ENGLAND'S ECONOMIC HEARTLAND

Connecting economies:

Swindon-Didcot-Oxford

Unlocking economic potential through improved connectivity

Including consideration of wider corridor to Bristol

// SUMMARY

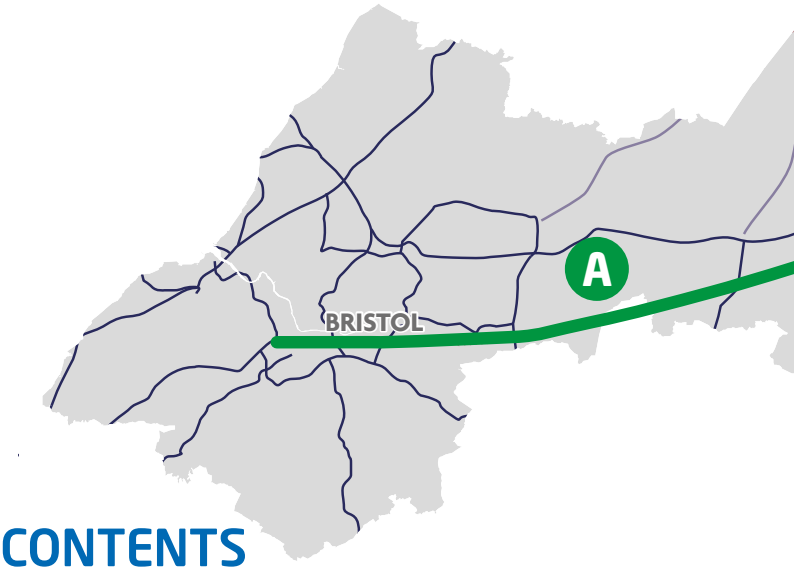
The Swindon-Didcot-Oxford corridor links two of the UK's 'fast growth cities', contains the world's leading university, numerous science parks and businesses at the cutting edge of science and technology, and, in Swindon, the most productive area of the England's Economic Heartland region. This relatively small area accounts for more than a quarter of all life science jobs in EEH, and packs a heavyweight £25 billion economic punch.

And if its geography is extended further west to Bristol, that economic punch is even more compelling: a corridor worth £60 billion to the UK, home to more than 900,000 jobs and 41 different 'innovation clusters' which are amongst the top 10 biggest in the country.

New research by Cambridge Econometrics suggests that with improvements to its transport system, the (Bristol)-Swindon-Didcot-Oxford corridor could deliver even more. Benefits of improved connectivity would include:

- Encouraging specialist knowledge such as advanced engineering to flow across the corridor, bringing together world-leading advanced physics (notably quantum) and technology-related enterprises around Oxford and Didcot, with the applied engineering and robotics specialisms in Bristol.
- Unlocking the opportunity presented by Swindon in the centre of the corridor, which has an abundance of affordable commercial floor space, and is already a highly productive regional economic centre. It is extremely well positioned to facilitate and benefit from the expansion of established industries in Oxford and Bristol.
- Boosting the higher education sectors between Oxford and Bristol, with increased collaboration and the capacity to leverage research resources (ie, laboratories).
- Supercharging the established advanced physics and engineering and life sciences prime sector specialisms in Swindon, which would benefit from increased corridor-wide R&D collaboration and economic integration.

As Cambridge Econometrics concludes: "This corridor has a clear and compelling narrative for improving transport infrastructure across its length."



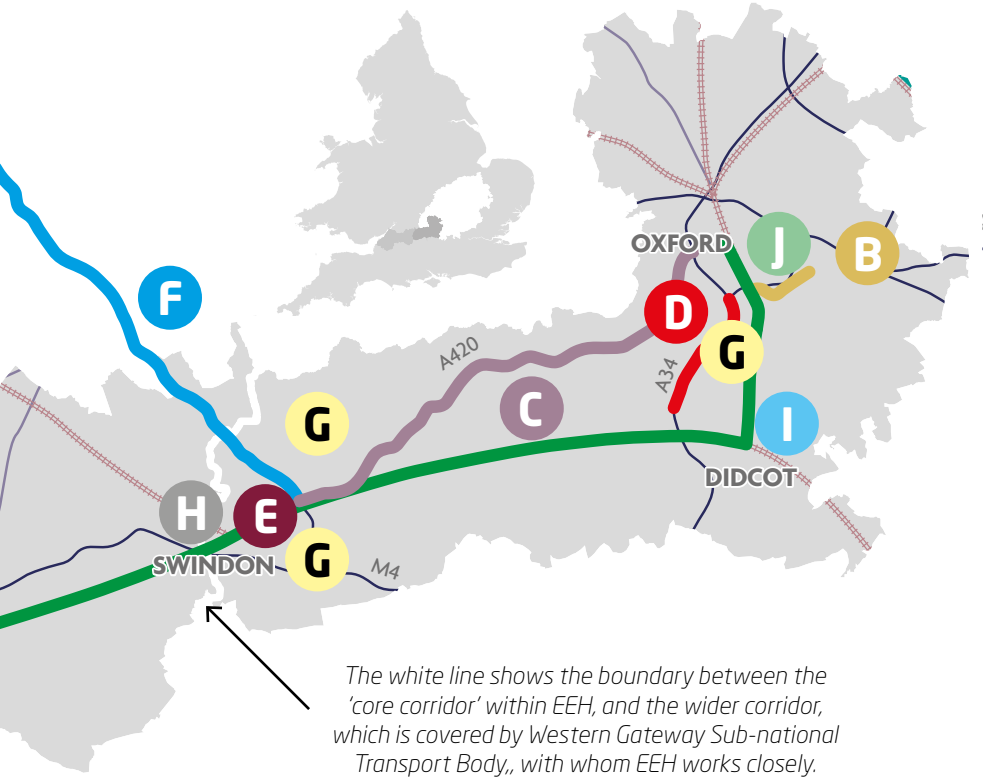
About this brochure

This brochure provides a compendium of both evidence and asks to government, which England's Economic Heartland, its local and combined authority partners, MPs, private sector and others can use to make the case for improved connectivity and infrastructure investment in our region. It provides the high-level economic narrative for improving connectivity in the corridor, based on expert analysis by Cambridge Econometrics. It then details the flagship transport improvements which England's Economic Heartland's evidence base suggests would significantly contribute towards economic growth. EEH is producing seven 'Connecting Economies' brochures in total. Of specific relevance to this area is the brochure outlining the economic narrative and priority interventions for the Peterborough-Northampton-Oxford corridor.

CONTENTS

PRIORITY INTERVENTIONS

The interventions below represent investments that are essential for our region's – and our country's – economic prosperity. They all have strong strategic value, including their benefits to local and regional connectivity and economic growth – and they have strong political support from our local and combined authority partners. They form a compendium of our ask to government, MPs and wider stakeholders. These schemes must be supported, progressed and delivered at the earliest opportunity for the benefit of the region and the UK as a whole.



The white line shows the boundary between the 'core corridor' within EEH, and the wider corridor, which is covered by Western Gateway Sub-national Transport Body,, with whom EEH works closely.

- Not displayed on map: Improving Oxfordshire's core bus network. See page 21
- A: Rail services to Bristol and new stations along the Great Western Main Line. See page 19
- B: Reopening of Cowley branch line. See page 22
- C: Improving multimodal connectivity along the A420. See page 18
- D: Improving bus journeys along the A34 between Abingdon and Oxford. See page 24
- E: Delivering the Swindon Knowledge Central station upgrade See page 20
- F: Improving connectivity on the A419/A417. See page 24
- G: Additional mobility hubs. See pages 26-27
- H: Electric bus and logistics infrastructure. See page 20
- I: Didcot and surrounding area infrastructure improvements. See page 25
- J: Upgrading Oxford Station. See page 23.

GVA: £24.3BN (2021)

Swindon-Didcot-Oxford's GVA accounts for 14% of EEH's total. However, economic growth (measured by GVA, in real terms) over the pre-pandemic years of 2011-2019 was 11.5%, slower than the national average of 19%. GVA in the wider corridor including Bristol was £60.1bn.

JOBS: 353,800 (2022)

Jobs in Swindon-Didcot-Oxford grew at the rate of 10% over 2011-2019, lower than the national average of 14%. There are 925,700 jobs in the wider corridor including Bristol.

POPULATION: 651,800 (2021)

Swindon-Didcot-Oxford's population accounts for 12% of EEH's population and grew 11% between 2011-2021. The population of the wider corridor including Bristol is 1.68 million.

PRODUCTIVITY

Productivity across Bristol-Swindon-Didcot-Oxford is 1% above the national average (2021). However, rates vary greatly throughout the corridor. Swindon is EEH's most productive area, but both the Oxford and Bristol areas have productivity gaps to the national average.

FAST GROWTH CITIES

Oxford and Swindon are two of only six 'fast growth cities' identified by the Centre for Cities (2021). These are defined as 'some of the most successful and innovative places in the UK'.

INEQUALITIES

Oxford, Swindon and Bristol all contain neighbourhoods within the 10% most deprived in the country (2019)

// ENGLAND'S ECONOMIC HEARTLAND

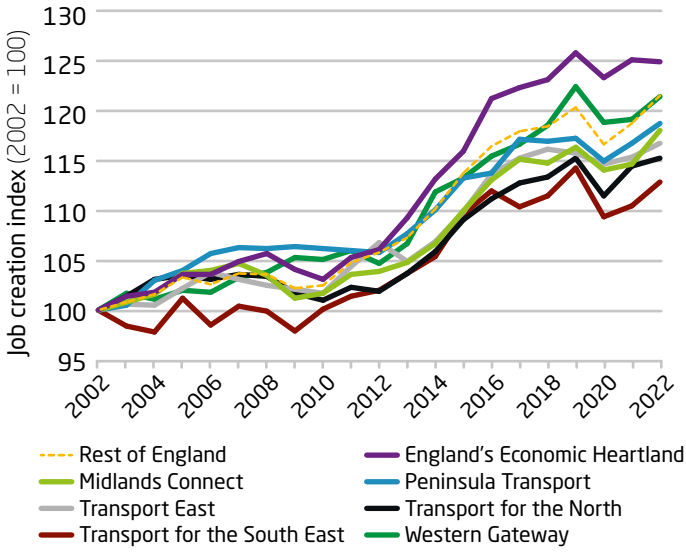
There's a reason why we're called England's Economic Heartland. Stretching from Swindon and Oxfordshire in the west through to Cambridgeshire and Hertfordshire in the east, our region is unrivalled in the country for the number of economic specialisms and clusters existing within it. Its success brings benefits and opportunities for the whole of the UK.

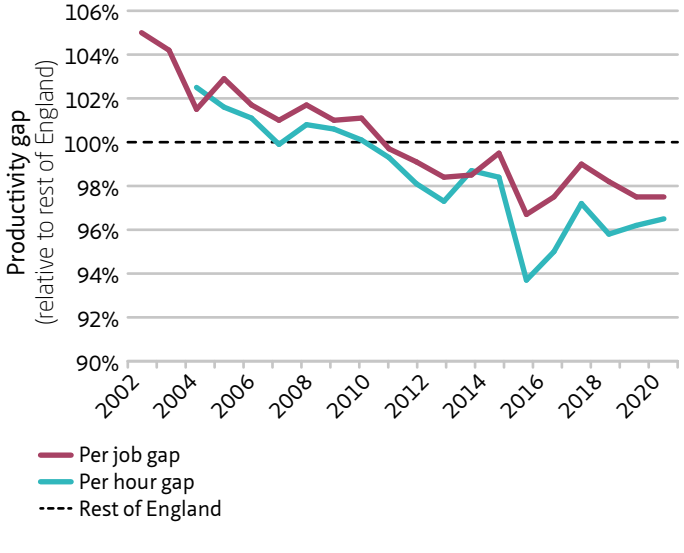
ECONOMY

For methodology see our website and p31

GVA: £172bn (2021) **JOBS:** 2.68m (2022) **FIRMS:** 275,400 (2023)

- **Jobs:** The region contains 10% of all jobs in England. Of the seven sub-national transport body (STB) regions which cover England outside of London, none has created more jobs than EEH over the past 20 years
- **Growth:** Economic growth (2.4% p.a. real terms) was also faster than the rest of England (2.2%), making EEH the fastest-growing STB region
- **Fast growth cities:** The EEH region hosts five of the six fast growth cities in the UK (Centre for Cities study): Cambridge, Milton Keynes, Oxford, Peterborough and Swindon
- **Exporting:** EEH has the highest exporting intensity of any STB region with total exports £56bn in 2021 (up 22% on 2016)
- **Foreign investment:** EEH also hosts significant foreign direct investment, with 7.3% of firms foreign owned (rest of England 6.4%) – only London has a higher share
- **Firm enterprise and survival:** EEH has the second highest firm enterprise rates of the STB regions and business survival rates are above average. 85% of firms are micro-sized
- **Commercial floorspace:** 55.3bn m^2 of commercial floorspace, with floorspace delivery rates 6x the average across the rest of England, 2013-23
- **Productivity:** Slow productivity growth (only 0.2% p.a) means EEH is now 3% less productive (per job) than the rest of England (20-years ago, it was more productive)





No STB region has created more jobs than EEH over the past 20 years. However, productivity growth has stalled, reversing EEHs historic productivity premium.

