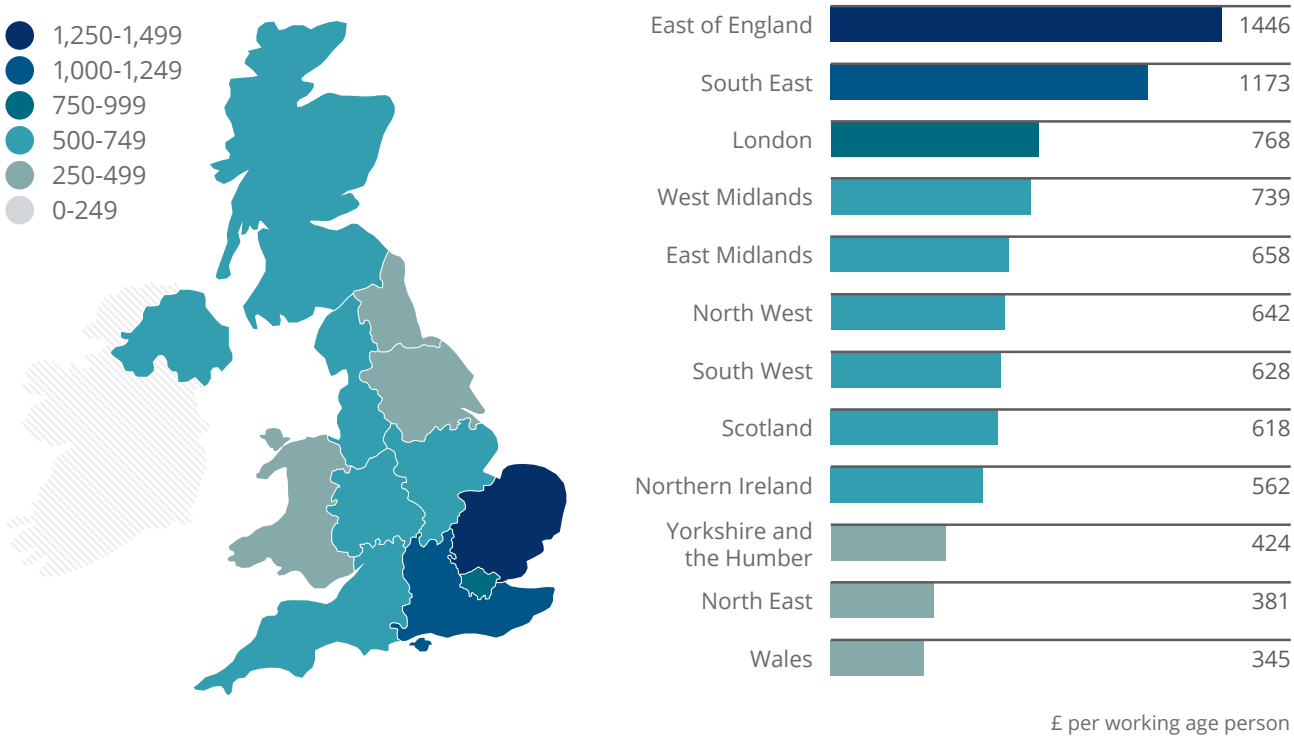
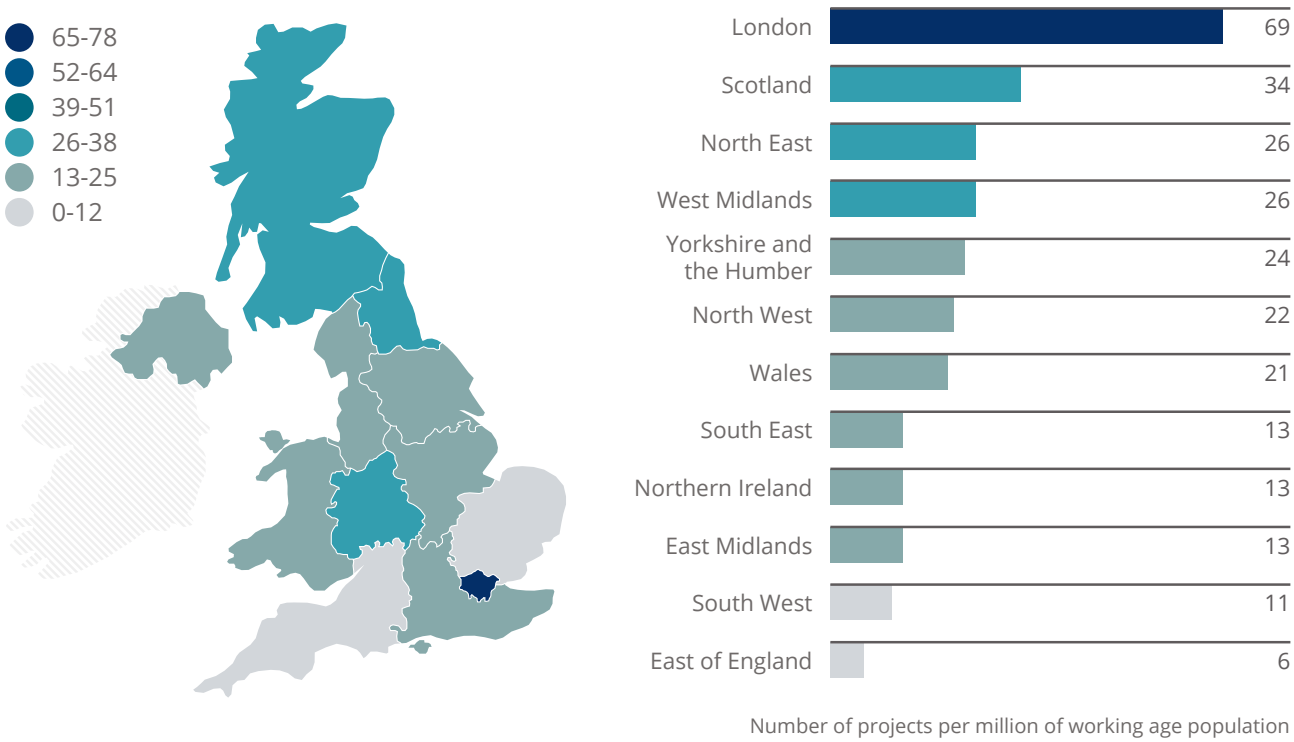


Fig. 4 Foreign direct investment projects per head, 2015

Source: HS2 Ltd calculations based on Office for National Statistics population estimates and FDI data from the EY attractiveness survey UK 2016



Cities and regions in the Midlands and the North find it harder to secure the same degree of scale and success as their counterparts in the South East. In the North the population is spread out across a number of cities and the density of employment in urban areas is lower than in the rest of England[23]. This smaller scale of urban areas reduces the productivity benefits that businesses and workers in more concentrated cities enjoy. These 'agglomeration' benefits include greater opportunities for firms to form links with suppliers, better matching of skills to job opportunities and the sharing of knowledge[24].

The smaller scale of urban economies in northern regions is compounded by poorer levels of transport connectivity compared to the South East:

- **Travelling the 40 miles between Bradford and Sheffield by rail takes a minimum of 1 hour and 16 minutes[25].**
- **Crowding is a growing problem – around a fifth of rail passengers in the North are dissatisfied with the room to sit and stand[26] – and services can be infrequent.**
- **The strategic road network in the North suffers from areas of congestion, such as the M60 in Greater Manchester, the M62 in the Liverpool City Region and in West Yorkshire, the M1 around Sheffield and the A1 and A19 in the North East and Tees Valley[27]. In the Midlands, 60% of manufacturing, logistics and professional services businesses report that conditions on the major road network causes them problems[28].**
- **Average speeds for rail journeys within the Midlands are often slow. For example, a 52-mile rail journey from Birmingham to Nottingham takes 1 hour and 9 minutes. A comparable rail journey between Southampton Central and Reading of 50 miles is around 20 minutes faster[29].**

"HS2 could undoubtedly prove a contributing factor in determining where businesses, including those within the business services industries, locate. Essential to this is how the new line integrates with other local, regional and national transport networks. As an industry that is already evenly spread across the UK, if HS2 sees business activity shifting in the long-term to alternative economic centres, such as Manchester, Birmingham and Leeds, then it is likely that business services companies will see an increase in work in these places as a result."

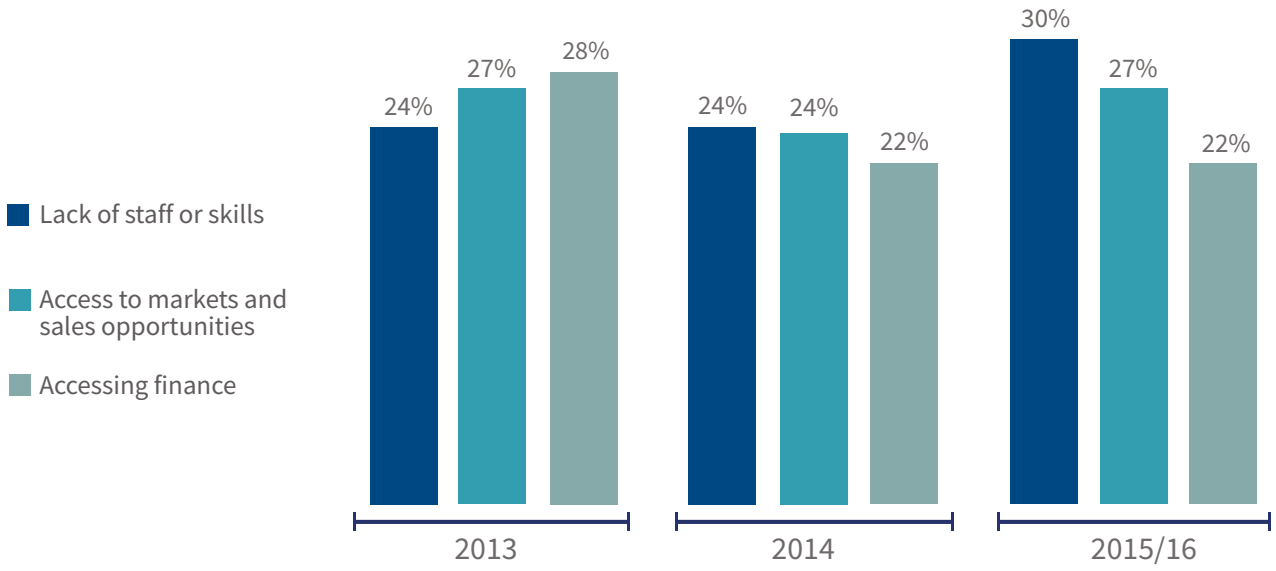
Alasdair Hutchinson, British Services Association

Relatively poor connectivity in the Midlands and North reduces the scope to access resources, markets and knowledge from connected regions. For example, businesses in Greater Manchester consistently report problems accessing finance, skills and markets as their top three barriers to growth (Figure 5).

Businesses in the North West, North East, Yorkshire and the Humber and West Midlands are less satisfied with the state of infrastructure than the national average. Connectivity (defined as the ease of access to infrastructure) is rated as a particular concern for businesses in the North West, North East and West Midlands (Figure 6).

Fig. 5 Top barriers to growth reported by businesses in Greater Manchester

Source: Greater Manchester Business Survey 2016



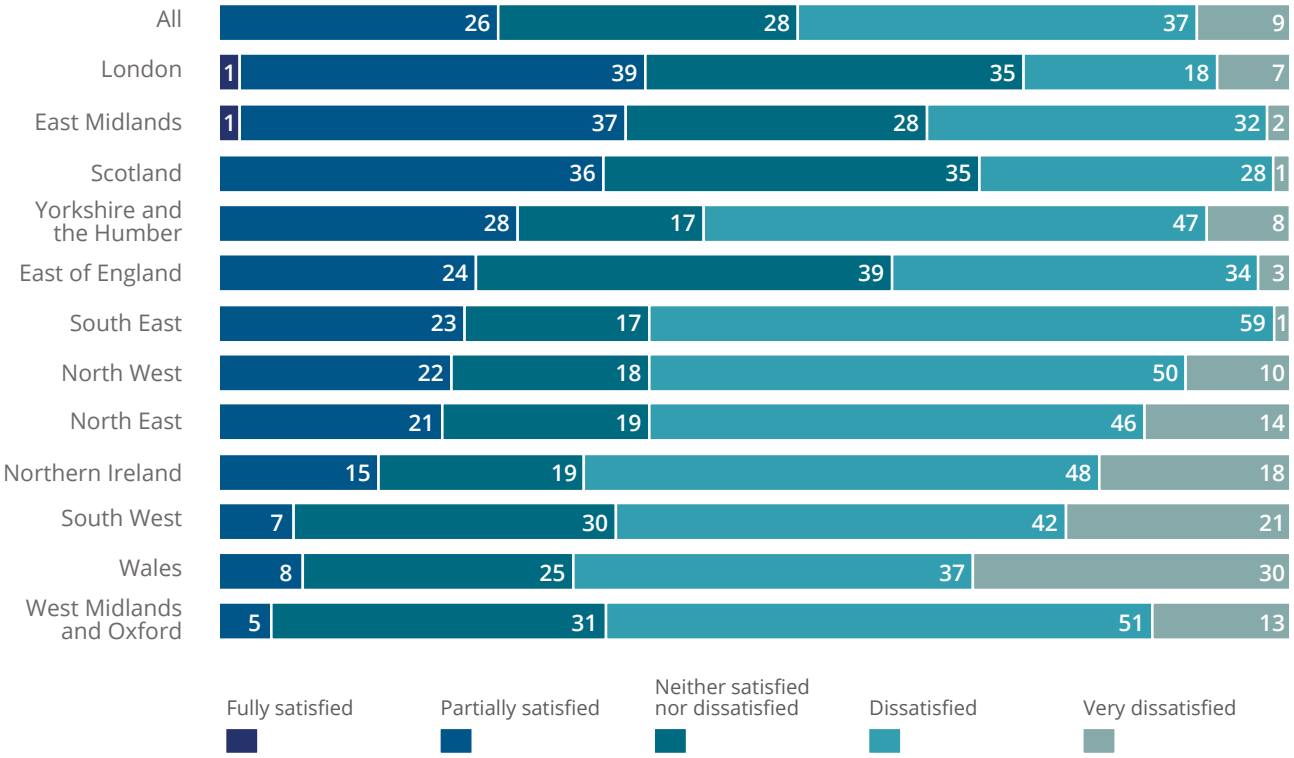
"High Speed Rail has the potential to transform the regions and cities it interconnects. Lines in Taiwan, Korea and France have helped to distribute economic growth by attracting and helping to create new high value jobs through improved transport opportunities. The plans being put in place by HS2 and local authorities and business communities will help ensure that similar success is achieved in Britain."