POPULATION

5.37 million (2021), 9% of the population of England

- **Growth:** Population growth (1.2% p.a.) was almost double the average across the rest of England (0.7%) between 2011-21, and fastest of any STB region
- **Housing:** 233,800 additional homes delivered over the past decade (2012-22), with housing delivery rates 1.4x higher than across the rest of England. Housing is 11% less affordable than the rest of England, with prices 10.4x household incomes
- **Rural:** 35% of EEH's population reside in rural areas and market towns

ENVIRONMENT

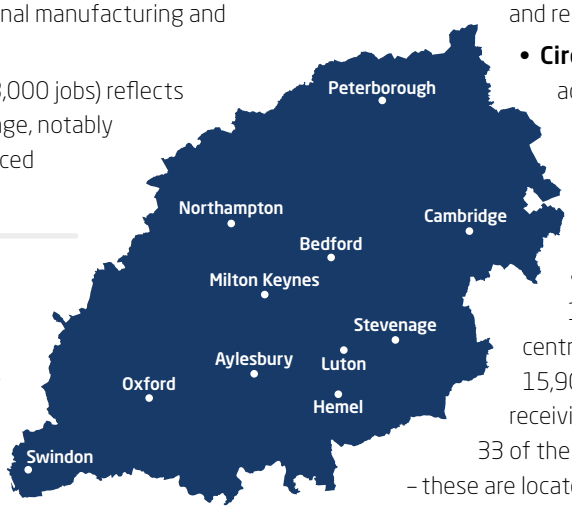
- **Total emissions:** Per capita CO_2 emissions were 4% higher than in the rest of England in 2021, & have declined at a slower rate (-24% 2005-21, rest of England -27%)
- **Transport emissions:** Transport accounts for 37% of total EEH emissions (rest of England 31%), and decreased more slowly (-8% 2005-21, rest of England -12%)
- **Agriculture:** 965,000 hectares of land in EEH is actively farmed, with 85% arable or mixed use. 50% of UK Grade 1 agricultural land is found in The Fens

PRIME SECTORS

The EEH area is home to several sectors of national importance, many of which produce knowledge, ideas and innovations that then flow across the entire national innovation ecosystem, benefiting firms across a far wider geography than the region itself. This cannot be overstated in the context of national strategic economic priorities.

Cambridge Econometric's analysis found the following sectors are 'prime' capabilities across EEH: highly-concentrated sectors that typically exhibit above average productivity, export and R&D/ innovation intensity, and pan-regional representation. These are:

- **Life Sciences** (79,400 jobs across EEH - that's 25% of all life science jobs in England!) includes the region's historic, research-based strengths related to pharma, medicinal manufacturing and bioscience
- **Advanced Physics & Engineering** (253,000 jobs) reflects diverse engineering specialisms and heritage, notably automotive, electronics, machinery, advanced materials, and related consulting
- **Logistics & Freight** (140,700 jobs) capitalising on the region's central geographic location and connectivity assets, this includes freight and goods storage, handling and transport across road, rail and air
- **Digital & Creative** (139,300 jobs) includes a wide range of digital-based activities, including software publishing, IT services and consulting, film, TV and media, and telecoms
- **Higher Education** (97,800 jobs) captures the many leading universities and higher education institutions across the region, and associated teaching, research, and support activities
- **Agri-food** (71,100 jobs) reflecting the rural and agricultural heritage of the region, this includes farm-based agriculture and support services, food and drink production and processing, and related wholesale
- **Circular Economy** (22,600 jobs) vital to addressing the region's environmental pressures, includes activities related to water and waste



INNOVATION

- **Research and development:** Almost 1 in 10 jobs (240,000 total) in EEH are R&D-intensive, the highest share of any STB region and also London. Almost a third (28%) of EEH firms report undertaking R&D, more than any other STB region, whilst a quarter (24%) are innovation active, introducing new methods of work
- **Patents:** The World Intellectual Property Organization ranks Cambridge as the most intense scientific & technology cluster globally, with Oxford 5th. Collectively they account for 2 in 10 UK patents. EEH generated 20,700 patent filings (2010-2015; most up to date complete data) more than any other STB region and London equivalent to 46 patents per 10,000 residents
- **Innovation clusters:** There are 183 established innovation clusters centred on the EEH region, hosting 15,900+ knowledge-intensive firms & receiving £855m of public research funding. 33 of the clusters have a UK top-10 ranking – these are located in Cambridgeshire, Oxfordshire, Milton Keynes and Hertfordshire. See next page for more information on innovation clusters.
- **Universities:** University of Oxford tops The Times' global university rankings with Cambridge fifth. EEH universities employ 6,100 dedicated research staff, whilst there are 2,900 central government research staff based in the region
- **Innovate UK:** Almost 2 in 10 Innovate UK funding projects are awarded to research projects in the EEH region, more than any other STB region and London

ENGLAND'S ECONOMIC HEARTLAND SUB-NATIONAL TRANSPORT BODY

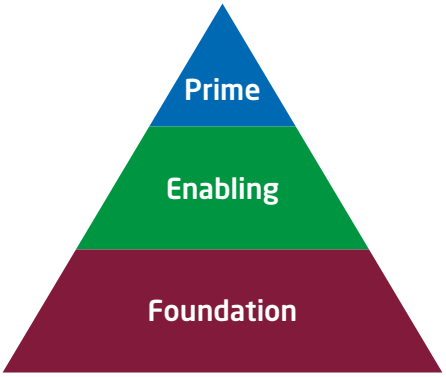
England's Economic Heartland (EEH) is one of seven sub-national transport bodies (STBs) which cover the entirety of England outside of London. It is overseen by the leaders of our 13 transport and combined authority partners, allowing us to speak with a single, powerful voice. EEH works closely with partners including Department for Transport, national infrastructure agencies such as National Highways, East West Railway Company and Network Rail, Science Supercluster Board, Arc Universities Group, Oxford to Cambridge pan-Regional Partnership and neighbouring STBs, ensuring work is joined-up across the wider region. A core role is to advise the Secretary of State on the improvements to our transport system which will realise economic growth while lowering emissions. To do this we have produced multimodal connectivity studies across several important corridors, alongside many other modally-specific studies. All our studies are aligned to the principles set out in our overarching transport strategy for the region, published in 2021.

// WHERE'S WHERE IN THE CORRIDOR

Oxford Science Park

An aerial view of the Harwell Campus

SECTORS AND INNOVATION CLUSTERS



For the purposes of its analysis, Cambridge Econometrics has split the sectors within the EEH economy into three (colour-coded) layers:

- **'Prime' sectors:** these are specialist, innovative, export-focused sectors, such as advanced engineering and scientific R&D (see page 5)
- **'Enabling' sectors:** these are established, high-productivity, high-wage sectors with a largely domestic focus, such as business management support and financial services
- **'Foundational' sectors:** these are the critical sectors without which the economy would not function. They employ the majority of workers. This includes activities like food and drink retail, education, health, leisure and social services. They have a critical role in determining the wellbeing and quality of life for residents in the region and improving productivity

The EEH website contains a full breakdown of the EEH economy, sector by sector – see page 31 for more details.

Innovation Clusters: Sectors include all firms that do a particular activity, whether they are 'innovative' or not. That's why DSIT's innovation cluster data is also used. These are spatially concentrated groups of firms, research capabilities, skills, and support structures in related industries that benefit from spillovers associated with agglomeration. The clusters includes firms – regardless of sector - that are: RD&I-active; spatially co-located; engaged in related activities; actively engaged in collaboration on public funded R&D projects.

Real Time Industrial Classifications (RTICs) are used to classify innovation clusters. Many firms in EEH's prime sectors are part of, will interact with, and indeed benefit from, its innovation clusters.

The visitor economy: With its rich history, stunning countryside and modern leisure hubs, travel and tourism plays an important role in the region's economy. During 2024/25 EEH will undertake study on how our transport system supports the region's visitor economy.

Key

GVA: up = growth between 2011-19 / **Population:** up = growth between 2011-21 / **Jobs:** up = growth between 2011-19) / **Firms:** up = growth between 2011-21 / **National average**: England / **Productivity:** Per job.

Comparison to other areas: For the Connecting Economies project (which considers a total of seven corridors / areas) Cambridge Econometrics defined 18 'sub-areas' across the EEH region, using workplace density and commuter zone analysis from Economic and Social Research Council-commissioned research. The areas are separate from administrative boundaries, using middle layer super output area (MSOA) geographies. Where an area is 'ranked' in comparison to other EEH areas, it is therefore out of a total of 18 areas within EEH. See our website and page 31 for further notes.

Settlements include:
1. Oxford, 2. Abingdon and 3. Woodstock

GVA: £11.6bn (up 12%) / Population: 311,100 (up 9%) / Jobs: 193,400 (up 13%) / Firms: 14,200 (up 13%)

Sectors: Higher Education (33,800 jobs, 35% of EEH total) / Life Sciences (9,700, 12%) / Circular Economy (1,400, 6%) / Advanced Physics & Engineering (14,100, 6%) / Digital & Creative (12,100, 9%) / Healthcare (20,900)

Innovation clusters: Quantum Economy (2nd largest in UK) / Autonomy & Robotics (3rd largest) / Omics (4th largest) / Photonics (4th largest) / MedTech (6th largest) / Pharma (7th largest) / EdTech (9th largest) / Food Tech (9th largest)

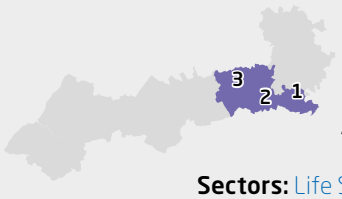
Economic assets include:

- University of Oxford, ranked as the best university in the world, a global leader in science and technology research and worth £15.7bn to UK plc. Includes the Bioescalator, Oxford Robotics Institute (ORI), Institute for Ethics in AI , Oxford Internet Institute and The Oxford Machine Learning Research Group
- Oxford Brookes is one of the UK's leading modern universities and has specialisms in advanced AI and robotics
- Culham Campus, home to UKAEA (the United Kingdom Atomic Energy Authority) and the Culham Centre for Fusion Energy, the UK's national fusion energy laboratory, which will design and build the world's first compact fusion reactor by 2040. The government is investing £184 million by 2025 in new fusion facilities, infrastructure and apprenticeships at Culham
- Other leading science and technology assets including: Oxford Science Park, with 100 occupiers & 600,000 sq ft of development; Begbroke, with 60+ world-leading research & tech companies, 900+ staff; Oxford BioEscalator; the Jenner Institute;Oxford University Hospitals Trust; and the Centre for Applied Superconductivity
- Oxford North is the city's new innovation district (in development). The 64-acre site will provideone million square feet of laboratories workspace, 480 new homes and provide 4,500 new jobs

Insights:

- WIPO ranks Oxford as the fourth leading scientific & technology cluster globally, & generates more than 1 in 20 UK patents
- The areas has 25 established innovation clusters centred locally, 9 of which are amongst the biggest (ie top 10) in the UK (second only to Cambridge among EEH areas), hosting 2,500+ knowledge-intensive firms & £390m of public research funding (the highest in EEH)
- Commercial floorspace costs 31% above national average
- Housing is 24% less affordable than the national average

Settlements include:
1. Didcot, 2. Wantage and 3. Faringdon



GVA: £3bn (up 10%) / Population: 107,300 (up 26%) / Jobs: 48,000 (up 25%) / Firms: 5,000 (up 22%)

Sectors: Life Sciences (7,100 jobs, 9% of EEH total) / Advanced Physics & Engineering (5,400, 2%) / Circular Economy (1,000, 4%) / Digital & Creative (3,700, 3%) / Management & Social Science (2,200) / Metal Products (1,500)

Innovation clusters: In-Orbit Space Manufacturing (UK top 10) / Pharma / Geospatial Economy / Research & Consulting (Physical Sciences & Engineering)

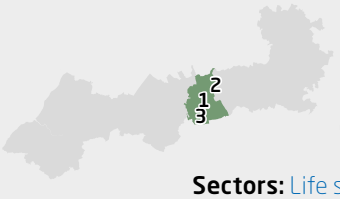
Economic assets include:

- Harwell Campus: 200-plus world-leading research & technology firms with 6,000-plus workers and home to the UK National Quantum Computing Centre; and Harwell Space Centre – a UK Space Agency gateway and Europe's largest space cluster
- Williams Grand Prix Technologies in Wantage – a key cluster in 'Motorsport Valley'
- Milton Park, 250-plus high technology companies with 9,000-plus workers

Insights:

- 43% of jobs are in EEH 'prime' sectors, the joint-highest share among EEH areas
- 10,000 jobs – 21% of total jobs – are R&D-intensive, the highest share among EEH areas, increasing at the second fastest rate over 2015-22 in EEH
- 10,500 additional homes were delivered over the past decade (2012-22), with housing delivery rates the highest of any EEH areas
- 55% of residents have higher education qualifications (national average 45%)
- Employment rate of 82.8% is the second highest among EEH areas

Settlements include:
1. Swindon, 2. Highworth and 3. Wroughton



GVA: £9.7bn (up 15%) / Population: 233,500 (up 13%) / Jobs: 112,400 (up 7%) / Firms: 8,700 (up 34%)

Sectors: Life sciences (5,600 jobs, 7% of EEH total) / Circular Economy (2,100, 9%) / Logistics & Freight (10,100, 7%) / Advanced Physics & Engineering (9,800, 4%) / Finance (10,300) / Management & Social Science (4,600) / Business Support Services (11,100)

Innovation clusters: Computer Hardware / Photonics / Software as a Services (SaaS) / EdTech / CleanTech

Economic assets include:

- National Collections Centre, a collections management facility for the Science Museum Group & Science Museum Library & Archive
- Unity Place and Kimmerfields in central Swindon, home to the new Zurich headquarters and a wider regeneration project 200,000 sq ft of office space and a new cultural quarter
- Swindon Oxford Brookes University, one of three campuses of a UK top 50 university
- Symmetry Park, comprising 221,320 sq ft of premier B8 use at the heart of the M4 corridor
- Panattoni Park, on the former Honda site, which will create 7,000 jobs and be used for manufacturing, warehousing and data storage
- The Mini production plant, producing over 350 pressed parts for the Mini body shell

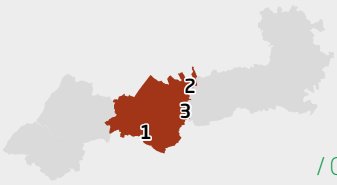
Insights:

- The area is the most productive in EEH, and significantly more productive (+28%) than the national average
- Swindon has the highest share of firms with head offices centred locally in EEH, including Zurich, pharma giant Patheon, UK Space Agency, WH Smith, Intel and the national Research Councils
- Commercial floorspace costs 24% below national average, and the area had the fifth highest floorspace delivery rate in EEH between 2013-23
- Housing is 23% more affordable than the national average, and is in fact the most affordable among EEH areas (relative to local incomes)
- The New Eastern Villages (NEV) is one of the largest greenfield developments in the country. It will consist of 8,000 homes, new schools, employment spaces and community and leisure facilities. It will be located to the east of the A419 and is estimated to span 724 hectares, with its eastern boundary reaching the point at which the River Cole meets the A420

The Zurich offices in Swindon

THE CORRIDOR TO BRISTOL

Settlements include: 1. Chippenham, 2. Cricklade and 3. Royal Wootton Bassett



Sectors: Advanced Physics & Engineering (4,500 jobs) / Circular Economy (800) / Life Sciences (3,500) / Construction (3800) / Electricity (300) / Mining & Extraction (200)

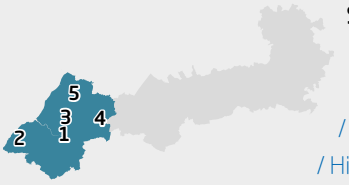
Economic assets include:

- SouthPoint Business Park, a new major logistics, industrial & employment site, set in 44 acres
- Siemens Mobility research centre has played a pivotal role in major UK rail projects such as the Elizabeth Line & Birmingham New Street Station

Insights:

- 6,500 jobs are R&D-intensive, 14% of total jobs, double the national average

Settlements include: 1. Bristol, 2. Clevedon, 3. Filton, 4. Chipping Sodbury and 5. Thornbury



Sectors: Advanced Physics & Engineering (52,700 jobs) / Digital & Creative (30,200) / Logistics & Freight (27,000) / Higher Education (19,400 jobs) / Circular Economy (5,600) / Life Sciences (4,100) / Finance (24,500) / Legal & Accounting (21,600)

Innovation clusters: Design & Modelling Technologies (2nd largest in UK) / E-Commerce (2nd largest) / Net Zero (2nd largest) / Software as a Service (2nd largest) / Data Intermediaries (3rd largest)/ EdTech (3rd largest)

Economic assets include:

- University of Bristol one of the UKs most popular and successful universities; and the University of West of England, the largest provider of higher education in south-west England
- Bristol Robotics Laboratory, centre of multi-disciplinary robotics research in the UK
- The National Composites Centre, a world-class research centre

Insights:

- 39,500 jobs in the area are R&D-intensive, 8% of total jobs, and growing at two times the national average
- The area has 44 established innovation clusters centred locally, 29 top 10 UK-ranking, hosting 7,200+ knowledge-intensive firms
- Employees are marginally (-3%) less productive than the national average

An image from Milton Park's 2040 masterplan

// UNLOCKING ECONOMIC GROWTH THROUGH IMPROVED CONNECTIVITY

Cambridge Econometrics has identified several ways in which improved connectivity could unlock opportunities for further economic growth along the corridor.

Connecting innovation

Prime sectors such as the circular economy, life sciences, digital and creative, and advanced physics and engineering all feature strongly in the Swindon-Didcot-Oxford corridor, with clear synergies further west to Bristol. For example, more than a quarter of the jobs within EEH's life sciences sector are in the Swindon-Didcot-Oxford corridor, and there are also 19% of the total workforce engaged in circular economy activities.

The wider corridor to Bristol employs more than 80,000 people in advanced physics and engineering jobs. There are synergies to exploit in this corridor, for instance by facilitating greater connectivity between Bristol, which produces cutting edge research in its robotics laboratories, to centres of potential application in in-orbit space manufacturing and high-performance engineering in Oxford, Swindon, Didcot and surrounding areas.

Strengthening transport connections between Oxford, Swindon and Bristol would facilitate increased interactions and exchanges between these cluster bases. Increased integration between clusters may produce agglomeration effects and enable businesses to leverage effectively the economic and technological assets in both regions.

Several of Oxford's established knowledge clusters spillover into the neighbouring Didcot sub-area which plays an important supporting role. Didcot has four established innovation clusters with In-Orbit Space Manufacturing placing in the UK Top-10. The Harwell Campus for research and technology, Williams Grand Prix Technologies, Culham Campus, and Milton Park are key R&D assets that feed into the growth of established clusters in Oxford and foster cluster development in Didcot.

Simultaneously, enhanced connectivity would enable firms in Oxford and Bristol to expand into the more affordable commercial real estate in Swindon and access economic resources such as the UK Space Agency and Symmetry Park.

Life sciences is a prominent sector across the Swindon-Didcot-Oxford corridor

For a quick guide to the relationship between connectivity, productivity and economic growth turn to page 30.

Boosting productivity

While both the Bristol and Oxford areas boast nationally important dynamic economies, they are hampered by productivity issues. Oxford is 5% less productive than the national average and pre-pandemic productivity growth was -0.1%. Similarly, employees in the Bristol area are 3% less productive than the national average. The Didcot area is marginally better with productivity 6% above the national average. The Swindon area is a notable exception to these corridor-wide muted productivity figures. The area is the most productive in the EEH region (+28% the national average) and pre-pandemic productivity growth also exceeded the national average.

Agglomeration effects, emerging from increased interactions and collaboration/competition between businesses, are an important potential driver of productivity growth. There is a significant opportunity to catalyse agglomeration across the corridor by improving transport connectivity between the considerable and innovative local economies in Oxford and Bristol. Investments in transport infrastructure can increase labour mobility, enabling firms to hire from a larger skilled labour pool, and allow the expertise and capital of established industries in Oxford and Bristol to radiate throughout the corridor.

The highly productive Swindon area is located in-between these economic centres. Infrastructure polices could therefore be an effective framework for supporting productivity growth in Swindon and Didcot and stimulating productivity improvements in Oxford and Bristol.

Increasing access to affordable commercial floorspace

The Swindon sub-area has 3.4bn square metres (m2) of commercial floor space with average costs 24% below the national average. The sub-area is well placed to benefit from the flows of labour and capital between Oxford and Bristol and provide firms in these areas with affordable commercial real-estate to expand into. Firms in the Oxford sub-area, where the costs of commercial floorspace are 31% above the national average, are likely to be constrained by high rental costs. Beyond Swindon, improvements in transport infrastructure would connect businesses in Oxford to the abundance of affordable commercial floorspace across the rest of the corridor with all other sub-areas exhibiting average costs below the national average.

The corridor has the space, at low costs, for new and growing businesses to expand into. Improved transport infrastructure in the corridor would increase the accessibility of local economic centres and work to address the productivity imbalances described above.

Enhancing collaboration between universities

Efficient transport networks could also play a key role in facilitating greater collaboration between students, researchers, and key education assets located at either ends of the corridor. University of Oxford and Oxford Brookes university to the east and University of Bristol to the west together account for nearly 53,000 jobs in the higher education space (Swindon also has an Oxford Brookes campus) – the former in particular supports nearly 35% of all higher education employment in the EEH. Greater connectivity in the region could open avenues for cross university research and help diffuse their benefits to emerging life sciences research and advanced manufacturing centres in central parts of the corridor.

Supporting logistics

Growth in the logistics and freight sector is also heavily dependent on access to reliable, resilient, and well-connected transport infrastructure. At present, logistics and freight activity is concentrated in Bristol and Swindon which currently has 221,320 sq ft of logistics facility under the Symmetry Park development. Investments in transport can facilitate expansion of operations to a wider area and improve the capacity of firms to leverage existing infrastructure, such as the logistics hub and warehouse facilities in Swindon. Enhanced labour mobility would connect workers to more productive jobs and employers to more skilled employees while catalysing collaboration among firms.