Professor Clive Roberts, Director of the Birmingham Centre for Railway Research and Education, University of Birmingham

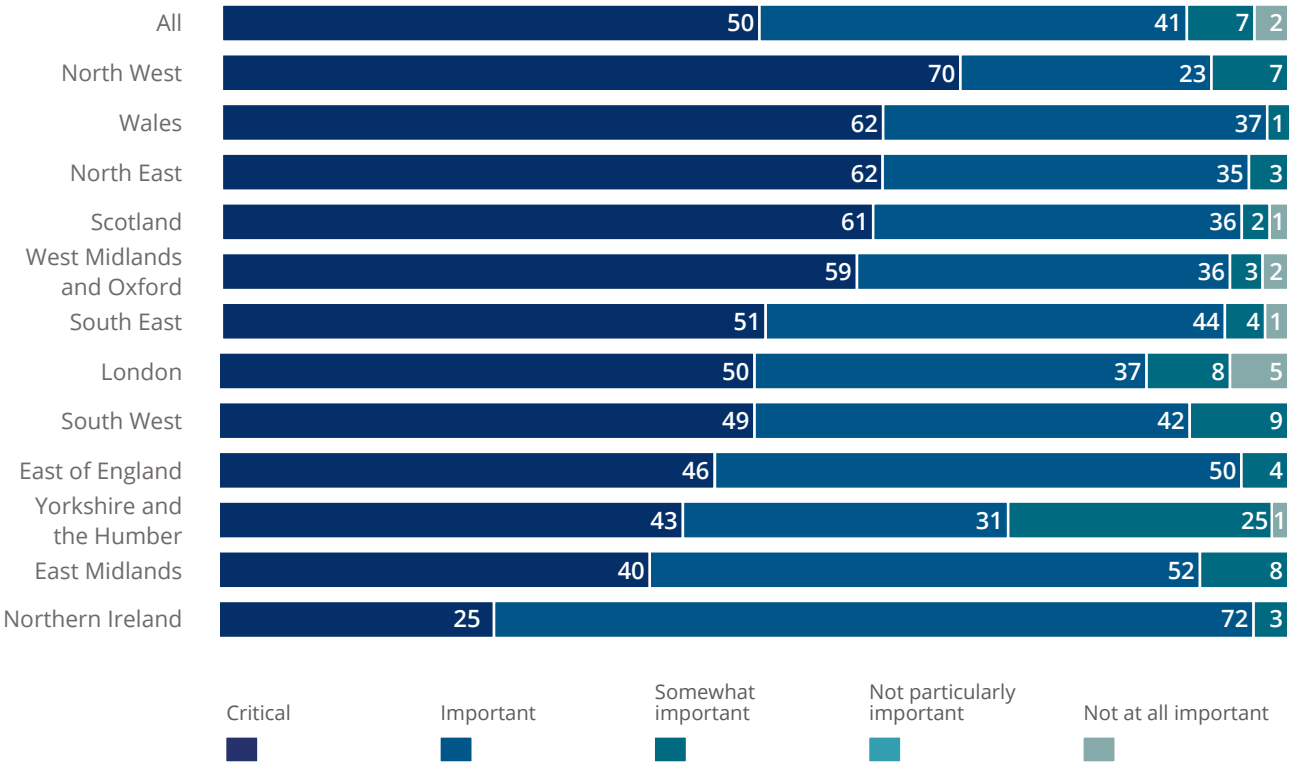
Fig. 6 Business views by region on state of infrastructure and on importance of connectivity as a barrier to improving local infrastructure

Source: CBI Infrastructure Survey 2016. Connectivity is defined here as ease of access to infrastructure

Business views on state of infrastructure by region (%)



Business views by region on barriers to improving local infrastructure – connectivity (%)

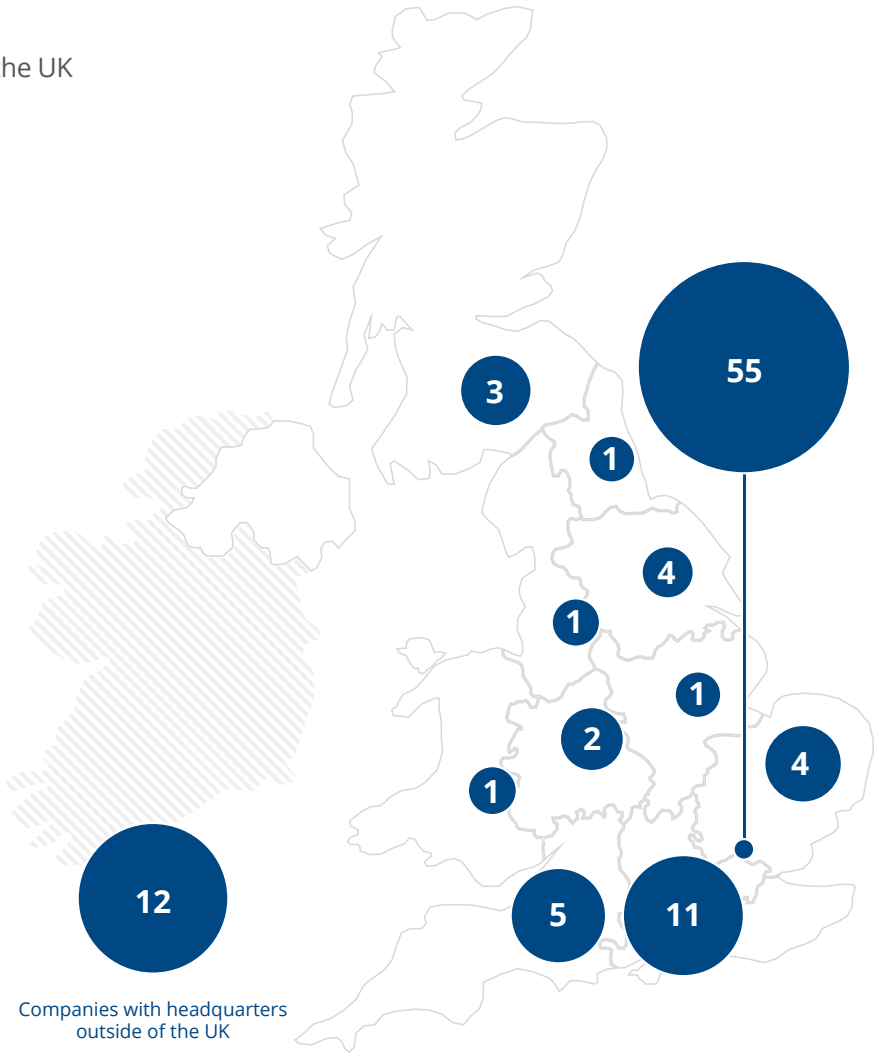


This relatively poor transport connectivity and lower levels of skills and investment shape the economic geography of the UK. This is evident in the location choices of the UK's largest companies. A majority of UK-based FTSE 100 companies have headquarters in London and the South East (Figure 7).

Fig. 7 Number of FTSE 100 companies in Britain by location of headquarters

Source: London Stock Exchange, correct as of January 2017

55 London
12 Companies located outside of the UK
11 South East
5 South West
4 Yorkshire and the Humber
4 East of England
3 Scotland
2 West Midlands
1 East Midlands
1 North East
1 North West
1 Wales



The next section looks at a range of opportunities HS2 will unlock for different sectors of the economy through improved connectivity across the UK's cities and regions. A key theme concerns how HS2, as part of a wider transport strategy, will help cities and local areas across the country develop their economic strengths, drawing on their assets and specialist capabilities, by improving access to supply chains, skills, sources of finance and innovation and to domestic and international customers.

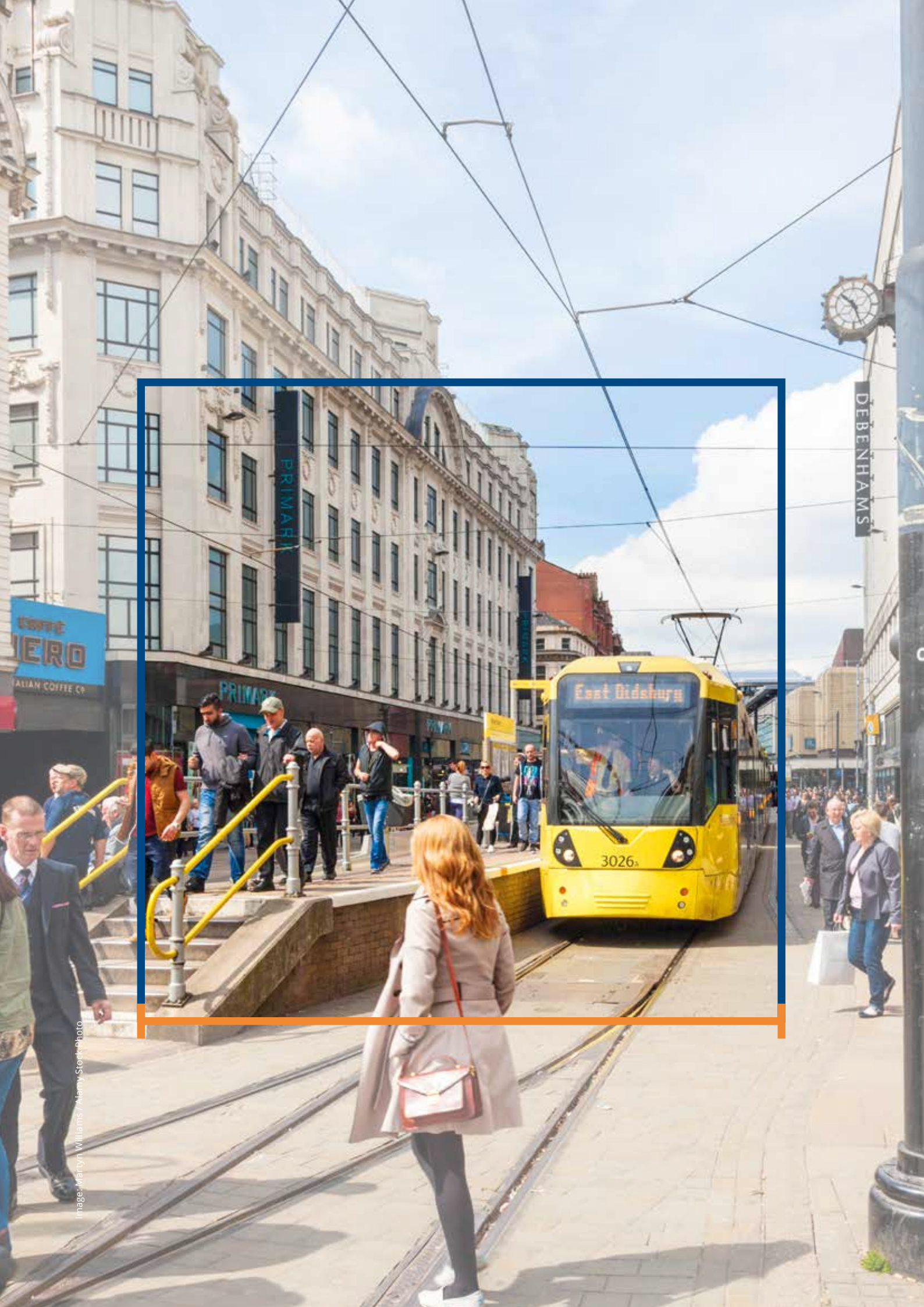


Image: Martyn Williams / Alamy Stock Photo

3

BUSINESS LOCATIONS AND EXPANSIONS

HS2 will unlock opportunities for businesses to increase their cost competitiveness and tap into new market opportunities by relocating or expanding in the Midlands and the North.

- **Regions outside the South East of England offer cost competitive locations for businesses seeking to relocate functions or to expand into regional markets.**
- **HS2 will allow firms to take advantage of these opportunities to improve their international competitiveness and tap into the economic strengths of the Midlands and the North, while retaining access to London.**

A London location offers businesses access to world class market opportunities, skills, finance and knowledge. London consistently ranks amongst the world's most attractive cities in which to do business[30]. These assets and global appeal will ensure that London remains a leading global business centre. The UK benefits from London's continued status as a 'world city', recognising that economic growth across the UK's cities and regions is not a zero sum game[31].

London is, however, ranked 75 out of 111 international cities assessed by KPMG for their cost competitiveness, and is the most costly location among European cities to do business[32].

The potential cost savings on offer in regional centres across the UK are significant, with lower costs compared to London for property (Figure 8) and staff (Figure 9). If British businesses can take advantage of these opportunities for greater cost efficiency, growing markets, excellent universities and centres of research expertise in the Northern Powerhouse and Midlands Engine regions, while at the same having better access to all the advantages of London as a global city, then they can become more competitive in global markets. For example, Manchester has been assessed as the most cost competitive location among the major European cities assessed by KPMG. In addition to cost competitiveness, Greater Manchester offers businesses looking to relocate or expand into the area access to an economy of around £56 billion, four universities, a world class business school and international links from Manchester Airport[33].

Fig. 8 Prime office rents, London and UK regional cities, 2015

Source: CBRE/JLL

Regional Locations

Belfast	**£16.00**
Birmingham	**£30.00**
Bristol	**£28.50**
Edinburgh	**£31.00**
Glasgow	**£29.50**
Leeds	**£26.50**
Liverpool	**£17.50**
Manchester	**£34.00**
Newcastle	**£24.00**
Nottingham	**£19.50**
South East	**£35.00**

London

City	**£68.50**
Docklands	**£45.00**
Holborn	**£69.50**
King's Cross	**£80.00**
Southbank	**£62.50**
West End	**£120.00**

£ per sq ft

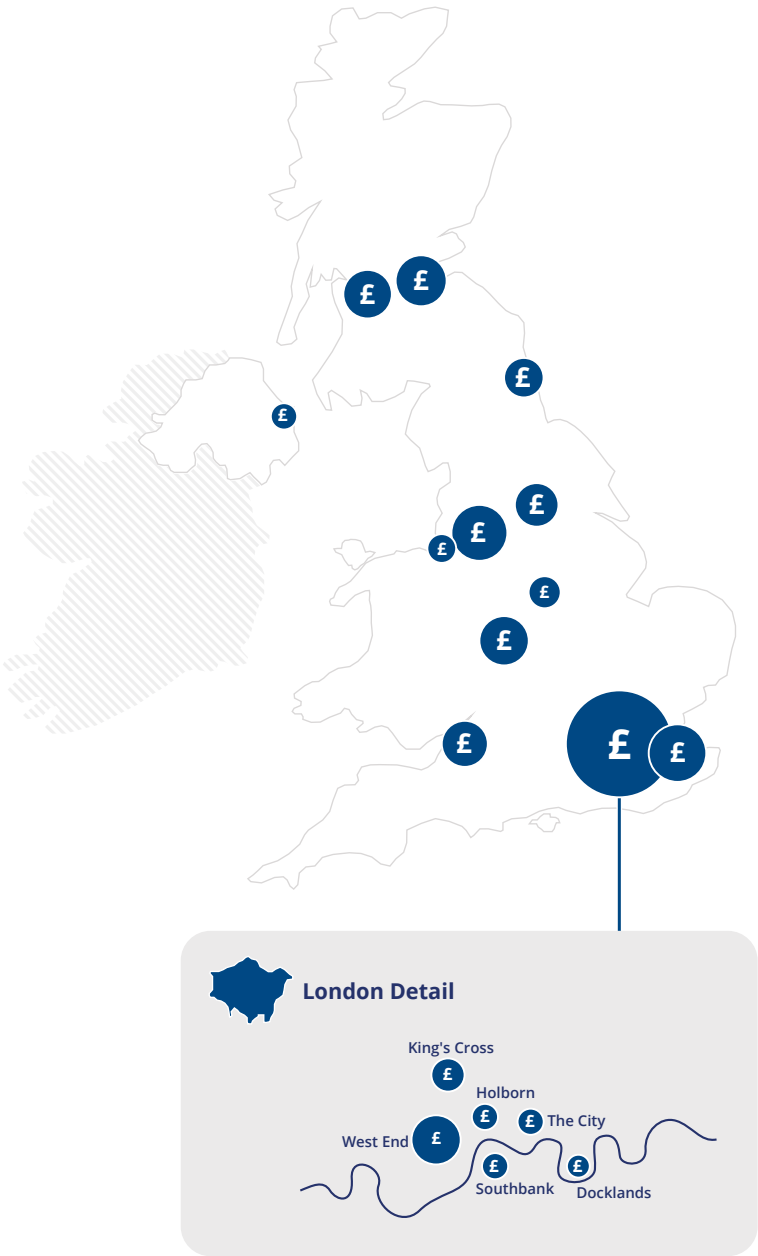
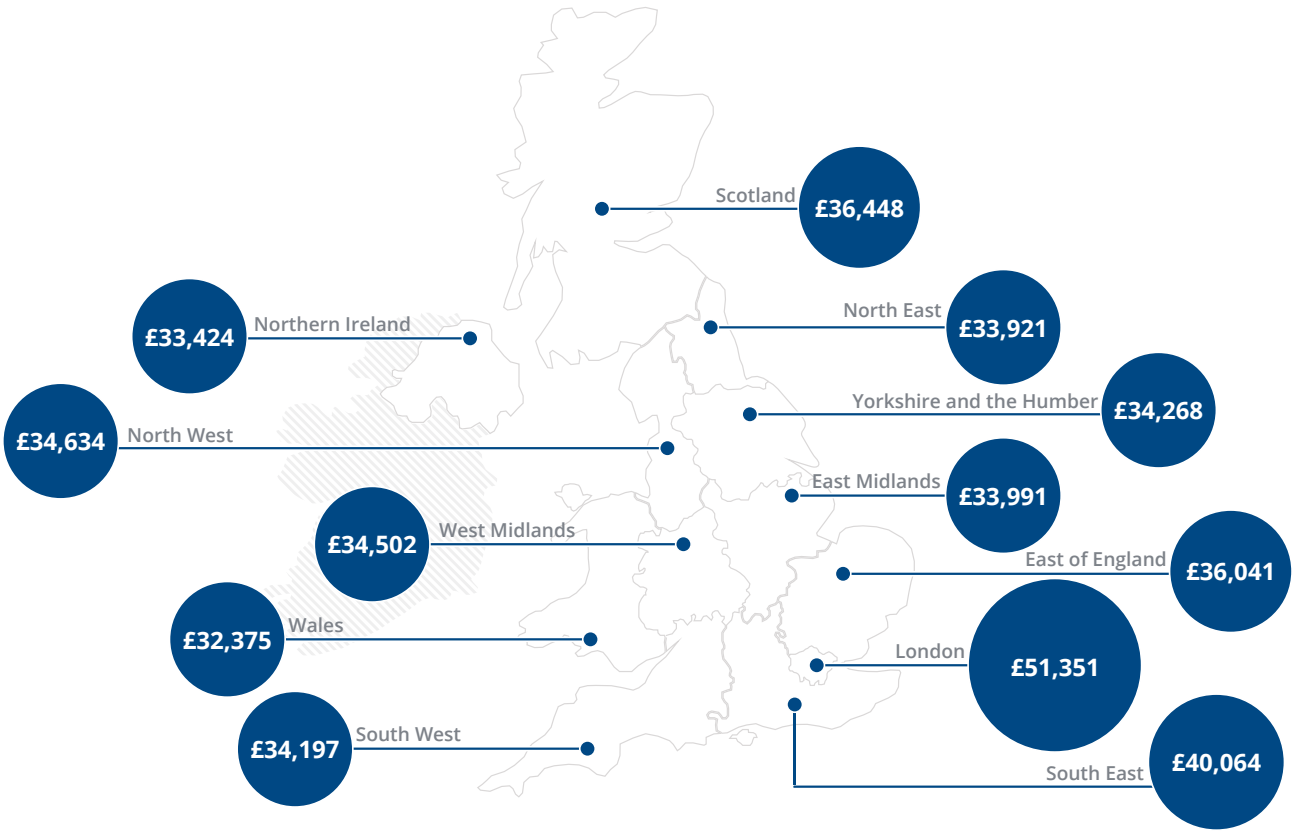