Unlocking opportunities for Swindon

People in the wider corridor are also more skilled on average – for instance, 66% of residents have received higher education qualifications in Oxford which is the highest share for any city in the UK. In Bristol and Didcot, approximately 55% of the population has higher education qualifications. Swindon, which lies in the middle of the corridor has a relatively high percentage of low or unskilled residents. Only 35% of people in the area have a higher education qualification compared to the national average of 45%. More than 1 in 10 neighbourhoods in Swindon are classified as the most deprived in the UK. Improving transport networks will facilitate greater participation in education, work, social and other opportunities elsewhere in the corridor. This has positive ramifications for the overall socio-economic wellbeing of the region.

Providing greater choice on housing

With high demand and development restrictions as a result of being on a flood plain and green belt, housing in Oxford is 24% more expensive than the national average. However, moving west along the corridor, housing becomes affordable and accessible. In the area encompassing Didcot, Wantage and Faringdon, housing delivery rate over the decade has been higher than elsewhere in the EEH. A little further west in Swindon, house prices are 23% less than the national average. Relative to the local income, Swindon has the most affordable housing in the wider EEH region. House prices gradually increase as one gets closer to Bristol. In Bristol, buying a house is only 3% more affordable relative to the rest of the country (and house prices are increasing at a rate faster than average).

High build up rates in the corridor will help make housing more affordable but having efficient and reliable transport networks is necessary to sustainably meet housing demand. For instance, good connectivity in the corridor could alleviate housing pressure in Oxford and Bristol by shifting some of demand towards the centre such as in Swindon. By providing a wider set of residential location choice to people working in the region, transport can help balance demand for services and amenities.

HEADLINE CONCLUSIONS

There is a clear and compelling narrative to improve transport infrastructure along the length of this corridor.

Connecting the innovative scientific and technology centres in and between Oxford and Bristol more closely may realise significant agglomeration effects and catalyse growth in the intervening areas, and Swindon in particular.

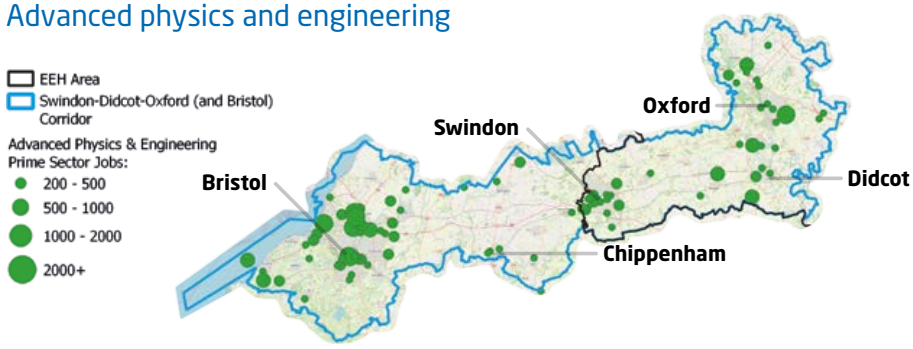
The benefits of closer integration across the corridor through improved connectivity are clearest in terms of the region's prime sectors and innovation clusters:

- Encouraging the advanced engineering prime sector specialism across the corridor, and to encourage specialist knowledge to flow, bringing together the more world-leading advanced physics (notably quantum) and technology-related enterprises around Oxford, with the applied engineering and robotics specialisms Bristol. Similarly, the Higher Education sectors in both areas would benefit from increased collaboration and the capacity to leverage research resources (i.e. laboratories).
- The established science and technology clusters in the Oxford area align closely with those in Bristol and increasing the flow of expertise and capital between these cluster centres would likely spur growth in these specialisms.
- The established advanced physics and engineering and life sciences prime sector specialisms in Swindon, as well the emerging science and technology clusters in this area, would benefit from increased corridor-wide R&D collaboration and economic integration. Swindon is situated in-between Oxford and Bristol, has an abundance of affordable commercial floor space, and is already a highly productive regional economic centre. It is well positioned to facilitate and benefit from the expansion of established industries in Oxford and Bristol.

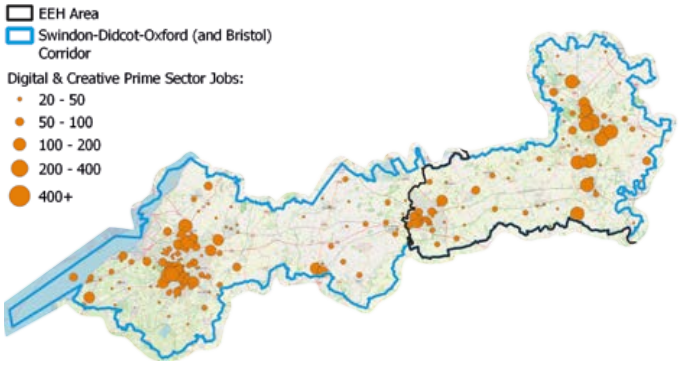
PRIME SECTORS

See page 6 for prime sector definitions

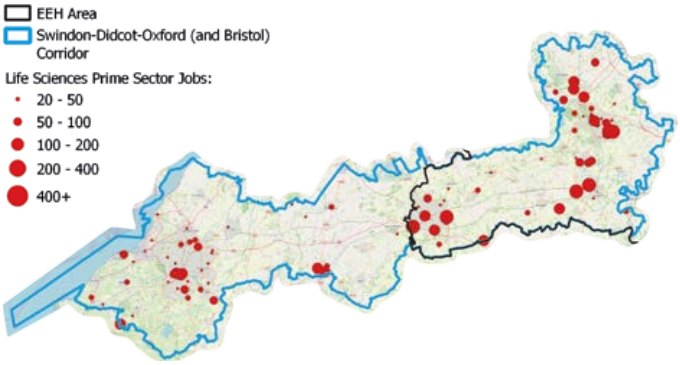
Advanced physics and engineering



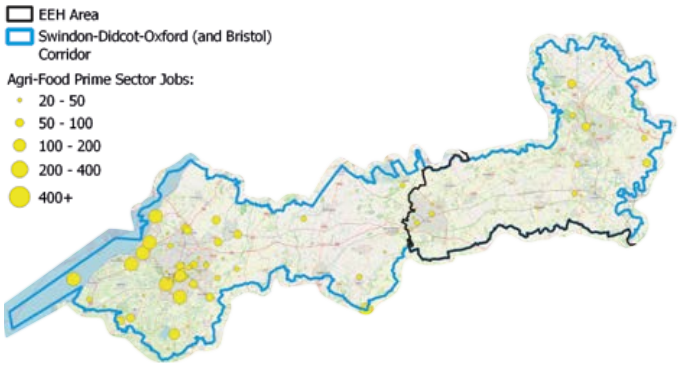
Digital creative



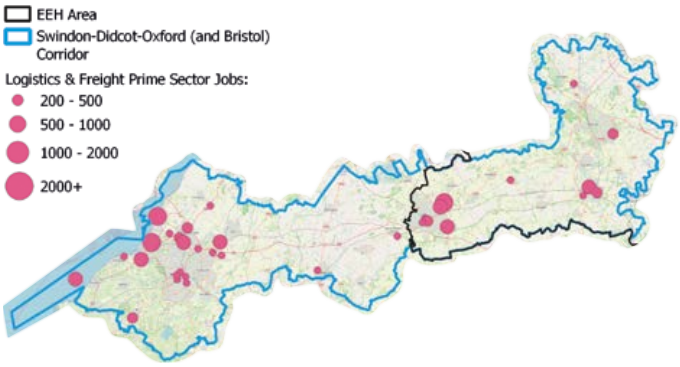
Life sciences



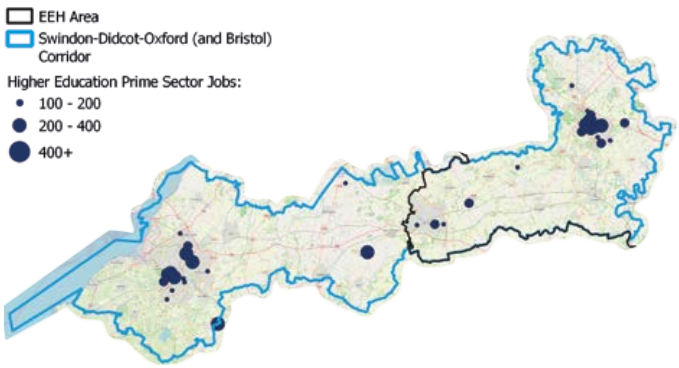
Agri-food



Logistics



Higher education



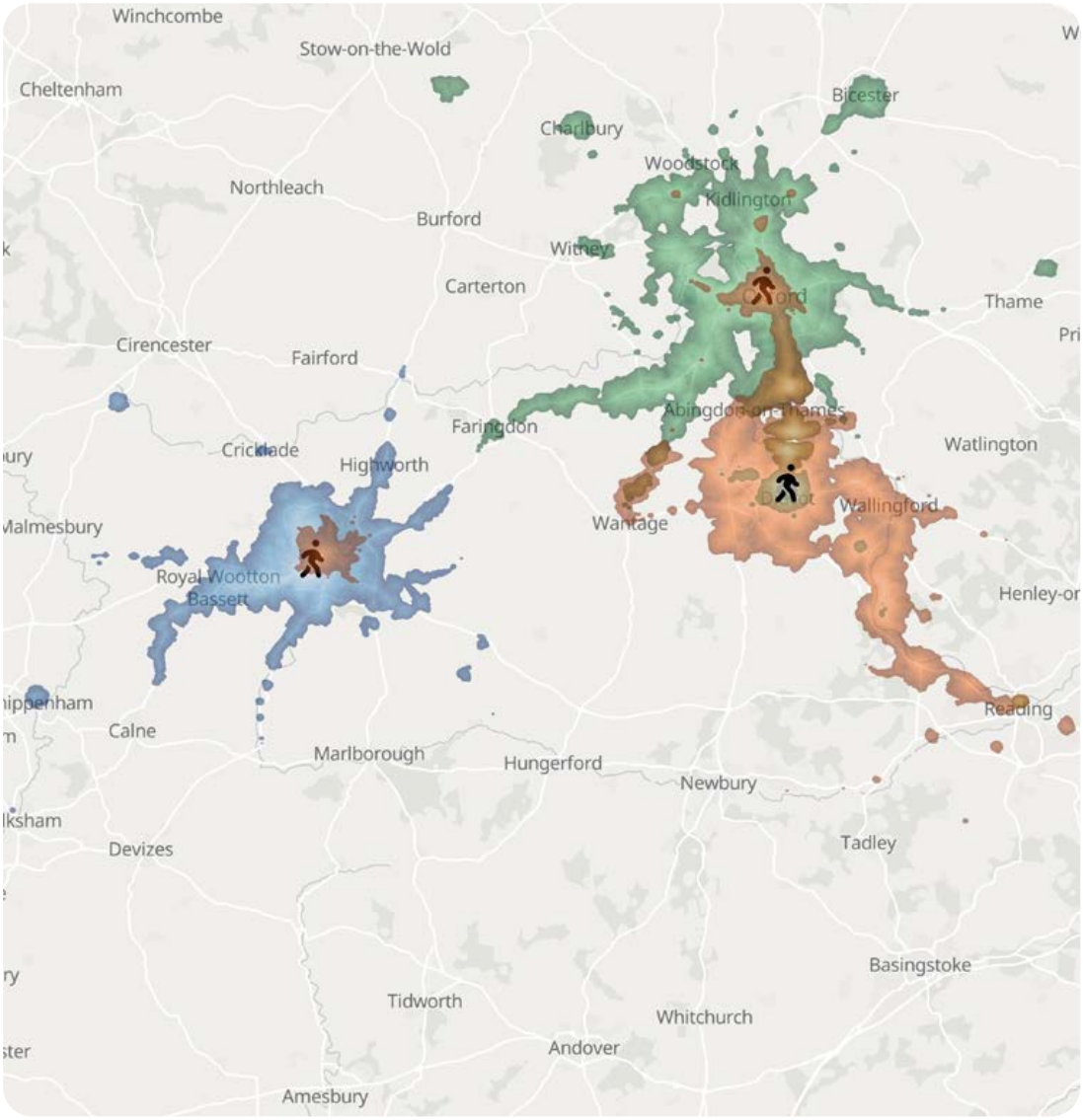
Circular economy

// CONNECTIVITY IN CONTEXT

This section contains a selection of maps, graphics, tables and stats which help build a snapshot of the corridor's transport system. It is by no means exhaustive – for a comprehensive range of evidence and data please see EEH's website.