Fig. 9 Total labour costs by UK region 2012

Source: Eurostat Labour Costs Survey 2012 [34]



£ per employee per year

HS2, as part of a well-connected transport network, will enable businesses currently located in London and the South East to expand their presence in other regions, while having easy access by high speed rail to London's commercial hub. While some businesses might decide to relocate out of the South East entirely, others may choose to reorganise their businesses and move some of their activities into more cost competitive centres. As well as cost savings, these location changes will allow businesses to tap into regional markets, talent pools and networks of research and innovation (discussed in later chapters). There are early signs of business relocations between UK regions and the international evidence suggests that high speed rail networks in other countries can encourage firms to relocate parts of their operations, rather than to relocate their entire operations.

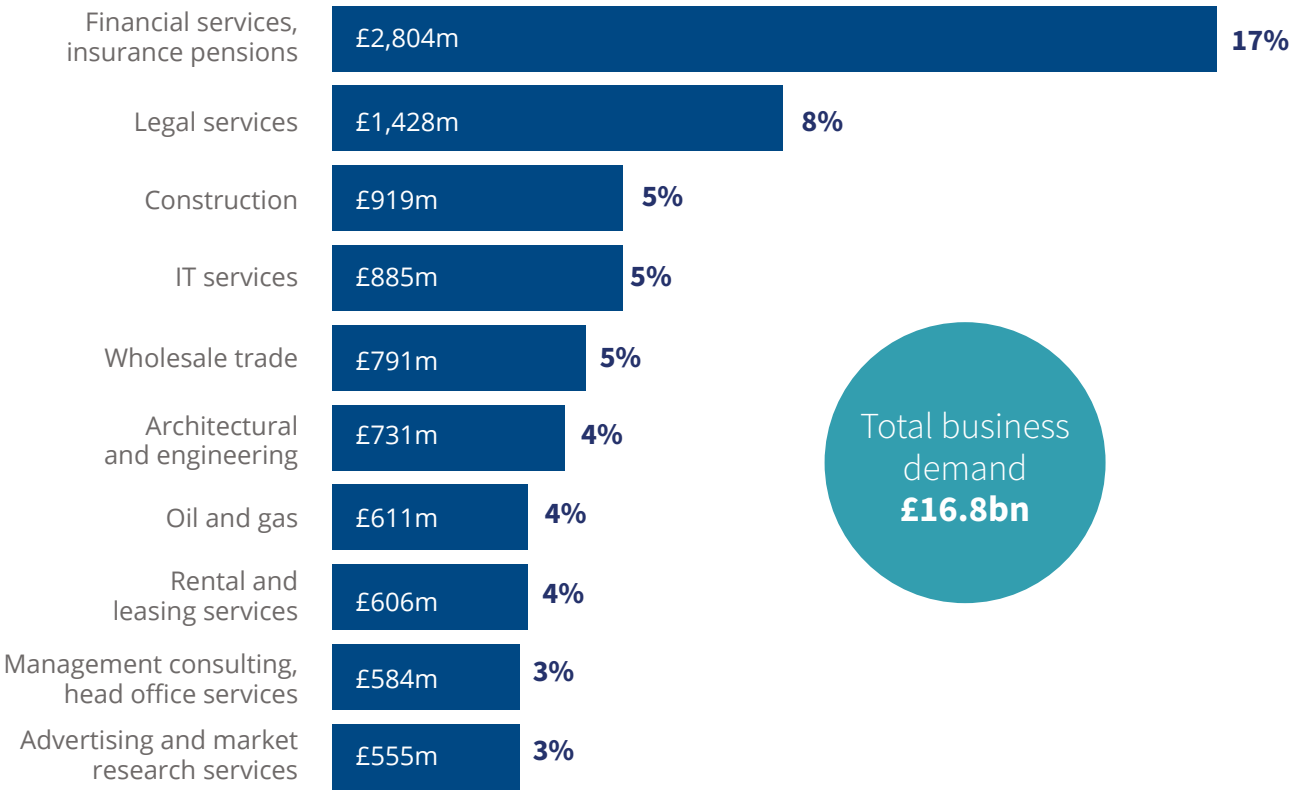
Studies of French firms following the opening of the first three high speed TGV lines in France find that those firms chose to relocate specific departments to take advantage of local skills. The opening of the first TGV line between Paris and Lyon led to increased levels of travel in both directions as businesses in both cities changed their patterns of working[35]. Recent research suggests that high speed rail in France has boosted profit margins and productivity for large firms with many sites around the country, by making it easier for managers to travel between head offices and affiliated sites[36].

Greater success has been achieved when high speed rail stations are used as a catalyst for urban development. Following the arrival of TGV services in Lyon, the city developed a new business district 'La Part-Dieu' adjacent to the station. Today, this quarter represents an area of 1.6 million square metres and has attracted 800 enterprises and 40,000 employees to locate in the vicinity[37].

These opportunities are likely to be especially attractive to the professional and business services sector. Legal firms, for example, will continue to require a London presence to access demand from London's financial sector hub (Figure 10). HS2 will increase the opportunity for legal firms to relocate functions to more cost competitive locations in the Midlands and the North, with fast and reliable access to their clients in London.

Fig. 10 Top sources of business demand for legal services by value

Source: Law Society



"As a global law firm with UK offices in Birmingham, Leeds, London and Manchester, the connectivity which HS2 will provide us with is going to be really important. A significant number of our lawyers here in Leeds travel to London on a regular basis for client and other meetings. HS2 should enable us to service our clients more efficiently as people can move around the country far more effectively."

John Alderton, Managing Partner, Leeds Office, Squire Patton Boggs (UK) LLP

We are already seeing signs of business and technology services firms relocating functions outside of the South East, suggesting that HS2 will 'push at an open door' by encouraging this trend.

- **In the legal sector, Magic Circle law firm Freshfields Bruckhaus Deringer launched its Global Centre (Europe) in Manchester in 2015, and will double its floor space in the city in Manchester. Paralegals in the Manchester office will provide legal support services to head office in London[38]. Law firm Allen and Overy employs paralegals and has recently launched training contracts for lawyers at its office in Belfast[39]. US law firm Hogan Lovells chose Birmingham for its new UK legal centre[40].**
- **The 'big four' accountancy firms have been expanding their regional UK offices. KPMG opened a new office in Leeds in 2015, housing 700 staff[41]. PWC generates 40% of its UK revenues outside London. EY has committed to spending £20 million on commercial property outside London by 2018. Deloitte is locating many of its 'centres of excellence' in the regions[42].**
- **In the financial sector, HSBC is relocating its UK retail and business banking operations, comprising 1,000 staff, to Birmingham[43]. Deutsche Bank now manages over 600 clients from Birmingham who were previously managed in London[44]. Insurance company HISCOX opened a new multifunction office in York in 2015, employing over 200 staff.**
- **Global financial technology company Lombard Risk Management plc announced in 2016 the opening of a new Technology Centre in Birmingham and the creation of up to 140 new jobs over the next three years, as it expands in the UK. The Birmingham office will allow developers based in Birmingham to work closely with key businesses in London[45].**

"EY has grown its Manchester office to more than 650 staff, a 57% increase since 2014, and our North West practice continues to expand with stable growth. Our investment in 2 St Peter's Square is a major demonstration of our commitment to this region and also of our confidence in the North West's thriving economy and growth prospects. The North has a vast array of thriving institutions, businesses and talent and all will benefit from the increased value that better transport connectivity brings."

Bob Ward, Senior Partner, North, EY

Regional Case Study

Financial and professional services in the Liverpool City Region

Over 80,000 people work in the financial and professional services sector across the Liverpool City Region, accounting for around 13% of total employment in over 6,000 businesses. The City Region has strengths in wealth management, where data suggests that Liverpool has more funds under management than any UK city outside of London, and in maritime professional services such as maritime law and insurance[46]. Liverpool is home to one of the largest local Law Societies in England and Wales and over 8,000 people work in legal services in the City Region[47].

The Liverpool City Region already provides an attractive location for London-based financial and professional services firms seeking to relocate parts of their operations.

Financial sector companies such as Bank of New York Mellon/Pershing, Deutsche Bank, Royal and Sun Alliance, Santander and Barclaycard have established back office operations in the region[48].

The region offers a deep pool of graduates in relevant subjects. There were 1,758 first year students studying Law, Finance or Accounting across the City Region's Higher Education institutions in 2012/13[49].

The region is a cost effective business location, with high quality office space available to rent for around £20 per square foot compared to around £70 per square foot for equivalent property in the City of London and £120 in the West End of London[50].

It is estimated that relocating a 50 person skilled legal back office centre from the City of London to Liverpool could achieve annual savings of £1 million[51].

The region's affordable house prices and high quality of life are an additional draw, with attractions such as the Lake District, Snowdonia, Peak District and Yorkshire Dales National Parks all within 2 hours' drive[51].

HS2 will cut journey times from Liverpool to London by 40 minutes to 1 hour and 34 minutes, providing frequent and reliable connections to the capital. This will make the Liverpool City Region an even more attractive location for financial and professional services businesses, encouraging both relocations and the growth of the region's established firms.

The Royal Liver Building, Liverpool

Image: Paul Thompson Images / Alamy Stock Photo

Image: Monty Rakusen

4

ACCESSING SKILLS AND TALENT

HS2 will grow the pools of talent and skills in regions outside of London and the South East.

- Businesses located in the Midlands and the North cite skills shortages as amongst their most significant obstacles to growth.
- These regions are home to high quality universities but many graduates choose to move away to London after graduation.
- HS2 will help local places to attract and retain talent by making our cities and regions more attractive places to live and work.
- Released capacity created by HS2 will increase business access to skilled workers.

While the UK system of schools, universities and training providers has many strengths, businesses across a variety of sectors and regions report challenges in accessing the skills they need to succeed.

- A CBI survey in 2017 found that 61% of employers in the UK are not confident of being able to recruit sufficient high-skill employees in the future[52].
- Thirty per cent of businesses located in Greater Manchester identified a lack of skills as one of their top three challenges to growth[53].
- The West Midlands Combined Authority estimates that if the skills profile of the West Midlands matched the England average, annual economic output in the region would increase by around £22 billion[54].

- **In the North East, there are skills mismatches in key areas of the regional economy. Yet overall the region has more people qualified at a high level of skills than there is currently demand for workers at that skill level, suggesting an opportunity to increase productivity in the region if workers can be better matched to job opportunities[55].**

Congestion on the strategic road network is worst where it is also heavily used by local commuter traffic[56], which hinders the ability of businesses in those regions to draw on a deep pool of skills. HS2 will increase the number of skilled workers that businesses based in our cities can access – both directly on HS2 services, and by releasing capacity on the existing rail network for new or more frequent local commuter services:

- **HS2 will allow more peak trains for both the existing commuter and the inter-city markets to be operated into London, thereby relieving passenger crowding for the foreseeable future[57]. For example, this capacity could be used for more frequent commuter services from Milton Keynes, Rugby and Peterborough[58].**
- **HS2 will allow a better range of services into Birmingham and Manchester, where priority on the main routes was given to inter-city trains at the expense of local, regional and inter-regional services to put in place the 2008 timetable following the West Coast Mainline upgrade[59].**
- **HS2 will release capacity on the existing rail network for new or more frequent local commuter services. The combination of changes to conventional rail services alongside new HS2 services has the potential to more than double evening peak seats compared to today's services from Manchester Piccadilly towards Stoke-on-Trent and Crewe, and from Leeds towards Wakefield, and almost double evening peak seats from London to Peterborough and further north to East Coast destinations when the HS2 network is completed in 2033[60].**

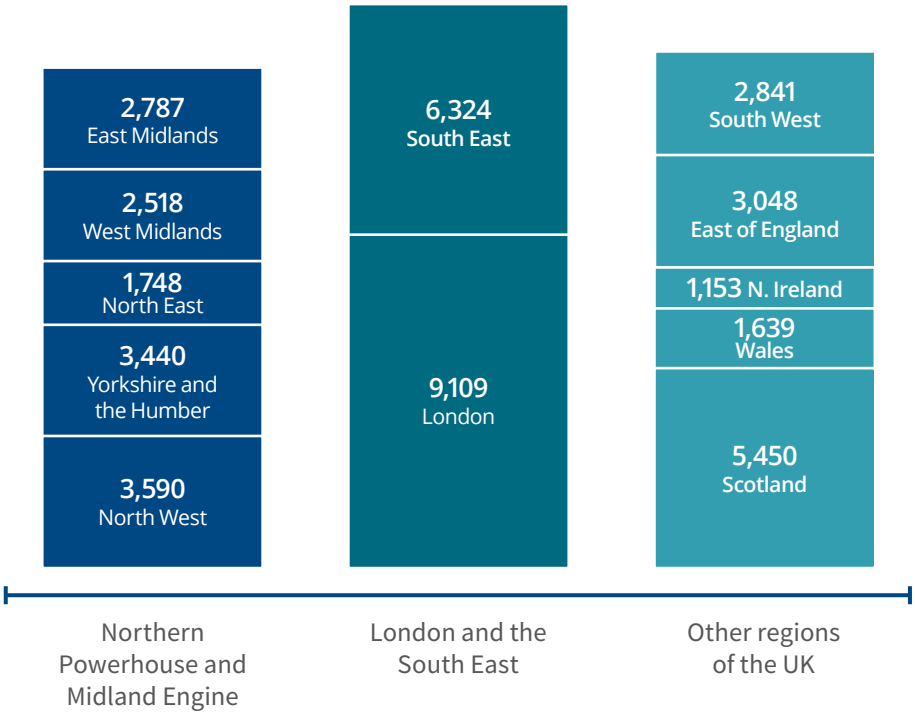
HS2 also offers the potential to help regions of the UK that are home to top quality universities to attract and retain the best and brightest talent after graduation.