PUBLIC TRANSPORT

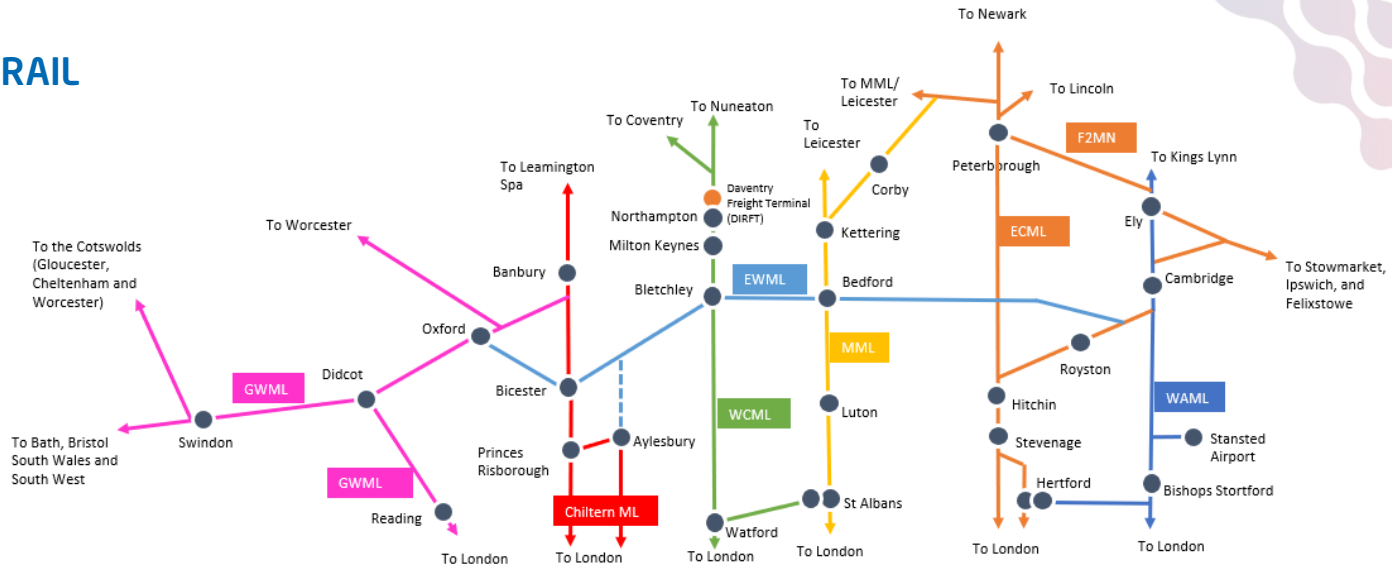
This map factors in average journey times and service frequencies to give a balanced indication of places which can be travelled to within 60 minutes on a weekday morning from a journey starting on foot and using bus and rail. These are from Swindon (blue), Didcot (orange) and Oxford (green). The journeys have been started outside the main rail station. For methodology and assumptions see p31. The map visually demonstrates the challenges of travelling by public transport between the corridor's two main urban centres of Swindon and Oxford.



BUS

High frequency local bus services serve the major settlements in the study area (notably Oxford, Didcot and Swindon). There are two distinct inter-urban bus corridors: A north-south bus corridor between Oxford via Didcot and Harwell Campus (with two buses per hour), and an east-west bus corridor between Oxford and Swindon via Shrivenham, Faringdon and Kingston Bagpuize (with three buses per hour). Several smaller settlements within the corridor lack access to high frequency bus services, while some smaller villages to the west of Wantage are not served by any buses at all.

RAIL



The diagram above shows the main lines within the EEH region (including the proposed East West Rail line between Oxford and Cambridge). There is no direct service between Swindon and Oxford, despite the potential to do so utilising existing infrastructure. As things stand, passengers between Oxford and Swindon have to interchange at Didcot Parkway.

It means this journey has a generalised journey time (GJT – which factors in frequency and interchange) of 79 minutes. Oxford to Didcot has a GJT of 40 minutes; Swindon to Didcot is 38 minutes. There is a GJT of 64 minutes between Swindon and Bristol, and 135 minutes between Oxford and Bristol.

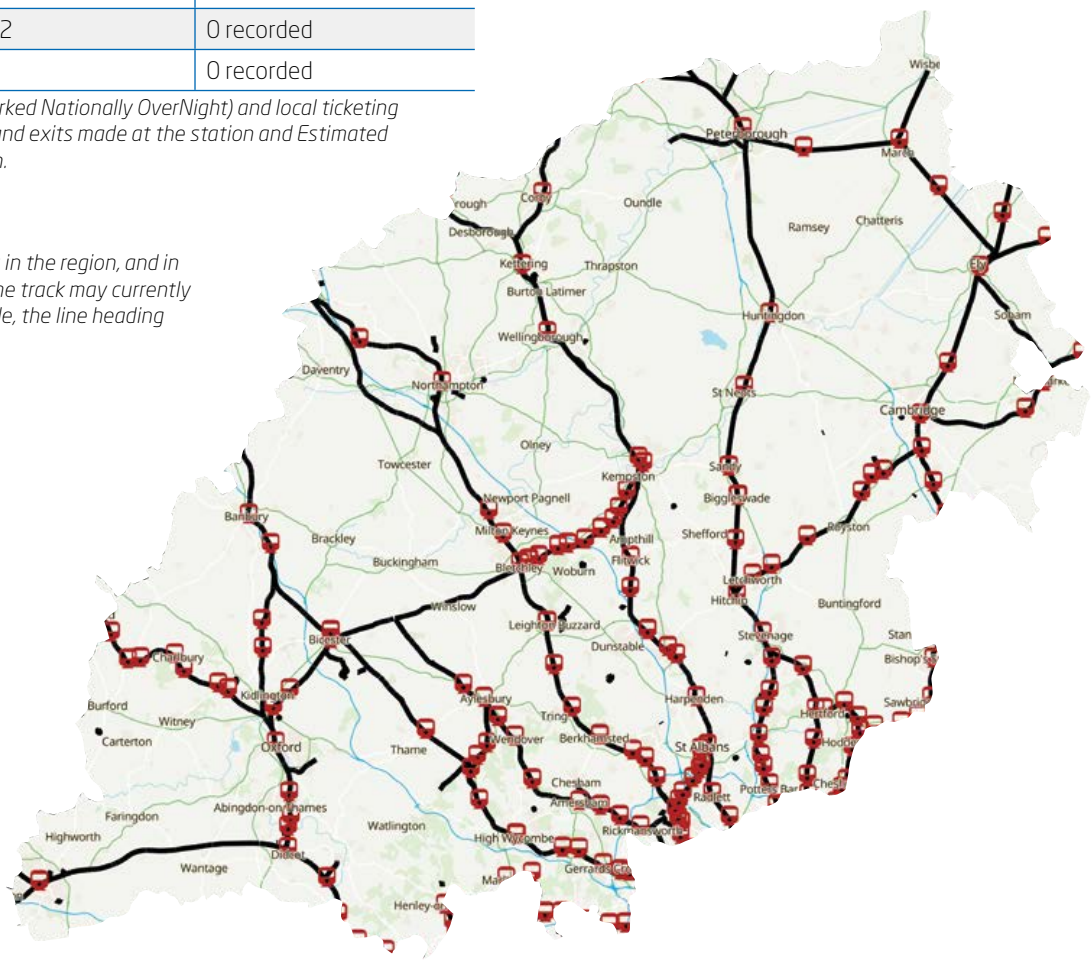
Station usage

Station	2022-23	Interchanges 2022-23
Oxford	6,581,606	514,180
Swindon	2,588,014	189,382
Didcot Parkway	2,329,704	545,574
Oxford Parkway	584,930	0 recorded
Cholsey	212,398	0 recorded
Radley	102,132	0 recorded
Culham	80,752	0 recorded

Source: LENNON (Latest Earnings Networked Nationally OverNight) and local ticketing data. Estimated total number of entries and exits made at the station and Estimated total of interchanges made at the station.

Station locations

This map shows the locations of stations in the region, and in black the entire network of rail track. Some track may currently be heritage rail or freight only, for example, the line heading northwards from Aylesbury.



CONGESTION

The map below shows congestion hotspots in the corridor (for methodology, see page 31; it is recognised that lower speeds in more urban areas may not necessarily constitute a 'congestion problem').

Notable pinch points include:

- A34 south of Oxford
- A338 / A415 Frillford Junction
- A415 / B4015 Clifton Hampden
- B4019 in Highworth
- Milton Interchange at Didcot
- Several Junctions within Wantage
- A419 Southeast of Swindon

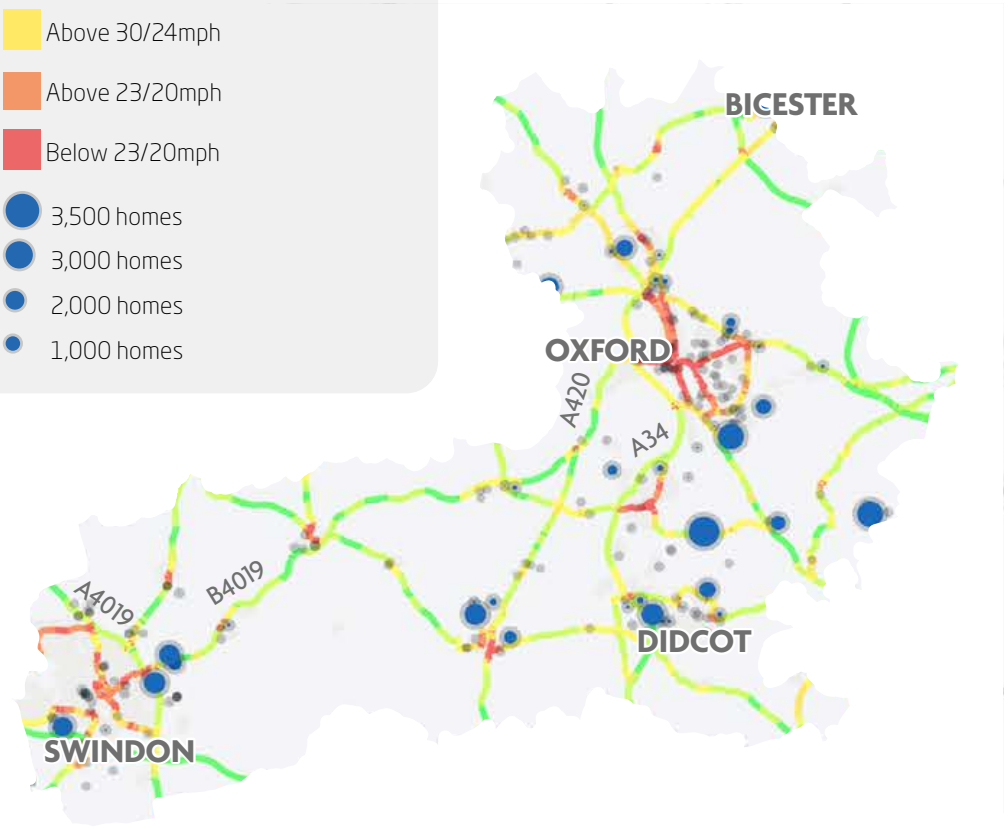
HOUSING

The map is overlaid with housing sites allocated in current local plans. There are major development sites allocated throughout the corridor, including, for example, Culham (3,500 homes); Grenoble Road, south of Oxford (3,000); Valley Park, Didcot (2,550); and Grove Airfield, near Wantage (2,500). There are several major housing sites around Swindon including Wichelstowe (2,273) to the west and, to the east, the New Eastern Villages sites – at a combined 8,000 homes one of the largest greenfield developments in the country, with its eastern boundary reaching the point at which the River Cole meets the A420.