The UK is world renowned for the quality of its universities and research institutions[61]. Cities and regions in the Midlands and North make a vital contribution to this reputation. They account for 32% of the UK's research staff working in universities with high quality research across all subject areas, comparable to the 35% employed in such universities in London and the South East (Figure 11). A similar pattern emerges when we focus on research in individual science, technology, engineering and mathematics (STEM) subjects such as computer science and engineering.

Fig. 11 Number of research staff working in universities with high quality research, all subjects

Source: Research Excellence Framework 2014

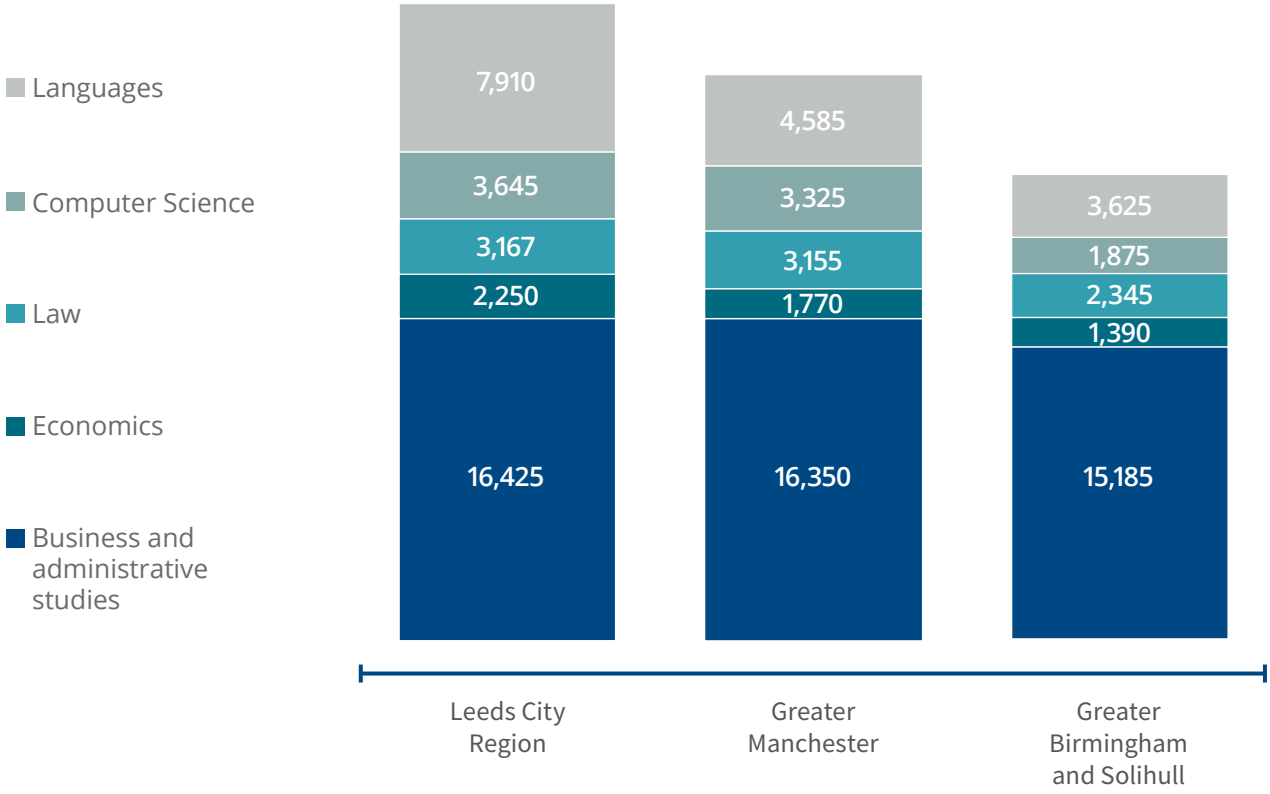
Note: Research staff numbers refer to employed academics with research responsibilities.
'High quality' refers to universities whose research is rated 'very considerable' or 'outstanding' in terms of its impact beyond academia.



These high quality universities in the Midlands and North provide a pipeline of graduates in subject areas that are in high demand by businesses, providing an asset for local employers (Figure 12).

Fig. 12 Total number of graduates by LEP regions in select subjects, 2012

Source: 'Leeds City Region: Financial and Professional Services', Leeds City Region LEP



Yet the regions hosting those universities find it hard to retain their graduate talent, who tend to migrate to labour markets in the South East. London attracted over one-fifth of all graduates who moved to work in a different city after graduation in the years 2013/14 and 2014/15 (Figure 13).

Data from the 2011 Census shows that while London lost population overall to the rest of England and Wales in 2010-11, it experienced a net gain of almost 15,000 people with a degree or equivalent level of qualification from other regions of the UK.

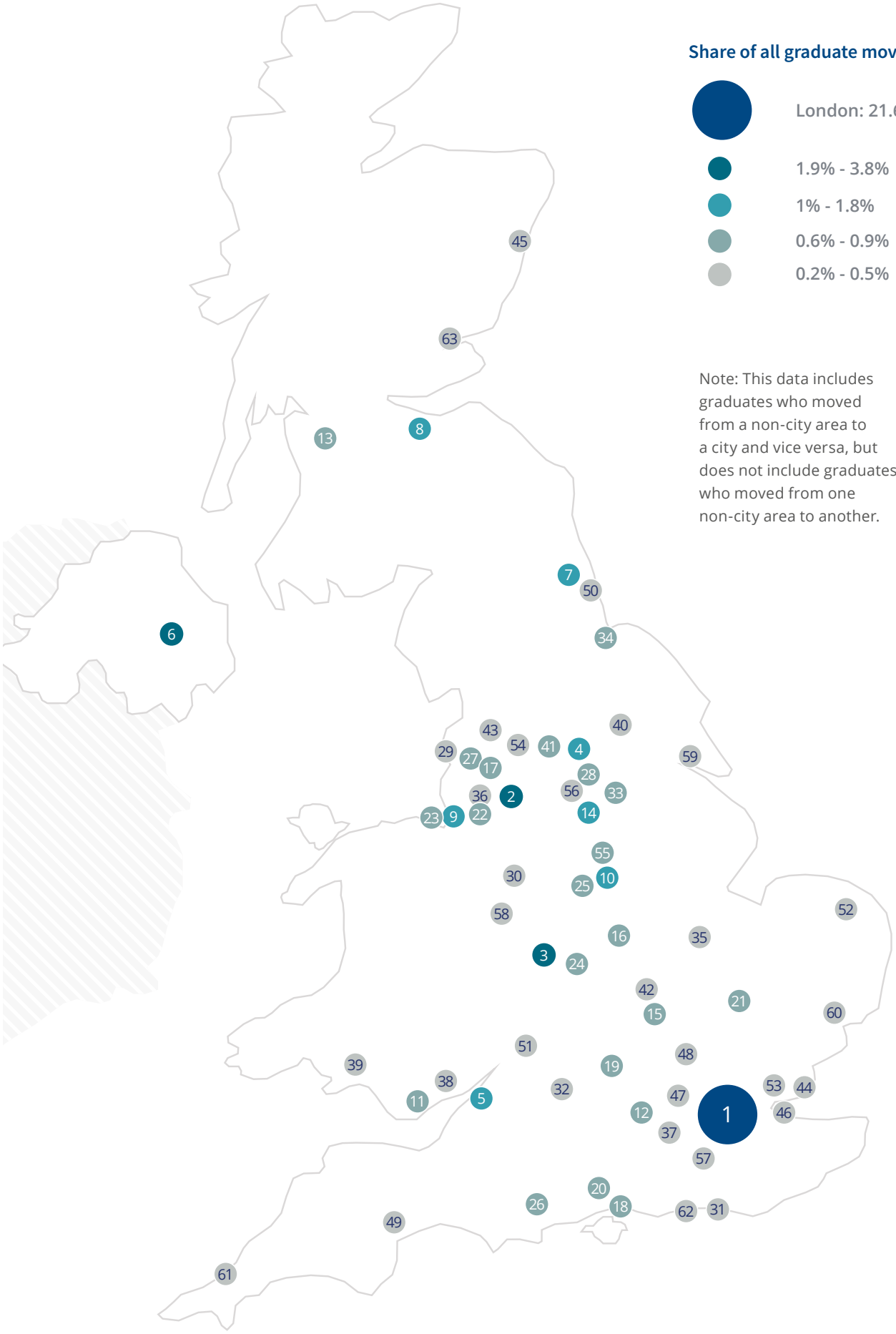
“The so-called ‘brain drain’ is a significant issue for city regions in the North… HS2 has the potential to support businesses in attracting and retaining skills for some key sectors in the North East…HS2 will help enable growth in areas in which the North East has a particular specialism.”

Helen Mathews, Head of Transport Policy, North East Combined Authority

Fig. 13 Distribution of those who worked in a different city after graduation to where they studied, 2013/14 – 2014/15

Source: Centre for Cities analysis of HESA destination of leavers survey

1 London
2 Manchester
3 Birmingham
4 Leeds
5 Bristol
6 Belfast
7 Newcastle
8 Edinburgh
9 Liverpool
10 Nottingham
11 Cardiff
12 Reading
13 Glasgow
14 Sheffield
15 Milton Keynes
16 Leicester
17 Bradford
18 Portsmouth
19 Oxford
20 Southampton
21 Cambridge
22 Warrington
23 Birkenhead
24 Coventry
25 Derby
26 Bournemouth
27 Preston
28 Wakefield
29 Blackpool
30 Stoke
31 Brighton
32 Swindon
33 Doncaster
34 Middlesbrough
35 Peterborough
36 Wigan
37 Aldershot
38 Newport
39 Swansea
40 York
41 Huddersfield
42 Northampton
43 Blackburn
44 Southend
45 Aberdeen
46 Chatham
47 Slough
48 Luton
49 Exeter
50 Sunderland
51 Gloucester
52 Norwich
53 Basildon
54 Burnley
55 Mansfield
56 Barnsley
57 Crawley
58 Telford
59 Hull
60 Ipswich
61 Plymouth
62 Worthing
63 Dundee



Note: This data includes graduates who moved from a non-city area to a city and vice versa, but does not include graduates who moved from one non-city area to another.

HS2 will make it easier for cities outside of the South East to retain their graduates:

- Research shows that graduates are attracted by opportunities for career progression in London – the 'escalator effect' – and by the quality of amenities, with initial wage differences playing a less significant role[62]. Recent research found that the main drivers of the location decisions of graduates are the availability of graduate level jobs and future career prospects. Graduates also take account of the cost and quality of housing, the identity and social scene of a city, proximity of green spaces, home ownership opportunities and overall quality of life when deciding on where to live[63].
- HS2 will allow skilled workers to develop careers in regional cities while retaining easy access to the professional and social networks, and to cultural amenities, in the capital. Integrating HS2 into local and regional transport networks will help to spread these benefits beyond the places with HS2 stations.
- Research suggests that locations become more attractive to highly skilled workers as the volume and quality of employment opportunities increase. For example, the Leeds City Region has successfully attracted workers in financial services because of the opportunities for career progression a cross the city region[64]. HS2 will expand the job opportunities available in the Midlands and the North by supporting business growth. HS2 will also offer graduates greater opportunities to build a career in the Midlands and the North by providing fast, frequent and reliable access to job opportunities in a broader network of places without the need to relocate. As an example, someone living close to the HS2 East Midlands Hub will have the option of accessing Sheffield, Leeds or Birmingham city centres in under 30 minutes' travel time on HS2 services, providing career opportunities in addition to those available in the East Midlands.

"Across investee companies, there is scope to make greater use of resource pools, chiefly skilled labour, in the northern regions…Better connectivity could accelerate regionalising of high-growth businesses, which would improve their competitiveness and ease recruiting challenges to rapid growth."

Richard Young, Director, British Private Equity and Venture Capital Association (BVCA)

→ HS2 will make cities more attractive places to live and work by supporting the growth of employment opportunities in knowledge-based service sectors that tend to cluster in city centres. HS2 will also act as a catalyst for ambitious regeneration schemes that are being developed by local places along the HS2 route. These local plans are set out in more detail in 'HS2: Changing Britain' and 'Changing Britain: HS2 Taking Root'. City centre living is especially attractive to young people. The centre of the UK's cities witnessed shrinking populations during the 1970s and 1980s, but this trend has been strongly reversed since the 1990s, with a return to city centre living. This trend has been most pronounced in large UK cities, driven by increasing numbers of students and of graduates under the age of 35. Manchester's city centre population almost tripled between 2001 and 2011, driven primarily by young professionals[65]. Survey evidence suggests that the vibrant cultural offer and proximity to job opportunities were significant factors, as was the availability of public transport[66]. Young people are less likely to have full driving licences and drive fewer miles than previous generations of young people[67]. If these trends towards city centre living and lower levels of car use among young people persist, then rail travel is likely to become increasingly important to connect people to employment and leisure opportunities.

YANG Fujia building, University of Nottingham

Image: HS2 Ltd

Regional Case Study

Supporting the development of high skilled jobs in the Leeds City Region

Leeds sits at the centre of a city region of around three million people and one and a half million jobs[68]. The region's higher education institutions attract a large number of students from across the UK. Despite losing the majority of graduates to other regions of the UK, Leeds successfully attracts many graduates who have not studied in the city. HS2 will help to enhance the attractiveness of the Leeds City Region to skilled workers and strengthen the supply of talent to grow the region's knowledge economy.

The Leeds City Region is home to nine higher education institutions that produce 40,000 graduates per year and 14 further education colleges, one of the largest concentrations of higher education institutions in Europe. Bradford is one of the youngest cities in the UK, with around a quarter of its residents aged under 16, and home to the technology-led

Leeds Station concept

Image: Leeds City Council

University of Bradford and its world ranked School of Management. The University of Huddersfield is a major anchor institution in Kirklees and Halifax is developing a proposal for a Vocational Higher Education Institution for Digital Manufacturing[69]. York is home to two universities and world class research and training facilities, such as the National Agri-food Innovation Campus, Nestlé's Product Technology Centre and Network Rail's Workforce Development Centre[70].

Leeds successfully attracts young people to move to the city to study. The city of Leeds welcomes more students to its universities, on a net basis, than any other UK city. In the academic year 2014/15, almost 33,000 more domestic students moved into the city of Leeds to study than left Leeds to study elsewhere. The Leeds City Region is similarly a net importer of students[71]. Around 30% of graduates from Leeds stay in the city to work after graduation. A further 17% of those who left the city of Leeds moved to other locations in the Leeds City Region[72]. The majority of Leeds' university students moved away for work after graduation, with just over one-fifth of those who moved in 2014/15 choosing to work in London. Despite losing significant numbers of graduates, the 30% of graduates who chose to remain in the city of Leeds after graduation, combined with the new graduates attracted into Leeds, mean that overall the city experiences a gain in graduate talent. It is notable that a relatively high proportion of young people who leave Leeds to study return to the city after graduation, making up almost a fifth of the graduate workforce[73].

Despite these assets, a key concern for the Leeds City Region is that fewer high income jobs have been created than in other parts of the country and fewer middle level jobs have been identified as contributing to a lack of job progression opportunities for many in the region. The gap between the proportion of the working age population with higher level skills in the Leeds City Region and the UK has grown between 2007 and 2014[74]. This skills gap is reflected in earnings in the Leeds City Region that are between 90% and 95% of the UK average, with substantial variation across localities[75]. The Leeds City Region Local Enterprise Partnership has identified mismatches between the supply and demand for skills in certain sectors, while significant numbers of skilled people, such as graduates, work in jobs that do not make full use of their skills[76].