Legend:

Congestion score morning peak hour

- The average speed on this section is above 66mph for a dual carriageway/motorway and 46mph for a single carriageway
- Above 59/36mph
- Above: 43/28mph
- Above 30/24mph
- Above 23/20mph
- Below 23/20mph
- 3,500 homes
- 3,000 homes
- 2,000 homes
- 1,000 homes



SMART JUNCTIONS

A study by City Science for EEH, due to be published shortly, identifies initial opportunities for smart junction technology for existing signalised junctions on key strategic corridors in EEH.

Smart junctions are emerging as a key way in which road capacity can be optimised, easing traffic flow or supporting journeys by public transport or active travel. This is based on vehicular demand, including for HGVs, congestion, key bus routes and collisions.

Based on congestion, demand and its use as a high frequency bus corridor, it identified the A34 and A420 as being a potential focus corridor for smart junction technology.

In addition, Swindon (238) and Oxford City (168) which have the first and third highest number of signalised junctions in EEH, alongside factors such as collisions involving a pedestrian or cyclist and the presence of an AQMA, were also identified as priority urban areas for smart junction technologies.

DIGITAL CONNECTIVITY

A Settlements include: Oxford, Abingdon and Woodstock

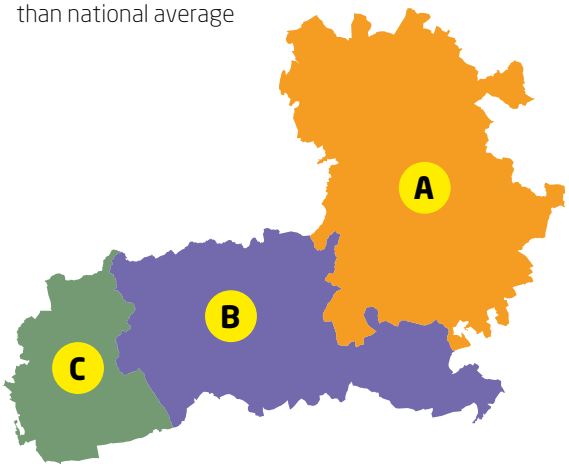
- 71% of homes covered by ultrafast broadband, above national average (69%)
- 37% of firms are covered by ultrafast broadband, below the national average (43%). Average download speeds are 6% faster than the national average

B Settlements include: Didcot, Wantage and Faringdon

- 65% of homes are covered by ultrafast broadband, below national average (69%)
- 36% of firms are covered by ultrafast broadband, below the national average (43%). This is the fifth lowest of the 18 sub-areas covering EEH. Download speeds are 5% slower

C Settlements include: Swindon

- 87% of homes covered by ultrafast broadband, above national average (69%) and highest of the 18 EEH sub-areas
- 60% of firms are covered by ultrafast broadband, above national average (43%), whilst average download speeds are 12% faster than national average



Key

Ofcom Connected Nations 2023. First bullet relates to home premises only, second is for commercial premises only.

IMPORTANCE OF DIGITAL INFRASTRUCTURE

Digital infrastructure is crucial to a high-performing, greener transport system and the wider economy. This includes through removing the need to travel in the first place, unlocking new technologies to enhance business productivity, and improving physical movements via intelligent transport systems and smart journey planning. Its transformative potential is particularly strong in rural areas, where digital services have traditionally been poor, yet where there is often a high reliance on journeys by private car.

A bus and cyclist in central Swindon

ENGLAND'S CONNECTED HEARTLAND

England's Connected Heartland (ECH) is a 5G 'Innovation Region' encompassing Oxfordshire, Buckinghamshire, Central Bedfordshire, Cambridgeshire and Berkshire. EEH supported its successful grant application to Department for Science, Innovation and Technology and works closely with its project team. Acting as a 'real world' testbed, its projects are designed to be replicable within the region and across the UK.

This includes:

- Deploying a 5G network along poorly connected sections of East West Rail between Bicester and Bletchley. This will improve passenger connectivity as well as deliver functional improvements for onboard devices, for example around train condition sensors and CCTV. It will offer connectivity options for trackside neighbours including public services providers, agricultural and other rural businesses and potentially communities.
- Deploying a 5G network at the Harwell Science and Innovation Campus in Oxfordshire. Advanced wireless connectivity provides a key foundation for enabling the digitalisation of R&D and advanced manufacturing sectors. The project will improve understanding of how similar networks can be deployed across other science or innovation parks in the region and elsewhere.

// PRIORITY INTERVENTIONS

Having outlined the economic rationale for improved connectivity along the corridor, the following section forms a compendium of our investment requirements: the specific improvements which our evidence base demonstrates are key investments for our country's economic prosperity. They all have strong strategic value, including their benefits to local and regional connectivity and economic growth – and they have strong political support from our local and combined authority partners. Our ask to government, MPs and wider stakeholders over the coming months is to work with us, to ensure our highest priority schemes are supported, progressed and delivered at the earliest opportunity.

IMPROVING MULTIMODAL CONNECTIVITY ALONG THE A420

The A420 is part of the major road network and links Swindon directly to Oxford. It is often used as a short cut for traffic travelling between the A34 and M4/A419 on the strategic road network, and for traffic avoiding the congested A34 corridor.

The result is that the A420 carries a significant amount of strategic through traffic, especially HGV traffic, conflicting with local traffic movements and contributing to air quality, congestion and road safety issues.

A key ambition is to remove unnecessary journeys from the A420 by encouraging strategic traffic movements, especially freight movements, to remain on the SRN. This needs to balance the conflict between strategic and local traffic movements to address road safety, environmental and air quality impacts on the local communities that live on and close to the corridor: supporting an 'avoid, shift and improve' approach to traffic along the corridor.

This would help to support greater journey time reliability, including for buses, and avoid the need for unnecessary highway capacity improvements as well as achieving significant improvements in air quality on local communities along the corridor.

The vision for the A420 is for a high quality multimodal corridor that supports connectivity by bus, walking and cycling, with reduced and more reliable journey times for buses to create a real alternative to using the car to access both Oxford and Swindon and villages and towns along the corridor such as Kingston Bagpuize, Faringdon and Shrivenham.

Measures include providing upgrades to bus services such as the S6 service on the A420 supported by improvements to existing bus stops, with better and safer access to these as part of local walking and cycling network improvements, creating bus priority at junctions on the A420 to facilitate safer access from the A420 to local villages that the buses serve.

The multimodal corridor would be supported by upgrades to walking and cycling accessibility, especially to bus stops and would be supported by the creation of mobility hubs serving Oxford and Swindon.

Road safety would be improved through junction improvements, roundabouts and signalisation of junctions, and better crossing facilities for pedestrians and cyclists to access bus stops and to be able to have better access to villages on the other side of the A420.

Next steps: Further develop the concept of the core bus network outlined in Oxfordshire County Council's Central Oxfordshire Travel Plan along this corridor, in collaboration with Swindon Borough Council. This includes mobility hub/park and ride proposals and a detailed A420 Corridor Travel Plan, to identify a prioritised programme of improvements.

RAIL SERVICES TO BRISTOL AND NEW STATIONS ALONG THE GREAT WESTERN MAIN LINE

The reinstatement of the Oxford to Bristol service via Swindon would create an important connection between Oxford, Swindon, Bath and Bristol – also providing a direct service between Swindon and Oxford without the need to change at Didcot.

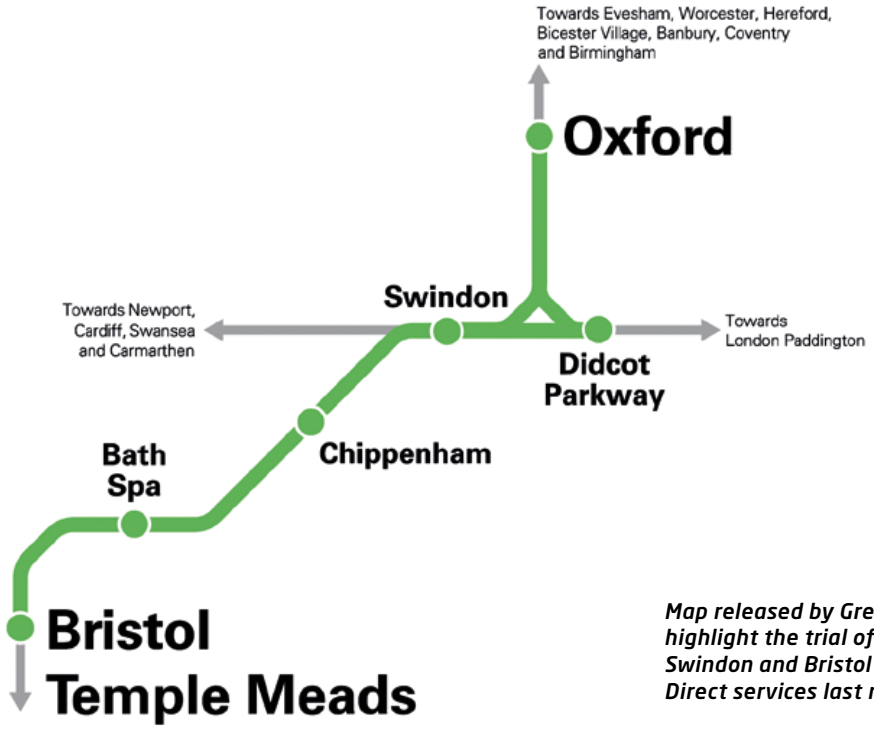
Reducing journey times by around 30%, this service would offer a real, competitive alternative to the car, unlocking economic and leisure opportunities along a corridor which is home to some of the UK's most successful economies, innovation clusters and universities. It is proposed that the service would initially be hourly and in the short-term would serve the stations of Oxford, Swindon, Bath and Bristol Temple Meads. With the provision of redeployed rolling stock, services could be operating within the next few years.

This would complement the opening of East West Rail from Oxford to Milton Keynes, allowing interchange at Oxford for onward connections. Indeed, a key priority for EEH is the realisation of an East West Main Line, using East West Rail between Oxford and Cambridge to enable a direct coast-to-coast service from Ipswich and Norwich all the way through to Swindon, Bristol and South Wales. This ambition is also shared by Transport East and Western Gateway STB which sit with EEH on the East West Main Line Partnership. The opening of the services from Oxford to Bristol would mark a very important milestone towards this ambition. A trial service is due to run during late 2024.

There is also a need for improvements to the Great Western Main Line and Cherwell Valley Line, including full electrification, especially between Didcot and Oxford; and the extension of intercity and regional rail services for both freight and passengers.

New stations along the Great Western Main Line are proposed to support planned sustainable housing growth in Oxford at Wantage and Grove, East Swindon and Royal Wotton Bassett in Wiltshire. To fully realise the benefits of these new stations, additional infrastructure to enhance capacity, including additional tracks between Wantage/Grove and Swindon, will be required.

Next steps: EEH, East West Main Line Partnership and its partners will support securing funding for Bristol Oxford direct hourly service as stage one of enhanced direct connections. This includes developing the business case for subsequent improvements including additional services and new stations.



Map released by Great Western Railway to highlight the trial of services between Oxford, Swindon and Bristol due to take place in late 2024. Direct services last ran in 2003.

DELIVERING THE SWINDON KNOWLEDGE CENTRAL STATION UPGRADE

Network Rail is working with partners on a major regeneration scheme called 'Swindon Knowledge Central', which would deliver a new knowledge-based hub of national significance around Swindon Station.

The station would be upgraded alongside the development of the adjoining 100 acres of brownfield land. A thousand new homes and the opportunity for 5,000 new jobs would be created, making the development one of the largest new regeneration projects in the UK.

The redeveloped station would act as a catalyst for growth, playing a major role in delivering Swindon's high-tech revolution.