Almost three-quarters of tech businesses in Leeds surveyed by TechCity in 2016 reported that limited access to highly skilled workers was a challenge to growth[77]. Attracting senior and experienced staff to fill vacancies in digital roles in the Leeds City Region can be a challenge.

The region has set a long-term ambition to close the gap with the national average for the percentage of the working age population with skills at degree-level equivalent or higher (NVQ Level 4 or higher), and is taking action to tackle skills shortages in key areas such as engineering, construction, coding and digital skills[78]. The LEP has identified the role of quality of life, place and profile in attracting and retaining skilled people in the region[79].

“The arrival of HS2 in Leeds will also be a catalyst for economic regeneration of the South Bank of the City which will make Leeds an even more attractive location for people to work, live and visit.”

John Alderton, Managing Partner,
Leeds Office, Squire Patton Boggs (UK) LLP

HS2, embedded in local and regional transport networks, can help the Leeds City Region to realise its ambition for good growth that delivers higher levels of productivity alongside more and better jobs, and improved skills and career opportunities. Frequent and reliable HS2 services will add capacity and more than halve rail journey times from Leeds to Birmingham from almost 2 hours currently to 49 minutes[80] and will bring the East Midlands within half an hour’s journey time from Leeds. Three hourly HS2 services in each direction will connect Leeds to London, the fastest of which in a journey time of 1 hour and 21 minutes, a saving of around 50 minutes compared to the current fastest time. This will improve access to markets, knowledge and sources of investment for the city’s key economic sectors, including a diverse and thriving digital sector, one of the largest manufacturing sectors in the UK[81] and one of the UK’s largest regional hubs for financial and professional services, creating new career opportunities for skilled people in Leeds.

HS2 and the prospect of improved east-west links through Northern Powerhouse Rail are acting as a catalyst for one of Europe's largest city centre regeneration initiatives at Leeds South Bank[82]. This will make the city centre a more attractive place to live, helping Leeds to attract skilled workers. HS2 will also help businesses to attract international talent to the Leeds City Region by improving access to Birmingham Airport and Heathrow Airport. The HS2 Birmingham Interchange station will bring Birmingham Airport within 46 minutes' journey time from Leeds. International talent plays an important role in the growth of highly skilled sectors such as digital. A recent survey of UK digital start-ups with fewer than 50 employees found that more than half had hired international employees[83].

The West Yorkshire Combined Authority and the Leeds City Region LEP are reviewing options for future improvements to the transport network within the City Region to maximise the benefits of HS2, Northern Powerhouse Rail and other major national transport investments to all parts of the City Region.

The City Region has secured £1 billion of funding for the West Yorkshire Plus Transport Fund to deliver transport schemes targeted at reducing congestion, improving the flow of freight and making it easier for people to commute to and from expected major growth areas. Locations such as Bradford, Huddersfield and Halifax are already around half an hour or less from Leeds station by rail, where there will be access to HS2 services through a shared station concourse. HS2 services will also call at York, acting as a catalyst for the York Central development close to the station. This access to the HS2 network can help make the Leeds City Region a more attractive place to work, live and invest for skilled people.

"Leeds is positioned at the centre of one of the strongest and most resilient economies in Europe, with a young and enterprising population creating our future economies in advanced manufacturing, data analytics, fintech and many more areas. We are working with city region partners and businesses on the strategies to unlock our enormous potential, and HS2 is key to our approach."

Cllr Judith Blake,
Leader, Leeds City Council

Image: Astrakan Images

5
GROWING SMALL BUSINESSES

HS2 will improve access to the finance, mentorship and professional networks that are vital for small businesses, start-ups and entrepreneurs to grow:

- Growth finance and the mentoring and advice that investors often provide for small businesses are more readily available in London and the South East than in other parts of the country.
- Equity investors require regular visits to an area to identify new investment opportunities and to originate deals. Once investments are in place, investors typically monitor their investments through regular face-to-face contacts.
- Improving transport links between London-based investors and businesses in the Midlands and the North can help to narrow the regional financing gap.

Small and medium-sized enterprises (SMEs) employ the majority of the UK private sector workforce. However, the UK is near the bottom of OECD rankings of the percentage of start-up businesses that grow to more than 10 employees after three years[84]. The UK also fares poorly by international standards in creating a healthy pipeline of high-growth firms, whatever their size. The UK has a far higher proportion of static firms (with close to zero annual growth in turnover) than the US. The UK also has a significantly lower proportion of firms than the US growing at between 1% and 20% per year.
Closing this 'scale-up gap' can play an important role in driving productivity growth and subsequently raising the overall performance of the UK economy[85].

HS2 will help SMEs based in the Midlands and the North to raise their productivity. Analysis of travel patterns suggests that SMEs may be becoming more willing to locate and do business in locations outside of London. However, this effect seems to be concentrated in towns and cities within 90 minutes' travel time by rail of the capital, perhaps reflecting the need to meet regularly with investors, clients and partners in London. Analysis of online rail ticket purchases show that in the period from 2012 to 2016, there was strong growth in business train trips by SMEs between London and a collection of UK towns and cities such as Brighton, Northampton, Swindon, Bristol, Peterborough, Oxford and Leamington Spa[86]. HS2 will bring more towns and cities in the Midlands and the North within this 90 minute travel time of London, including Manchester, Leeds, York, Sheffield, Nottingham and Crewe, improving access for their small businesses to the capital.

This improved accessibility to London may be especially beneficial for small and fast-growing businesses in search of new sources of funding to support their growth. Small firms, notably in the Midlands and the North, identify access to finance as one of the top challenges to growth:

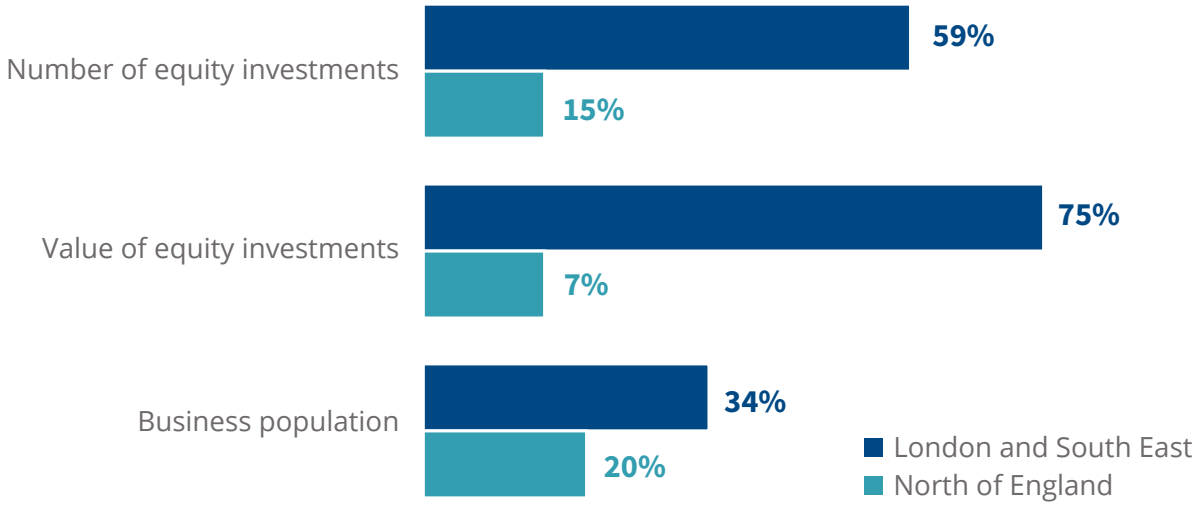
- **Equity finance represents a small share of total financing for UK SMEs[87], but it is particularly important for start-up businesses and businesses with high-growth potential, such as the digital sector (see case study, page 54). Research by the British Business Bank shows that the local distribution of equity finance for small businesses is uneven. In particular, fewer equity deals occur for smaller businesses located in regions outside of London and the South East than inside. London and the South East is over-represented in the number and value of UK equity deals compared to their share of the UK's population of businesses and start-ups (Figure 14)[88].**
- **Businesses outside of the South East frequently report difficulties in accessing finance. For example, businesses located in the Leeds City Region identified access to finance as their number one barrier to growth in 2015[89].**
- **The link between investors and the businesses in which they invest is often more than financial. Many investors are themselves former entrepreneurs who bring mentoring and advice to the businesses in which they invest. Business angel investors are wealthy individuals who invest their own money directly into start-ups, and angels often serve as mentors for the start-ups in which they invest[90].**
- **If not addressed, the regional equity financing gap risks inhibiting the growth of many small and growing businesses outside of London and the South East in expanding sectors such as digital and over time will tend to reinforce the current economic imbalances between UK regions.**

"Location of private equity investors is heavily London centric...These investors need to travel to meet, both to originate deals and for their ongoing business…Experience suggests that any Northern based business seeking to grow needs to spend one day a week in London."

Richard Young, Director,
British Private Equity and Venture Capital Association (BVCA)

Fig. 14 Proportion of total UK equity investment by area

Source: British Business Bank analysis of Beauhurst data



The concentration of venture capitalists in London makes it harder for many small and growing firms outside the South East to give their business activities visibility with finance providers. Academic studies have previously showed that distance can deter venture capitalists in the UK, US and Germany from investing in companies[91]. A survey of UK-based business angel investors conducted in 2008 found that these investors have a preference for investing locally. Nearly three in 10 business angels (28%) will only invest within 50km of their home location. In total, 43% of these investors were prepared to invest within 250km[92].

HS2, acting as the backbone for the UK's rail network, can help small and growing businesses in the Midlands and the North to bridge this financing gap by bringing them closer to London-based investors. Equity investors require regular visits to an area to identify new investment opportunities and to originate deals.

Once investments are in place, these investors typically take seats on company boards and will closely monitor their investments through regular face-to-face contacts. Venture capital funding contracts provide for staged financing and venture capitalists are constantly evaluating the companies in which they invest[93]. By cutting journey times and improving the reliability of rail connections, HS2 will make it possible for growing businesses in cities such as Birmingham, Manchester, Leeds, Liverpool and Sheffield and their London-based investors to make a return trip to meet in half a day.

"Access to early-stage finance remains a barrier to growth for digital businesses in the North. Angel investors in London will rarely travel 2 to 3 hours to meet with digital businesses and provide mentorship and advice. Faster and more reliable rail links will make investments in the North's thriving tech clusters more attractive."

Richard Gregory, Director, Tech North

Sector Case Study

Supporting the growth of digital clusters in the North of England

The digital sector is a significant source of growth and employment in the UK, employing over 1.6 million people and with turnover that grew by over 20% between 2011 and 2015[94]. The North of England is home to digital clusters that employed over a quarter of a million people in 2014[95]. Manchester is the largest digital cluster outside of London by number of employees[96] and Leeds has expertise in health technology, FinTech and Big Data[97]. Newcastle is home to thousands of software technology, electronic gaming and creative businesses[98] and Liverpool has strengths in the areas of gaming and connected devices[99]. The Sheffield City Region is home to over 5,000 technology companies[100].

Roundtable discussions with digital businesses in the North highlighted that even for a sector that is at the cutting-edge of developing and adopting new technologies, face-to-face contact remains crucial. Tech businesses rely on networking events and trade fairs to source new business and collaborate on developing innovations and ideas. Communications via email and video conferencing can be helpful for digital businesses to stay in contact with staff, suppliers and customers, but in many instances they do not offer an effective alternative to face-to-face contact. The tech sector uses agile ways of working, built on flexible and collaborative working, to drive business growth in an uncertain and fast-changing environment, requiring physical proximity and the 'personal touch'[101]. HS2 will deliver improved transport links to foster these in-person contacts between digital clusters.

HS2 will also help Leeds, Manchester and Newcastle to strengthen their offers as destinations for conferences and business visitors, providing additional networking opportunities for local businesses.

Digital businesses are dynamic, with 17% of digital businesses of 10 or more employees classified as high growth, compared to 10% of businesses of the same size in non-digital sectors[102]. Start-ups and small and medium-sized companies make a significant contribution to this dynamism and require access to sources of finance and capital to grow. Digital businesses in the North of England which attended roundtable discussions report that it is possible to source start-up funds from local investors.

In Manchester in particular, a second generation of tech entrepreneurs are emerging who have sold their original businesses and are seeking new investment opportunities. There is also a trend towards venture capital funds establishing a local presence in northern clusters. For example, Northstar Ventures in Newcastle has more than £100 million under management and two new accelerators were recently launched in Manchester[103].

However, in a survey conducted by TechCity in 2016, 28% of digital businesses surveyed in Manchester and 37% of digital businesses surveyed in Newcastle reported limited access to finance as a barrier to growth[104].

Image: Cavan Images

According to investment data provider PitchBook, there were 471 investment deals by business angel investors and venture capital investors in 2016 for London-based tech businesses. By comparison, there were just 27 in the North of England[105]. Technology businesses located in London and the South East received over 60% of the amount of private equity and venture capital investment in the sector in 2016, while the Midlands received 14%, the North West received 12% and Yorkshire and Humberside received 4%[106].

For businesses seeking to access private equity and venture capital, London remains the centre of the UK's financial sector. Around 25 venture capital funds were established in London between 2010 and early 2015, helping to cement London's status as Europe's leading venture capital centre[107]. Tech firms based in London have this wealth of potential investors on the doorstep – London has been ranked as the number one city in Europe for access to capital for start-up and scale-up digital businesses[108].

Growing tech businesses located in the North West, Yorkshire and the North East report the need to travel frequently to London to meet venture capital funds and secure investment. In some instances, investors may require these businesses to establish a permanent presence in London, which risks a loss of entrepreneurial talent from northern digital clusters. By cutting journey times and providing frequent and reliable services, HS2 will help digital businesses in northern clusters to meet regularly with London-based investors from their home regions. This offers benefits when digital businesses are seeking new financing deals. Once financing deals are in place, HS2 will support businesses to meet regularly with their investors to benefit from advice and mentoring and to allow investors to monitor their investments.

Higher levels of overseas investment might also help to alleviate financing gaps for tech businesses in the North. The total number of foreign direct investment projects into the UK's digital sector reached a 10-year high in 2016. However, the gap between London and other regions of the UK widened, as London secured 63% of all inward investments by number into the UK digital sector in 2016, compared to 57% in 2015 and 43% in 2007[109].

HS2 will play a supporting role by improving connections between the fast-growing digital clusters in the North of England and London, encouraging London-focused foreign investors to visit other regions of the UK, and by improving access to international airports.
For example, HS2 will reduce journey times between Leeds and London by around 50 minutes to 1 hour and 21 minutes, making day trips easier.

Gateshead Millennium Bridge, Newcastle

Image: HS2 Ltd

Image: Monty Rakusen

6

SUPPORTING RESEARCH, DEVELOPMENT AND INNOVATION

HS2 will enable engineers, researchers, scientists and suppliers to more easily engage in the face-to-face collaboration and sharing of knowledge and ideas that underpin the competitiveness of the UK's advanced manufacturing industries.

- **The UK's excellence in science and innovation is vital to our global success.**
- **Research, development and innovation thrive on face-to-face contact to share knowledge and ideas.**
- **HS2 will support face-to-face collaboration in research, development and innovation by effectively shrinking the distance between manufacturing plants, suppliers, universities and research centres.**

The UK is a research and innovation powerhouse. Ranked in the top five in the Global Innovation Index in 2017[110], the UK is home to the most productive science base in the G7[111].

For the UK's high-value manufacturing sectors – such as pharmaceuticals, automotive, aerospace, chemicals and electrical/electronic industries – this excellence in research, development and innovation is vital to their global success.

As an example, in 2015, the British automotive sector invested over £2 billion in research and development. Despite competition from producers in lower cost countries, UK automotive manufacturing is enjoying a renaissance with booming exports, built on this commitment to innovation[112].

Innovation thrives on face-to-face contact. Knowledge sharing, new discoveries and serendipity are encouraged when engineers, scientists, researchers and suppliers are able to come together and collaborate.