Delivering Swindon's Knowledge Central unlocks an opportunity to enable an integrated public transport network with reach beyond the Borough. This gains better value for money from capital investment in the development around the station and the new bus interchange (opening 2025 – see boxout), while the proximity and visible investment in attractive, multipurpose space for connectivity supports modal shift. These well-connected, sustainable, resilient public transport opportunities would help deliver accessibility and reduce carbon footprints for local and regional journeys.

Next steps: A Strategic Board has been established. Chaired by Heidi Alexander MP, the board will oversee delivery of the scheme. The first meeting of the board will be in September 2024. Also represented on the board are Swindon Borough Council, London and Continental Railways, Business West, Department of Business and Trade, UKRI, Intel, University of Bath and Homes England. A prospectus and concept masterplan have been prepared to highlight the scheme's potential. Governance arrangements are currently being agreed between landowners. A detailed masterplan and delivery plan will follow.

Harnessing Swindon's prime location through improved connectivity

Improved connectivity will help Swindon realise the potential from its strategic location in the country, which provides a pivotal point for people, goods and services to flow through, to, and from. Congestion on the surrounding road network demands that mass transit options are supported in order to deliver the best opportunities to residents and share Swindon's offer regionally and nationally. Rail can be exploited beyond the main line link between Swindon and London. Opportunity lies in the traffic flows along the A420 and regional and inter-regional journeys for both passengers and freight. There is a strong drive to unlock Swindon's rail potential in a way which supports local, regional, and national objectives. Links with Westbury in Wiltshire are under-exploited and land values along existing rail corridors offer economic potential for less London centric routing which would support local growth.

ELECTRIC BUS AND LOGISTICS INFRASTRUCTURE

Swindon's 'Bus Interchange' will provide a sleek and modern hub for inter-regional and inter-modal connectivity. To maximise this opportunity, there is a need to provide infrastructure which will enable upgrades to the vehicle fleet which improves the user experience while supporting the shift to net zero – namely electric bus and logistic fleet charging capability.

This is the missing piece of the infrastructure jigsaw which has so far prohibited grant fund applications being made. Achieving this early in relation to development in Swindon, maximises benefits to be gained from existing and planned investment.

Next steps:: The need for charging infrastructure is a key theme in the Swindon Bus Strategy (Bus Service Improvement Plan – BSIP). A full scoping exercise is recommended. The significance of Swindon in terms of logistics and the regional economy requires the town to be planning for capability for business to make the transition for logistical fleet as well as bus.

Artist's impression of the new bus interchange in Swindon

IMPROVING OXFORDSHIRE'S CORE BUS NETWORK

Oxfordshire has historically had some of the highest levels of bus patronage in the country.

In 2019 a total of 40.8 million bus journeys were made with 59.0 journeys per head of population, making Oxfordshire the best performing shire county in terms of bus use per capita. Patronage today is around 90-95% of pre-COVID levels.

Oxfordshire County Council wants to create an environment where people choose to use public transport, walking and cycling as the natural first choice. The focus is on reducing car dependency in and around Oxford through enhanced public transport services, zero emission buses, expansion of the Zero Emission Zone, modal 'traffic filters', workplace parking levy and bus priority, and making the best use of existing road infrastructure to maximise its use for active and public transport modes.

The proposalsare expected to support faster, more direct connectivity by public transport and will substantially improve air quality and reduce congestion in the Oxford urban area through avoiding unnecessary vehicle journeys and moving more car trips onto improved public transport services, and active travel modes such as walking or cycling.

Improvements in bus services will need to be complemented by improvements in interchange for onward transport connections. This will include development of mobility hubs at key locations such as on the A44 south of Woodstock and Oxford Parkway station.

Next steps: Oxfordshire County Council will work with its partners, stakeholders and local communities to introduce a Traffic Filter Trial and develop proposals to expand the Zero Emission Zone and a Workplace Parking Levy. The latest Oxfordshire Bus Service Improvement Plan was adopted in June 2024 and will continue to secure the bus service improvements through the Enhanced Partnership.

REOPENING OF COWLEY BRANCH LINE

There are exciting plans to regenerate south Oxford, home to the Oxford Science Park, ARC Oxford and several important science parks and the Mini factory.

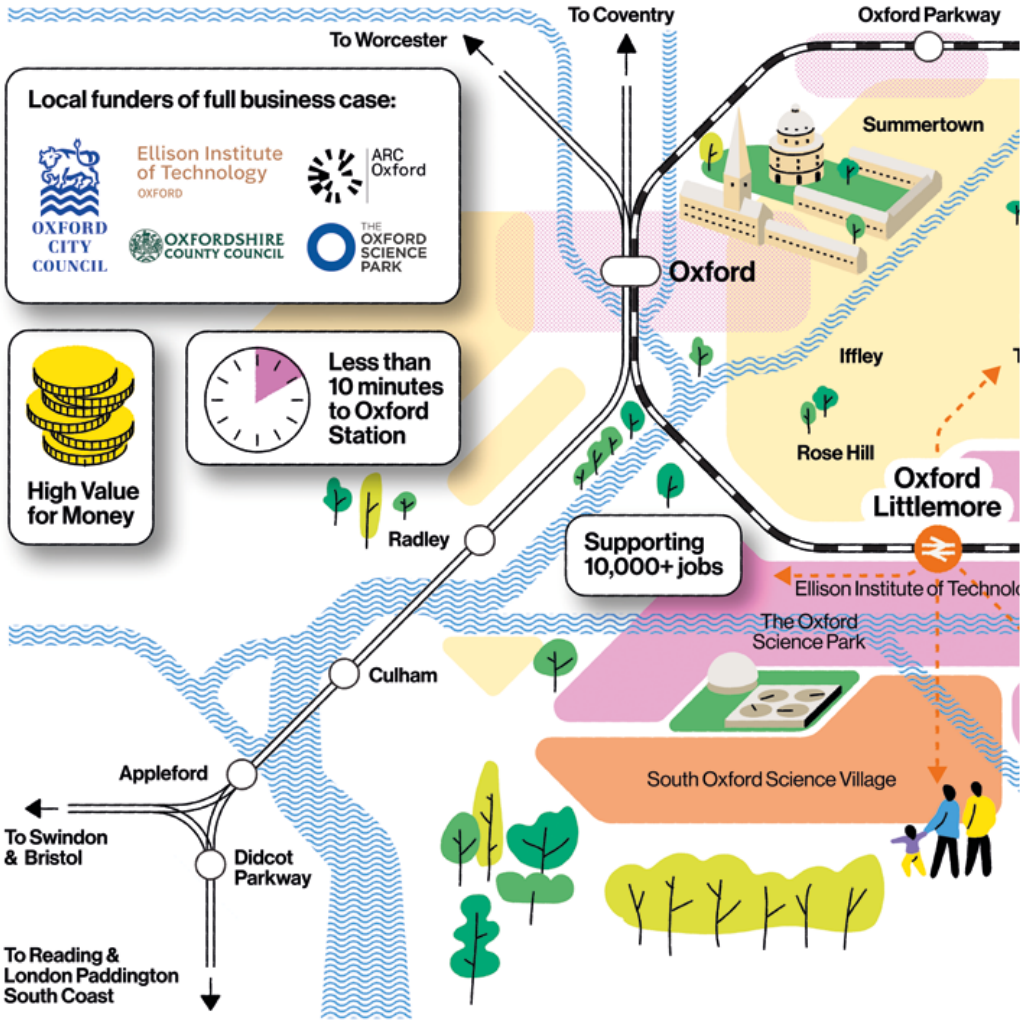
The Cowley branch line is currently used exclusively for freight. This project would see passenger services introduced and new stations at "Oxford Littlemore" (for Littlemore and The Oxford Science Park) and "Oxford Cowley" (for Blackbird Leys and ARC Oxford) – significantly increasing access to sustainable mobility within and to/from Oxford and cutting road congestion.

It would support more sustainable development of planned strategic housing sites at Grenoble Road and Northfield Farm (approximately 4,800 homes), while connecting significant employment sites (including four hectares of employment identified within 2.5 km of new stations). Existing and new residents would be able to access the city centre in less than 10 minutes.

The proposal is for a half hourly service from "Oxford Cowley" through to Oxford and onto London Marylebone. Passengers would also be able to access East West Rail via a single interchange, contributing to an enhanced rail network across the region.

Network Rail estimates that more than 1,000,000 journeys per year would be made using the new stations after only three years of operation. All of this while still safeguarding the continued use of the line for freight operations.

Next steps: Partners in Oxfordshire to finalise the 'Cowley Plus' project, which includes the business case, timetabling and rolling stock strategy.

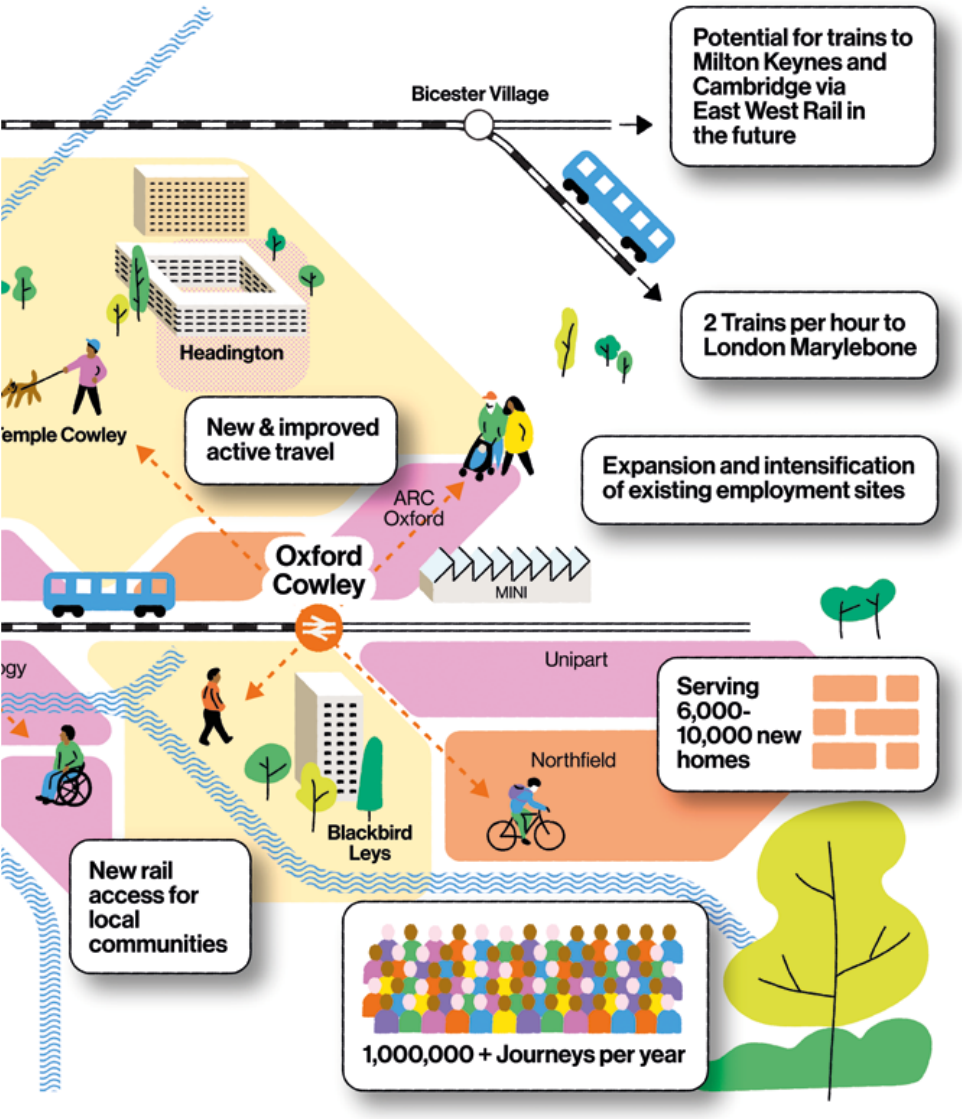


Developing a strategy for rail in Oxfordshire

Oxfordshire sits at a strategic position on the national rail network, with passenger linkages to the west and London via the Great Western Main Line and to the Midlands via Banbury.