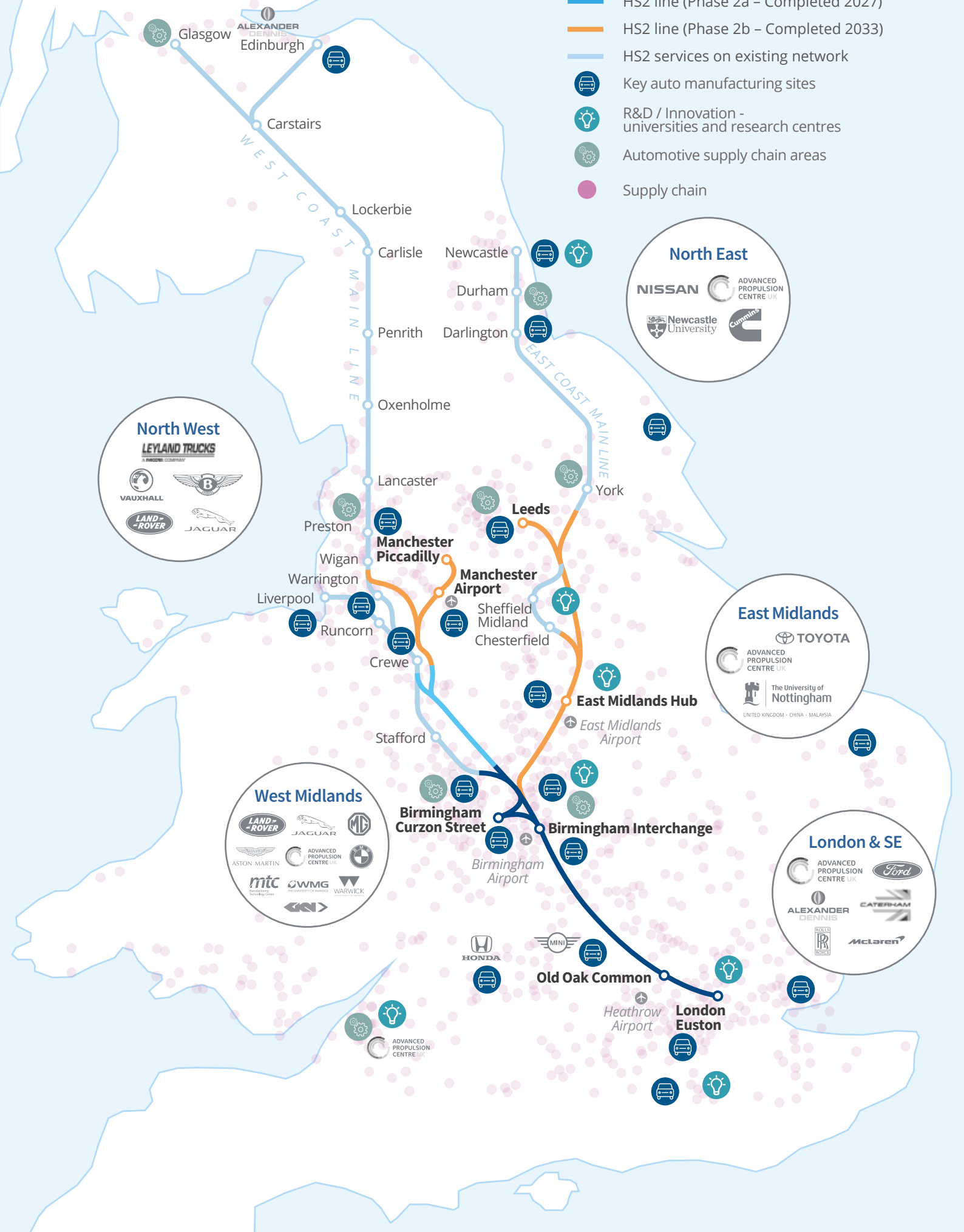
Recognising this, the UK has established a network of Catapults – technology and innovation centres where UK businesses, scientists and engineers can work side by side on research and development. British manufacturers collaborate with supply chains and research centres that increasingly cut across traditional sector boundaries and are becoming more geographically dispersed across the UK. The UK automotive sector provides a case study – manufacturers, suppliers and sources of innovation are dispersed widely across UK regions (Figure 15).

HS2 will support face-to-face collaboration in research and innovation by effectively shrinking the distance between manufacturing plants, their suppliers, universities and research centres:

- **The manufacturing supply chain is not limited to the supply of physical components to make up a final product. The supply chain system also includes services such as planning, design, purchasing, distribution and sales[113].**
- **As an example, UK automotive manufacturers and their supply chains are embracing new digital technologies to deliver productivity gains, quality improvements, greater flexibility and shorter times to market.**
- **New digital technologies offer manufacturers the opportunity to work more collaboratively with their suppliers. Enhanced data sharing will allow manufacturers to automatically communicate changes in their production plans to suppliers and to reduce inventories and lead times for supplies[114].**
- **These new digital innovations require manufacturers and their suppliers to collaborate with research bodies that cross the boundaries between sectors and may not be located close to manufacturing businesses. For example, the Digital Engineering and Test Centre is a centre of excellence within the Loughborough University London campus at the Queen Elizabeth Olympic Park. The Centre is a spoke of the Advanced Propulsion Centre and brings together industry and academia from the automotive and digital communities to work collaboratively to develop next-generation propulsion systems[115]. Automotive manufacturers, including Ford, McLaren, Jaguar Land Rover and Nissan, are affiliated and actively engage with the Centre[116]. These collaborations place a premium on fast, frequent and reliable transport connections between regions of the UK.**

Fig. 15 UK automotive sector: Location of manufacturers, suppliers and centres of research and innovation

Source: SMMT Motor Industry Facts 2017 and HS2 Ltd analysis



The UK's aerospace sector provides another excellent case study. The UK aerospace sector is the second largest in the world and supports over a quarter of a million jobs in the UK in a series of clusters including the East and West Midlands, Lancashire, Cheshire and Edinburgh. As well as global giants, the UK is home to over 3,000 companies in the aerospace supply chain[117].

Many of these aerospace clusters will be well served by HS2 services, allowing manufacturers, suppliers and researchers to collaborate more frequently and easily (Figure 16). Integrating HS2 with local transport networks will be important to provide 'last mile' connectivity from HS2 stations to manufacturing and research centres:

- **The Midlands aerospace cluster is centred around Rolls-Royce, one of the world's leading manufacturers of aircraft engines[118], in Derby and around suppliers of aircraft control systems in Birmingham, Wolverhampton and Coventry[119]. HS2 will cut journey times to and from the East Midlands to just 20 minutes from Birmingham and just 17 minutes from Birmingham Interchange station in Solihull, bypassing congested roads and slow existing rail links[120].**
- **There is an alliance of over 200 aerospace companies in the North West with a combined turnover in excess of £7 billion[121]. Lancashire accounted for almost 15% of British aerospace jobs in 2014[122] and HS2 will almost halve the rail journey time between Preston and the West Midlands aerospace cluster to 50 minutes.**
- **Advanced manufacturing Catapult research centres in Coventry, Sheffield, Nottingham and the North East will be connected to one another and to major manufacturing centres along the HS2 route. Improved rail connections between these clusters will help to support the work of the Aerospace Technology Institute (ATI) to facilitate connections between researchers and across disciplines, with the aim of maintaining the UK's world-leading aircraft design and manufacturing capability[123].**

"HS2 offers the biggest opportunity for our region in a generation. Of course, it puts us at the heart of a national high speed rail network which hugely boosts our connectivity. But there are so many other benefits. It provides us with the opportunity to transform our transport links within our region, to make the most of HS2. Our vision is that nobody in the West Midlands will be more than 40 minutes away from a HS2 station by public transport. An investment like this also gives us a huge opportunity to boost skills, support business and generate inward investment. It's an opportunity we are determined to capitalise on."

Andy Street, Mayor of the West Midlands

Fig. 16 UK aerospace sector: Location of manufacturers, suppliers and centres of research and innovation

Source: ADS Group member locations: www.adsgroup.org.uk/member-locations/, and HS2 Ltd analysis

Regional Case Study

Supporting collaborations in manufacturing in the Midlands

The Midlands is home to nationally significant manufacturing clusters, including advanced manufacturing in the Black Country and Derbyshire, the automotive cluster around Coventry and Warwickshire, the ceramics industry in Stoke and Staffordshire and an aerospace and transport manufacturing cluster centred around Derby.

The region also has a strong science and research base, including 20 universities, three of which have been ranked in the top 150 in the world – Warwick, Birmingham and Nottingham. Over 600,000 people in the Midlands work in manufacturing, delivering over one-fifth of the UK's annual manufacturing output[124].

Electronics technicians

Image: Juice Images

The East Midlands is a dynamic economy with strengths in cutting-edge manufacturing and engineering, particularly transport, life sciences and construction. Derby celebrated 175 years of rail manufacturing in 2014. Derby City, South Derbyshire and the M1 corridor is home to a cluster of highly competitive advanced manufacturing firms and Nottingham is designated as one of the UK's six Science Cities, with the Queens Medical Centre/Nottingham University Hospital NHS Trust one of the largest teaching hospitals in the country. Advanced manufacturing is complemented by universities with excellent research that collaborate with local businesses, such as the School of Mechanical Materials at the University of Nottingham[125].

The polycentric East Midlands region is based on the major centres of Nottingham, Derby and Leicester, the regional centres of Northampton, Mansfield and Lincoln and many market towns and rural areas. The region is working to ensure that all parts of the East Midlands enjoy high quality transport links to HS2. Work is underway to develop an integrated 'Mass Transit Strategy', with the HS2 East Midlands Hub station at Toton at its heart. LEPs and local authorities are evaluating options for a series of rail 'shuttle services' between the HS2 Hub station and the city centres of Nottingham, Derby and Leicester, which would be timed to connect with the HS2 timetable. Options are also being explored to extend the Nottingham Express Transit tram network or develop a Bus Rapid Transit network to connect a wider set of locations to HS2[126].

"The Midlands economy is built on a strong advanced manufacturing base and is enhanced by a wide range of sectoral strengths, universities and research centres. Midlands Connect and Midlands Engine are seizing on the once in a generation opportunity HS2 brings to drive growth for the region, through improved connectivity within the region as well as beyond.
We will create a thriving environment for businesses to flourish and HS2 is critical for us to do that."

Sir John Peace, Chairman, Midlands Engine

Advanced manufacturing is a major contributor to the economy of the West Midlands. The region has strengths in advanced engineering industries and is well positioned to compete in sectors that are likely to see high growth in future, such as driverless vehicles and battery vehicle manufacture and design. The West Midlands also supports around 350,000 employees in the science and technology sectors, representing one in five jobs in the region. The West Midlands economy benefits from being home to eight universities and to two of the UK's strategically important Catapults (in High Value Manufacturing and Energy Systems), as well as leading research organisations. Birmingham University and Warwick University were both recently ranked in Europe's 100 most innovative universities by Reuters. Globally leading manufacturing firms, such as Jaguar Land Rover, are using digital capabilities and data analytics to accelerate their R&D activities, improve quality, and reduce costs[127].

Despite these strengths, the overall productivity performance of the Midlands is well below the national average level. The West Midlands Combined Authority, working with its three partner LEPs, sees exploiting the region's science and innovation excellence as vital to help raise productivity in the West Midlands[128].

The evidence collected during a recent Science and Innovation Audit of the West Midlands suggests that the region's innovation ecosystem is generally working well. The region has a long track record of joint working between businesses, universities and research centres across the Midlands. However, the Audit also identified a number of challenges to boosting innovation in the region as a key driver of increased productivity. These include the need for higher levels of knowledge exchange between universities and business and across technology areas and sectors[129].

HS2 will improve connections between businesses, universities and research centres in the East and West Midlands and with other regions across Britain. Phase 2b of HS2 will bring the East Midlands Hub station within 20 minutes' journey time of HS2 stations in Solihull and Birmingham city centre, with frequent and reliable services to support regular face-to-face partnerships and collaboration. HS2 will also connect advanced manufacturers and centres of research excellence in the Midlands to opportunities for new collaborations across the UK.

Image: Cultura Creative (RF) / Alamy Stock Photo

Regional Case Study

Connecting the Cheshire Science Corridor to knowledge and manufacturing clusters

The Cheshire Science Corridor achieved Enterprise Zone status in 2016, recognising the international reputation of the region's diverse scientific analysis and research. The region encompasses many fields of scientific analysis and research including life sciences, chemical engineering and energy and environmental technology parks. The Cheshire Science Corridor is a crescent that crosses the northern part of the Cheshire & Warrington sub-region linking together nationally and internationally significant research facilities and existing businesses (Figure 17). The Cheshire and Warrington LEP estimates that the Enterprise Zone has the potential to generate 20,000 jobs and attract 500 new businesses by 2030[130].

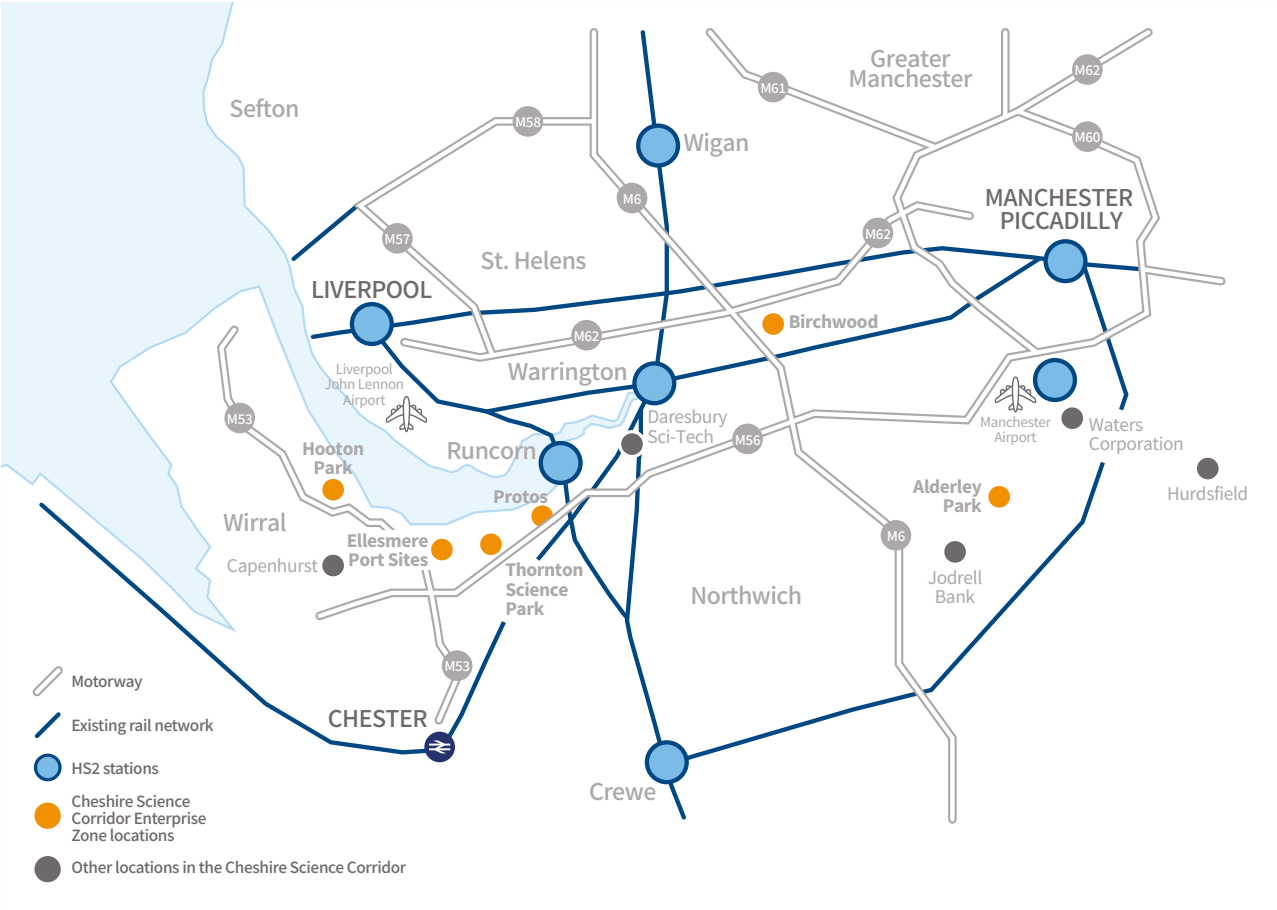
Close collaboration with the universities in the neighbouring cities of Manchester, Liverpool and Chester have supported industry research and development across the region's portfolio of sites, and support the skill base[131].

Indeed, the region's skill level is higher than the UK average. Almost four in 10 of the working age population have levels of high skills (degree equivalent or higher)[132].

Researchers and scientists working in the Corridor will have access to the UK's high speed rail network via HS2 stations at Liverpool, Runcorn, Crewe, Warrington and Manchester Airport. HS2 will provide connections to London – which sits within the UK's 'golden triangle' life sciences cluster – in just over 1 hour and 30 minutes from Liverpool and in less than 1 hour from Crewe. Twice-hourly HS2 services in each direction are expected to connect Manchester Airport to Birmingham in around half an hour's journey time, bringing the research excellence of the Cheshire Science Corridor closer to one of the UK's most significant clusters of advanced manufacturing.

Fig. 17 Cheshire Science Corridor

Source: Cheshire Science Corridor Enterprise Zone



"The Cheshire Science Corridor is one of the strongest science and technology clusters in the UK with some of the most significant assets located here. Science and innovation are key drivers to improving productivity and the pivotal role of collaboration in driving growth in this sector is widely acknowledged. We therefore see HS2 as supporting our ambition to be an internationally renowned Science and Technology Cluster, as it will be a key contributor to strengthening networking capacity both nationally and internationally."

Cllr Rachel Bailey, Leader, Cheshire East Council

Image: GRANT ROONEY PREMIUM / Alamy Stock Photo

7
CONNECTING UK MARKETS

HS2 will create opportunities for UK businesses to access new markets by bringing them closer to new customers in cities and regions across the country.

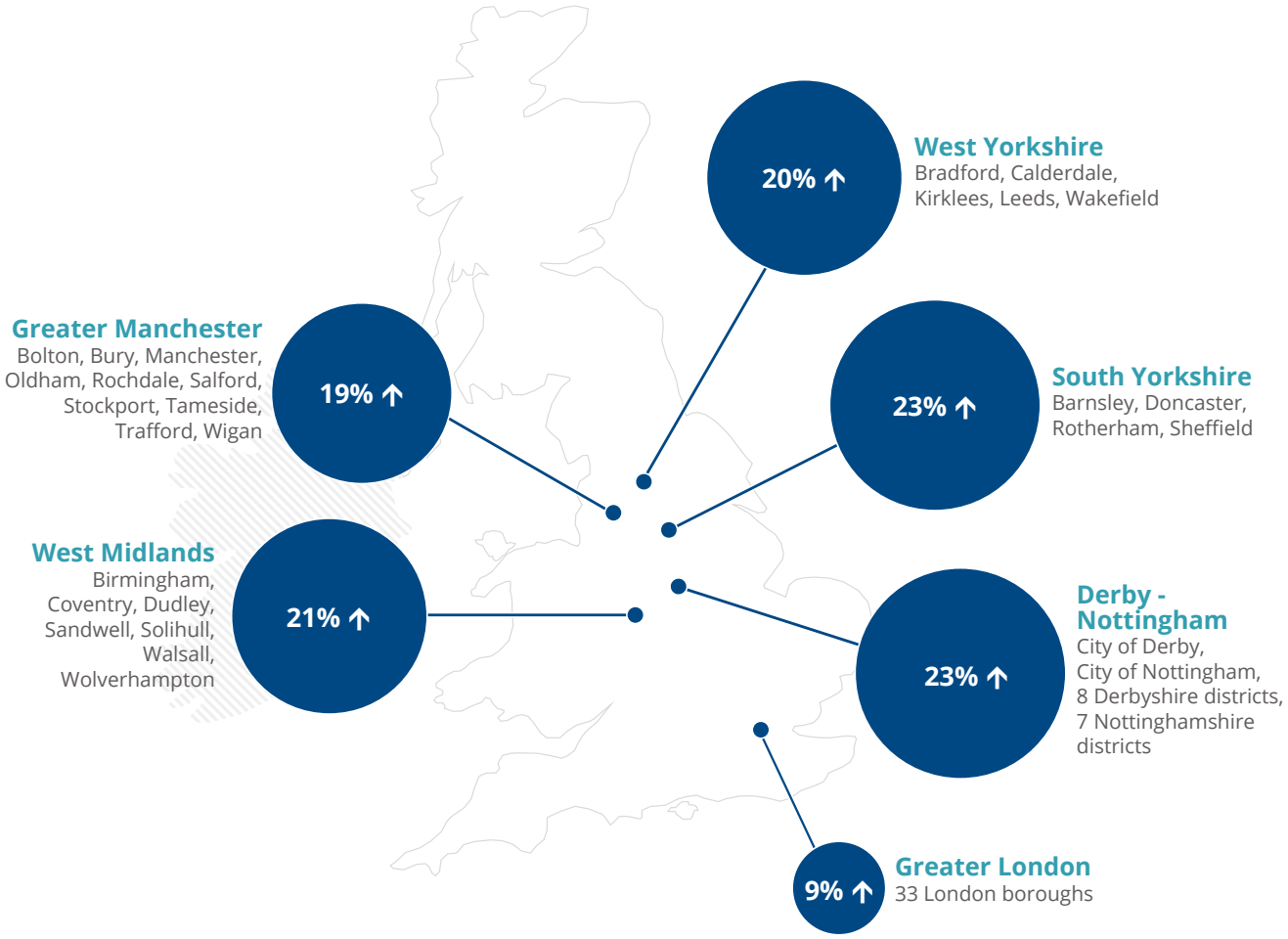
Analysis published in 2013 by HS2 Ltd suggests that businesses based in regions along the HS2 route will experience significant improvements in their access to new markets and business opportunities within the UK[133].

The analysis is based on the HS2 route design, service specification and demand forecasts that underpinned the HS2 business case in 2012 and has not been updated to reflect subsequent changes to the HS2 scheme. However, the conclusions of the analysis on the regional pattern of improvements in business-to-business connectivity remain valid.

The analysis finds that potential improvements in the ease with which businesses can access other businesses are especially pronounced in regions outside London (Figure 18). For example, the analysis estimates that HS2 will increase the number of businesses that can be accessed at a reasonable travel time and cost by rail from the West Midlands city region by over 20%. This will provide businesses based in the West Midlands with significant opportunities to forge relationships with new customers, suppliers and research collaborators based in other city regions of the UK. Greater London already benefits from significant levels of rail connectivity, so the changes in access to businesses for Greater London brought about by investment in HS2 are smaller (around 9%) than for the other city regions that will be connected by the HS2 high speed line (ranging from 19% to 23%).

Fig. 18 Change in business-to-business connectivity by region due to HS2

Source: 'HS2 Regional Economic Impacts', KPMG on behalf of HS2 Ltd, September 2013



The UK tourism sector stands to benefit from better connecting tourist destinations in the Midlands and the North to domestic and international tourists in London and the South East. The sector directly and indirectly supports jobs for over four million people in the UK[134] and many of the UK's most popular tourist destinations will be easily accessible via high speed rail on HS2. For example:

- **Yorkshire's strong and diverse tourist offer contributed over £5 billion to the region's economy in 2015[135]. HS2 services will call at York station, which will act as a gateway to Yorkshire's sporting, cultural and historic attractions.**
- **Cumbria and the Lake District received over six million overnight visitors in 2016, as well as almost 39 million day visitors[136]. The Lake District has been designated as a World Heritage Site by UNESCO[137]. Cumbria Tourism estimates that spending by these visitors in the region generated employment for around 36,000 people on a full-time equivalent basis[138]. Half of UK visitors making an overnight stay in Cumbria come from the North of England. The Cumbria Local Enterprise Partnership (LEP) has identified an opportunity to increase visitor numbers from London and the South East, where market penetration is currently low[139].**

The journey time on HS2 from central London to the Lake District will be equivalent to today's journey time by rail from central London to the Peak District. This offers the Lakes the opportunity to expand the reach of its tourist market. At less than 2 hours' journey time from London Euston to Oxenholme, HS2 will make Cumbria more accessible to visitors from the South East for weekend trips, helping to fill vacancies during the quieter spring and autumn 'shoulder seasons'.

- **HS2 will improve access to major international airports (as discussed in the next chapter). Improved rail connections to major hub airports from across the country will be an asset for the entire UK tourism industry as it looks to expand. The advent of 'open-jaw' airline ticketing – the ability to link trips to the UK with different inbound and outbound airports on the same ticket – will be an important innovation in coming years. Improved rail connectivity between inbound and outbound cities will encourage the uptake of these tickets and encourage international tourists to visit areas across the UK.**

Regional Case Study

Strengthening supply chains in South Yorkshire

The Sheffield City Region encompasses more than 1.8 million people and approximately 700,000 jobs in nine local authority areas in South Yorkshire. The City Region launched its Growth Plan in 2014 that aims to grow the City Region's existing strong supply chain of businesses, as well as encouraging new businesses to start up in the region[140].

The Sheffield City Region does not have a single dominant sector. Its economy comprises a diverse mix of capabilities and sectors and there are strong business-to-business linkages that make up the City Region's supply chain, often crossing traditional boundaries between sectors.

Analysis commissioned by the Sheffield City Region LEP found that the City Region's economy is strong in designing and delivering solutions to a range of digital, materials and engineering challenges, particularly in creative and digital industries, advanced engineering and healthcare technology, and distributing those solutions to high value businesses across the UK and abroad[141]. Businesses located in the region create and engineer parts and components or equipment and machinery that support other more specialised sectors in other locations. The City Region is also strong in developing designs into final products, which in turn form crucial components in the supply chains of other industries in the UK and overseas.

“Sheffield, and the region around it, has a strong tradition as suppliers of products to manufacturers in other parts of the country, who produce export goods that the country relies on heavily. We are being held back by poor rail connectivity and capacity on routes to London, Leeds and Manchester in particular. HS2, properly integrated with the plans of Transport for the North, helps us address those issues.”

Richard Wright, Executive Director,
Sheffield Chamber of Commerce & Industry

Sheffield City Centre

Image: eye35.pix / Alamy Stock Photo

For example, businesses based in South Yorkshire that specialise in high-precision engineering metals and alloy production and high quality design and manufacturing serve the supply chains of sectors including civil nuclear, offshore wind, low carbon energy, aerospace, automotive, defence, medical, and oil and gas industries. These businesses are supported by strong research collaborations, such as at the University of Sheffield Advanced Manufacturing Research Centre (AMRC). The Centre focuses on advanced machining and materials research for aerospace and other high-value manufacturing sectors.

Around 70 companies have joined as members, from global aerospace companies such as Boeing, Rolls-Royce, BAE Systems and Messier-Bugatti-Dowty, to local small businesses. The Centre also works with hundreds of other manufacturers on specific research projects[142]. Sports car manufacturer McLaren recently announced that it will open a new purpose-built Composites Technology Centre at the AMRC, partnering with the University of Sheffield[143].

The University of Sheffield Advanced Manufacturing and Research Centre

Image: HS2 Ltd

The Sheffield City Region recognises that the market within the region is not sufficient to deliver the scale of opportunities required to grow the region's manufacturing, engineering and materials businesses. The City Region's Growth Plan aims to increase sales of goods and services to other parts of the UK and abroad. HS2 will support increased levels of trade beyond South Yorkshire. Fast, frequent and reliable rail connections will encourage face-to-face contact between the region's manufacturing, engineering and materials businesses and their clients in supply chains across the UK, helping South Yorkshire to provide the design and development solutions that drive growth in high-value-added sectors nationwide. The Sheffield City Region is developing its HS2 Local Growth Strategy to maximise the benefits of high speed rail for the region. The scoping work for the strategy recognises the need for enhanced local rail services to feed into HS2 stations and services, and for improved access to HS2 stations by other modes including bus and car to connect the region's major town and city centres and key growth areas into the HS2 network.

Steel engineering in Sheffield

Image: Monty Rakusen / Alamy Stock Photo

Image: HS2 Ltd

8
CONNECTING TO GLOBAL MARKETS

Airports connect UK businesses with the global marketplace. HS2, as part of a wider transport network, will improve accessibility to export markets through dedicated high speed rail stations at Birmingham Airport and Manchester Airport. Heathrow Airport will be easily accessible from across the Midlands and the North using HS2 services. East Midlands Airport and Leeds Bradford Airport will be accessible via onward connections from HS2 stations.

The Government has set out a commitment to make Britain a global leader in free trade. We know that businesses which export show stronger employment growth and have higher wages than non-exporters. However, currently there are too few UK businesses that take advantage of the opportunities presented by overseas markets, with less than 11% of businesses exporting[144].

HS2 will prove a game changer for access to global markets through improved accessibility to Birmingham Airport and Manchester Airport, which will benefit from dedicated stations on the high speed network. A new station at Old Oak Common in West London will allow HS2 passengers to connect to frequent direct rail services to Heathrow Airport. The station will be served by direct trains from all HS2 destinations, providing faster and easier access to Heathrow from across the Midlands and the North.

Analysis of 82 global cities with some of the world's busiest airports suggests that cities with airport rail links or shorter access times enhanced by rail have higher productivity than those without airport rail links or with longer access times by other transport modes[145]. HS2 will bring fast, frequent and reliable services connecting the airports in Birmingham and Manchester to cities across Great Britain (Figure 19). This will increase the catchment area of these airports for leisure and business passengers in the UK:

- **HS2 will bring Birmingham Interchange station within 50 minutes' journey time of Leeds and Preston, making Birmingham Airport the most accessible long-haul airport by rail for both cities.**
- **Nottingham and Derby will enjoy easy access to Birmingham Airport from the HS2 East Midlands Hub station in just 17 minutes.**

"Birmingham Airport believes that HS2 is a vital addition to the UK's infrastructure. The extra capacity and improved connectivity between the UK's cities and industrial centres mean it will bring huge global opportunities for industry in Birmingham and across the West Midlands."

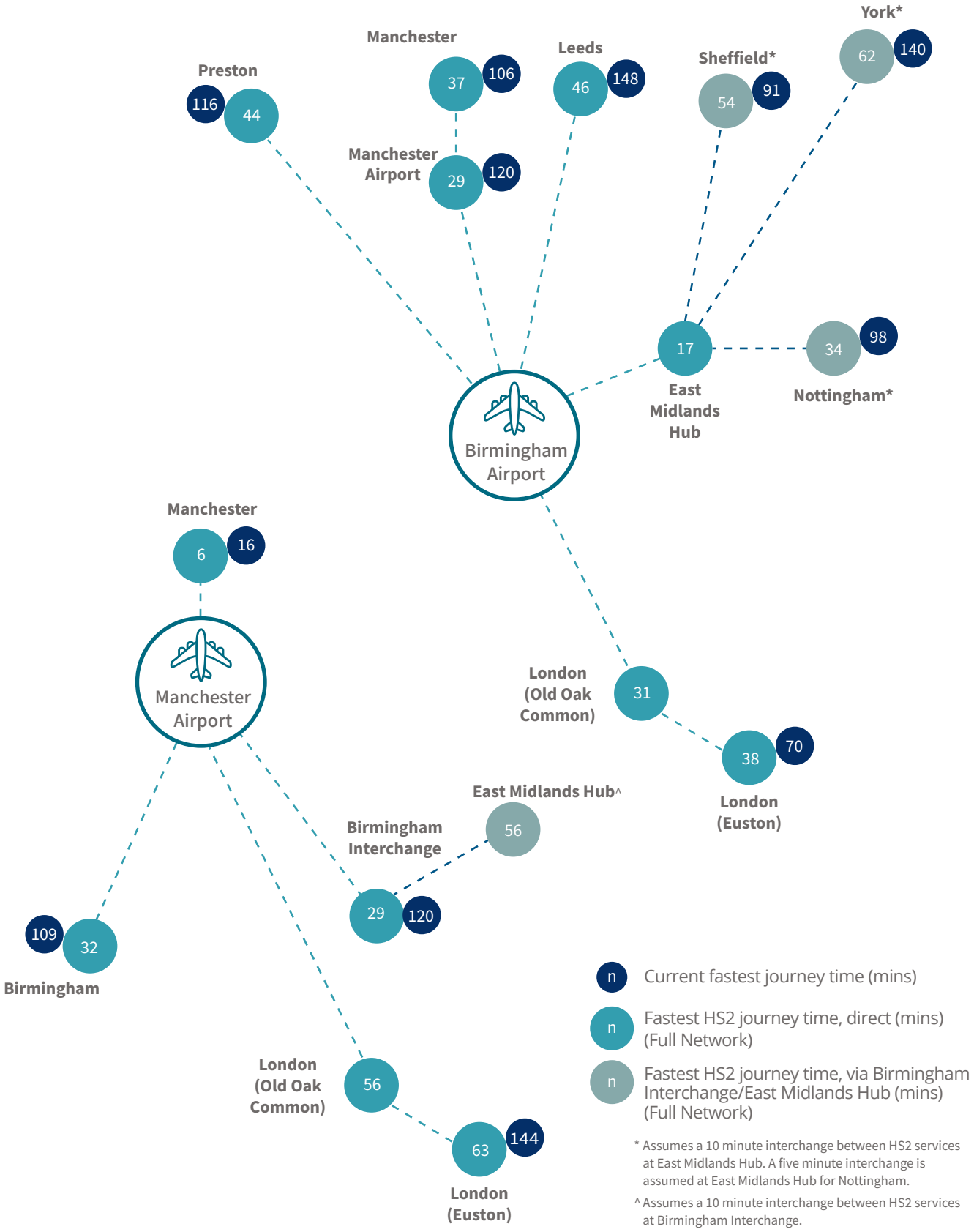
Tim Clarke, Chairman, Birmingham Airport

Manchester Airport

Image: Monty Rakusen

Fig. 19 Journey times by rail to Birmingham Airport and Manchester Airport

Source: HS2 Ltd



Current times to Birmingham Airport are for existing Birmingham International station and to Manchester Airport for the existing Manchester Airport station. HS2 times to Birmingham and Manchester airports are to the new HS2 Birmingham Interchange station and the new HS2 Manchester Airport station respectively.

Moreover, the Government's decision to build a third runway at Heathrow, with the greater connectivity HS2 offers to the regional airports in Birmingham and Manchester, provides a coherent approach to building UK airport capacity. This will strengthen the overall resilience of UK airports and give a regionally balanced approach in developing international trade through increased access to global markets. Birmingham Airport will be accessible from central London in just 38 minutes, which should help address part of the capacity shortages for South East passengers (Figure 20).

By improving rail links to airports, HS2 will better connect British businesses with the global marketplace. The UK runs a trade surplus in services with the rest of the world. Aviation connectivity is very important to many key UK services sectors due to their high dependence on face-to-face contact and on visiting clients overseas. As such, connectivity facilitates exports of UK services, enabling UK entrepreneurs to have easier and more effective access to a variety of international customers[146].

Aviation connectivity also supports export growth for manufacturing businesses. A survey showed that the more export intensive a firm becomes, the more critical aviation becomes to their business. Over half of the most export-intensive businesses (defined as businesses who earn over 75% of their turnover from exports) reported that aviation was critical to their company[147].

Strong international connectivity is also a significant draw for international businesses that invest and create jobs in the UK. Manchester Airport offers direct flights to all of Europe's major cities, and long-haul routes to the Far East, Middle East and North America, including direct flights to New York. The airport has played an important role in fostering international interest in Manchester as a business location, including from major international sovereign wealth funds[148].

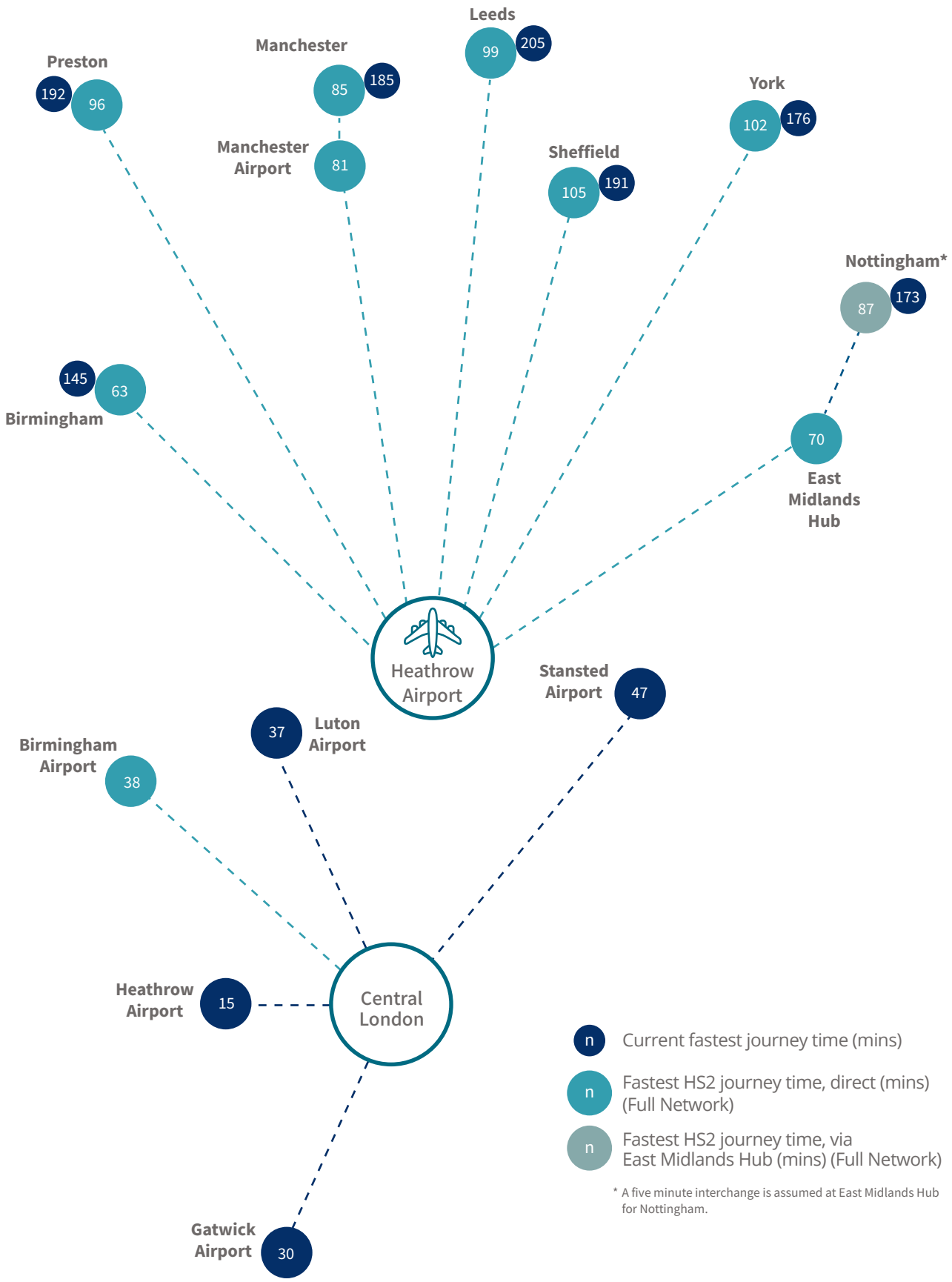
The value of airport connections to businesses will depend not only the existence of links to foreign destinations, but also on the frequency and convenience of flights to those places.
Since the knowledge-based sectors strongly rely on visiting clients overseas, greater frequency and choice of flights increase the flexibility with which business meetings can be arranged and with which they can be rescheduled at short notice[149]. HS2 will bring business clusters in city centres closer to Heathrow Airport, Birmingham Airport and Manchester Airport, offering more choice of destinations and more flexibility in the scheduling of flights than ever before. In this way, HS2 will offer British businesses with the convenient and easy access to international airports that businesses in countries such as the Netherlands, Germany, France and Belgium already enjoy using their high speed rail networks (see international case study, page 86).

"Bentley's headquarters in Crewe is home to the design, R&D, engineering and production of the company's four model lines which are exported to 60 markets around the world. Infrastructure investments such as HS2 will bring improved connectivity to the region, with the rest of UK and worldwide, which we hope will attract suppliers and the best talent to support our business in the future."

Marlies Rogait, Member of the Board for Human Resources,
Bentley Motors Ltd

Fig. 20 HS2 journey times to Heathrow Airport and to airports from Central London

Source: HS2 Ltd



HS2 journey times to Heathrow Airport are via Old Oak Common station, an assumed 10 minute interchange and an assumed 15 minutes on Crossrail journey to Heathrow Airport.

Regional Case Study

Connecting world class manufacturers in the Constellation Partnership region to global markets

The Constellation Partnership brings together two Local Enterprise Partnerships (LEPs) and seven local authorities in Cheshire and Staffordshire in a bid to capitalise on the opportunity that HS2 presents. The Partnership's ambition is to deliver over 100,000 new homes and 120,000 new jobs by 2040, spurred on by the arrival of HS2 services in Crewe in 2026 and the extension of the high speed line to Crewe in 2027[150]. HS2 services will call at Crewe and Stafford, providing high speed connectivity to London and bringing the Constellation region within an hour of the capital. Network Rail has been developing options for a Crewe Hub to improve the onward connectivity from Crewe, working with High Speed Two Ltd. The Department for Transport consulted on these options during 2017, which included the option for an HS2 service to call at Stoke-on-Trent[151]. HS2 services will call at Stafford from 2026. In the north of the region, the HS2 station at Manchester Airport will be accessible to towns such as Macclesfield and Northwich.

Manufacturing strengths allow the Constellation Partnership region to export into global markets. For instance, in Cheshire and Warrington around a fifth of employment is in export-intensive industries, the third highest of any LEP area in England[152]. World class manufacturers such as JCB, Michelin, UTC Aerospace Systems and Rolls-Royce are located in the Constellation Partnership region. The Stoke-on-Trent and North Staffordshire region is a world leader in the innovative design and development of ceramics, with 350 ceramics-based

businesses employing around 7,000 people[153]. Crewe is home to Bentley's world class production facilities, employing more than 4,000 people and accounting for more than £1 billion of UK exports each year[154].

HS2 will help the export competitiveness of the region's advanced manufacturing sector by improving access to supply chains and sources of knowledge, research and innovation and by providing fast, frequent and reliable access to Heathrow Airport via the HS2 station at Old Oak Common in West London. Old Oak Common will be less than 50 minutes' journey time by HS2 services from Crewe. A dedicated HS2 station will also expand the catchment area of Manchester Airport, providing the opportunity to expand the number of flights and destinations.

Bentley car production factory, Crewe

Image: A.P.S. (UK) / Alamy Stock Photo

International Case Study

High speed rail connections to airports

Amsterdam Schipol is a major international hub airport and also functions as a regional shopping and international business and conference centre. The airport has a high speed rail station that increases the airport's catchment area within the Netherlands and offers access to the Zuidas business district of Amsterdam, enhancing the city's international competitiveness. High speed rail links also connect Schipol directly to France, Belgium and Germany and provide extra capacity for passengers accessing the airport[155].

Frankfurt International Airport has a dedicated station on Germany's ICE high speed rail line linking Frankfurt and Cologne. Lufthansa gives passengers the option to buy their air and rail tickets together and to check in to their flights and drop off luggage at Cologne train station. Passengers can also earn frequent flyer points and miles whilst on the train. Air and rail timetables are integrated to minimise waiting time for passengers[156]. Almost two-thirds of train passengers on the rail line linking Cologne and Frankfurt either arrive or leave by plane[157].

The Paris Charles de Gaulle (CDG) Airport TGV High Speed station was built in 1994 with the aim of creating greater speed and convenience between train and air travel[158]. Over 50 high speed trains per day connect CDG Airport to major towns in France. The station also has five daily high speed connections to Brussels and Amsterdam[159].

The TGV air service from the station combines international flights from several different operators with TGV journeys into a unique single ticket to many different destinations. Passengers are able to check in at Brussels for flights from CDG, boosted by TGV Air being partnered with several international airlines and also being promoted by travel agencies[160].

Frankfurt airport

Image: Zoonar GmbH / Alamy Stock Photo

Image: Monty Rakusen

9 CONCLUSIONS

This report has explored the different ways in which HS2 will support businesses and sectors in the UK's cities and regions as part of a Modern Industrial Strategy, by drawing on business perspectives from across the sectors and regions.

"Improving connectivity across the UK is critical. It underpins the mobility of labour, as well as goods and services, to align the supply and demand for skills and talent between and within regions. HS2 is doubly important because it will also help to rebalance our national economy, reducing our dependence on London and the South East and creating more dynamic growth in the Midlands region and beyond."

Professor Simon Collinson, Deputy Pro-Vice-Chancellor for Regional Economic Engagement and Director of City-REDI (City Region Economic and Development Institute), University of Birmingham

Business Locations and Expansions

HS2 will unlock opportunities for businesses to increase their cost competitiveness and tap into new market opportunities by relocating or expanding in the Midlands and the North:

- **Regions outside the South East of England offer cost competitive locations for businesses seeking to relocate functions or to expand into regional markets.**
- **HS2 will allow firms to take advantage of these opportunities to improve their international competitiveness and tap into the economic strengths of the Midlands and the North, while retaining access to London.**

Supporting Research, Development and Innovation

HS2 will enable engineers, researchers, scientists and suppliers to more easily engage in the face-to-face collaboration and sharing of knowledge and ideas that underpins the competitiveness of our advanced manufacturing industries:

- **The UK's excellence in science and innovation is vital to our global success.**
- **Research, development and innovation thrives on face-to-face contact to share knowledge and ideas.**
- **HS2 will support face-to-face collaboration in research, development and innovation by effectively shrinking the distance between manufacturing plants, suppliers, universities and research centres.**

Accessing Skills and Talent

HS2 will grow the pools of talent and skills in regions outside of London and the South East:

- **Businesses located in the Midlands and the North cite skills shortages as amongst their most significant obstacles to growth.**
- **These regions are home to high quality universities but many graduates choose to move away to London after graduation.**
- **HS2 will help local places to attract and retain talent by making our cities and regions more attractive places to live and work.**
- **Released capacity created by HS2 will increase business access to skilled workers.**

Growing Small Businesses

HS2 will improve access to the finance, mentorship and professional networks that are vital for small businesses, start-ups and entrepreneurs to grow:

- **Growth finance and the mentoring and advice that investors often provide for small businesses are more readily available in London and the South East than in other parts of the country.**
- **Equity investors require regular frequent visits to an area to identify new investment opportunities and to originate deals. Once investments are in place, investors typically monitor their investments through regular face-to-face contacts.**
- **Improving transport links between London-based investors and businesses in the Midlands and the North can help to narrow the regional financing gap.**

Connecting to UK and Global Markets

HS2 will provide better access to customers in the UK and to overseas markets through high speed rail connections to international airports:

- **HS2 will create opportunities for UK businesses to access new markets by bringing them closer to new customers in cities and regions across the country.**
- **Airports connect UK businesses with the global market place. HS2, as part of a wider transport network, will improve accessibility to export markets through dedicated high speed rail stations at Birmingham Airport and Manchester Airport. Heathrow Airport will be easily accessible from across the Midlands and the North using HS2 services. East Midlands Aiport and Leeds Bradford Airport will be accessible via onward connections from HS2 stations.**

HS2, as part of a wider transport network, will be a key factor in helping businesses and sectors in places across the UK to increase their productivity by providing fast, frequent and reliable connections between our city regions. Together, we can achieve our goal of getting the best out of Britain.

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High Speed Two (HS2) Limited
Two Snowhill,
Snow Hill Queensway,
Birmingham B4 6GA
Freephone: 08081 434 434
Email: HS2enquiries@hs2.org.uk

HS2