It will also have new links to the east via East West Rail, and is on a key rail freight route between the south coast and the Midlands and north.

The Oxfordshire Rail Corridor Study, jointly developed between Oxfordshire local authorities and the rail industry, recognised this strategic position, but also the need for the rail network to continue to develop to support economic growth, both in Oxfordshire and beyond. In particular, it identified the need for focused investment to enable enhanced and new services through Oxfordshire, including to Cowley linking



with major new development areas, new services from East West Rail to majorly upgraded or new stations including Culham, Didcot and Wantage and Grove, as well as enhanced services along the Cotswold Line, and towards Bristol.

The upgrades underway at and close to Oxford station are key to unlocking the potential of rail in Oxfordshire, but more will be needed to enable all planned services to come forward, including capacity enhancements between Oxford and Didcot and Oxford and Hanborough, as well as completing electrification of the lines through Oxfordshire. Local and regional partners will continue to work with the rail industry and central government to enable and plan for delivery of these improvements, including identifying priorities for investment in a new rail strategy for Oxfordshire.

UPGRADING OXFORD STATION

Through the Oxfordshire Connect project, Oxford Railway Station is being expanded and the wider area upgraded to support East West Rail services.

The programme is upgrading Oxford Station, expanding the railway infrastructure in the area and improving the local road network, including:

- A bigger, improved railway station
- Provision for East West Rail services
- More rail capacity for the future
- A safer road layout

This investment underway is an essential part of the transport strategy for the wider region and plans for growth, increasing rail capacity for passengers and freight and reducing congestion.

The wider redevelopment of the station to increase its capacity further remains a central rail priority in the Oxfordshire Infrastructure Strategy. To realise this, local partners and landowners have funded a masterplan, in partnership with Network Rail to:

- Futureproof a second new track and platform to ensure capacity through Oxford Station can be increased and supports additional service enhancement and connectivity opportunities, subject to the availability of industry funding.
- Provide a much-needed gateway to one of the UK's global cities, creating better integration with public and active travel modes to facilitate the doubling of passengers expected by 2050, unlocking land for commercial development.
- Be a catalyst for the Oxford West End Opportunity Area, which has the potential for over 4.5m sq. ft. of lab and innovation space in the heart of the city centre.

Next steps: Partners to devise an 'interim improvements programme' for delivery over the next three years. This will help to cater for growing passenger numbers and provide a more welcoming experience to the city for visitors and investors.

IMPROVING CONNECTIVITY ON THE A419/A417

There are challenges with the east side of Swindon as a number of the junctions are substandard and with capacity challenges.

The A419 connects Swindon's M4 junction 15 to Gloucester's M5 junction 11a. It suffers from peak hour congestion resulting in journey reliability issues, including for local bus services. The route is predominantly dual carriageway, with a missing section that is single carriageway at Birdlip in Gloucestershire that contributes to localised congestion but if addressed could increase traffic on parts of the substandard sections of A419.

Next steps: The A419/A417 Strategic Travel Demand Management Pilot is considering development of a strategic approach to travel demand management for the A419 corridor from J15 M4 to M5 J11a (Gloucester). This highly proactive travel demand management approach will look at the role for public transport and sustainable modes linking Swindon, Cirencester and Gloucester / Cheltenham. It is in parallel with the mobilisation of the A417 Missing Link project near Gloucester and improvement of junctions east of Swindon to reduce localised congestion and improve journey time reliability for local and express bus services in particular.

The proposals are designed to complement and is additional to committed work from National Highways. This will look at the aggregate impacts and opportunities arising from new development and induced traffic, as well as the role of sustainable transport options in 'normal' conditions and in the event of unforeseen disruption events on this corridor.

IMPROVING BUS JOURNEYS ALONG THE A34 BETWEEN ABINGDON AND OXFORD

The A34 is a key part of the strategic road network, connecting the ports in the south to the Midlands.

However, it also plays a key role in local connectivity in and around Oxford and the wider area. It suffers from peak hour congestion with high levels of HGV traffic that result in journey time unreliability, air quality issues and creates severance impacting local communities.

Part of the proposals to support Oxfordshire County Council's Local Transport and Connectivity Plan are proposed A34 bus priority measures to provide faster and more reliable journey times between Abingdon and Oxford that would support the introduction of new express bus services.

Proposed measures include:

- Capacity improvements at the Hinksey Hill/ A34 interchange to better facilitate the movement of express bus services through this junction
- New bus lane on the A34 between Lodge Hill and Hinksey Hill
- Capacity improvements and bus priority measures at and on approach to the A4130/A34 Milton Interchange

In addition to committed work from National Highways, there is also a need for targeted junction improvements on the A34 to improve journey time reliability for local and express bus services, in particular at Hinksey Hill Interchange.

Next steps: Further develop the concept of the Core Bus Network outlined in Oxfordshire County Council's Central Oxfordshire Travel Plan, including potential for Mobility Hub/Park and Ride proposals along the along this corridor and a detailed M40/A34 SRN Corridor Travel Plan.

DIDCOT AND SURROUNDING AREA INFRASTRUCTURE IMPROVEMENTS

Oxfordshire County Council is proposing to deliver four schemes in and around Didcot that will support new housing and employment sites, improve pedestrian and cycling connectivity for work and leisure trips, reduce congestion, and enable more reliable bus journey times.

They will include improvements to existing roads and the construction of new roads, new walking and cycle routes, and will enable new and enhanced bus services.

The four schemes are:

Widening of the A4130: The creation of a dual carriageway east of Milton Interchange with 1.6km of high quality and segregated walking and cycling facilities, linking to the future development at Valley Park and Didcot Science Bridge.

Didcot Science Bridge: A new single-carriageway road bridge over the A4130, Great Western Main Line, and Milton Road, connecting to a new link road through the former Didcot A Power Station. The element connects with the A4130 north of Purchas Road roundabout. High-quality and segregated cycling and pedestrian facilities will be provided along the length of the scheme.

Didcot to Culham river crossing: A new single carriageway link road between the A4130 at Didcot and the A415 at Culham, with high quality and segregated walking and cycling facilities. It will include a new bridge over the Appleford Railway sidings and a new bridge over the River Thames.

Clifton Hampden bypass: A new single-carriageway link road between the A415 at Culham Campus and the B4015 to the north of Clifton Hampden, with shared-use walking and cycling facilities.

In March 2019, Homes England awarded £218m for the scheme. It is intended that further funding from various sources will be used, including from developer contributions (Section 106), the Oxfordshire Local Enterprise Partnership, and from Oxfordshire County Council's capital budget.

Next steps: A public inquiry on the proposals took place in the first half of 2024. The inspector is now drafting her report for the Secretary of State for Housing, Communities and Local Government (who will determine the planning element); and the Secretary of State for Transport (who will determine the compulsory purchase order element).

Artist's impression showing Didcot Science Bridge scheme

What are mobility hubs?

Mobility hub projects are increasingly being promoted in the UK to help provide solutions to some of our most challenging transport issues.

"Mobility hubs are highly visible, safe, and accessible spaces where public, shared and active travel modes are co-located alongside improvements to the public realm, along with community facilities where relevant. The redesign and reallocation of space away from the private car enhances the experience for travellers and creates a more pleasant environment for everyone" (Source: CoMoUK).

Mobility hubs are a modular concept bringing together, or aggregating, a range of components, specific to each location. The combination of components should support the following elements.

Choice of sustainable modes

Including with public transport, shared mobility, such as car club, e-bikes or e-scooters*, and cycle parking provision

Visibility and accessibility

Hubs need to be part of a recognisable network with clear signage and branding, disabled access and active travel routes

Ease of switching between modes

Both in terms of physically and digitally linking the use of the different modes

Safety

The design and facilities should ensure traveller safety is a key factor by ensuring areas are well lit and covered by surveillance

Practical facilities

Good design will consider what non-transport practical additions can be included, such as shelter, toilets, wi-fi, parcel lockers and freight consolidation

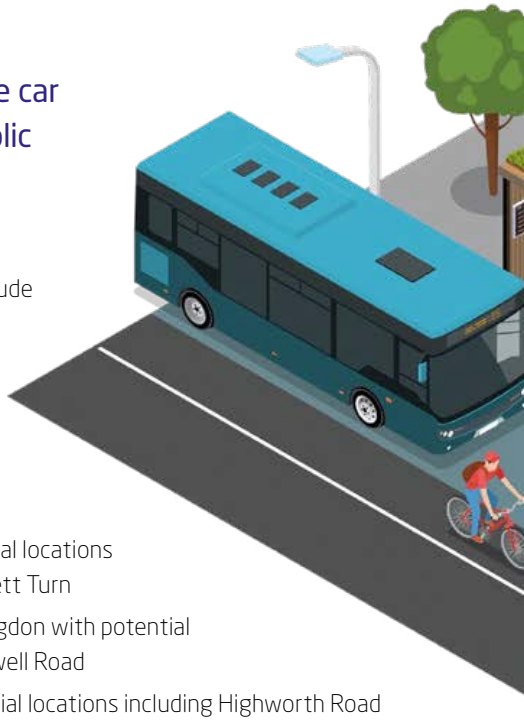
Visual, social and community appeal

Enhance the area visually through green infrastructure, and provide a contribution to the social and community fabric

* E-scooters are currently illegal to use on public roads unless part of UK Government trials

ADDITIONAL MOBILITY HUBS ALONG THE CORRIDOR

Mobility hubs are important strategic transport nodes that help to reduce car dependency by encouraging use of more sustainable modes such as: public transport, cycling, micromobility and walking for all or part of journeys.



They facilitate seamless interchange and can vary in scale reflecting the needs of the local community and local geography and can provide a range of facilities such as retail, office, electric charging etc with the objective of maximising opportunities of users to choose more sustainable modes for all or part of a given journey.

The Swindon-Didcot-Oxford corridor already benefits from several strategic mobility hubs that provide a central point for users to transfer between different modes of travel. Most notable among these are the "Park & Ride" facilities located around Oxford which provide private car users in particular the ability to avoid driving into central areas by connecting with frequent and reliable bus connections.

There is an opportunity to build upon their success by introducing further mobility hubs in the area, including along the A34, A4074 and A420, as identified by EEH's Swindon-Didcot-Oxford connectivity study and including the identified potential sites in Swindon, new Eastern Villages and Wichelstowe.

A420 Mobility Hubs

Options to be explored include the below, with a particular benefit being the integration of the S6 bus service:

- Besselsleigh or Kingston Bagpuize / Southmoor with potential locations including Charney Bassett Turn
- On A420 south of Faringdon with potential locations including Coxwell Road
- Shrivenham with potential locations including Highworth Road or Pennyhooks Lane
- Watchfield
- East of Swindon, linked to the New Eastern Villages development area.

A34 Mobility Hubs

Options to be explored are focused around existing A34 junctions and include:

- Lodge Hill
- Milton Interchange
- Harwell Campus, close to the A34 Chilton Interchange
- Marcham interchange, providing attractive sustainable connectivity for onward journeys to Oxford and Abingdon
- Near Radley, providing attractive sustainable connectivity for onward journeys to Abingdon-on-Thames

M4 Junction 16 at Wichelstowe

The flagship Wichelstowe housing development is a joint venture between Swindon Borough Council, Barratt Homes and David Wilson Homes. It will deliver 4,500 new homes, alongside community facilities, to the south of the town and north of the M4. A mobility hub would support the council's ambitions for Wichelstowe to be an exemplar for sustainable housing growth.

Next steps: Oxfordshire County Council and Swindon Borough Council are undertaking studies to understand opportunities for mobility hubs. Their work will be supported by England's Economic Heartland, which is developing a regional investment prospectus for mobility hubs. It has already developed a tool for identifying potential locations, and guidance for writing mobility hub business cases.

Image is kindly provided with permission from www.como.org.uk

// PRINCIPLES FOR SUCCESS

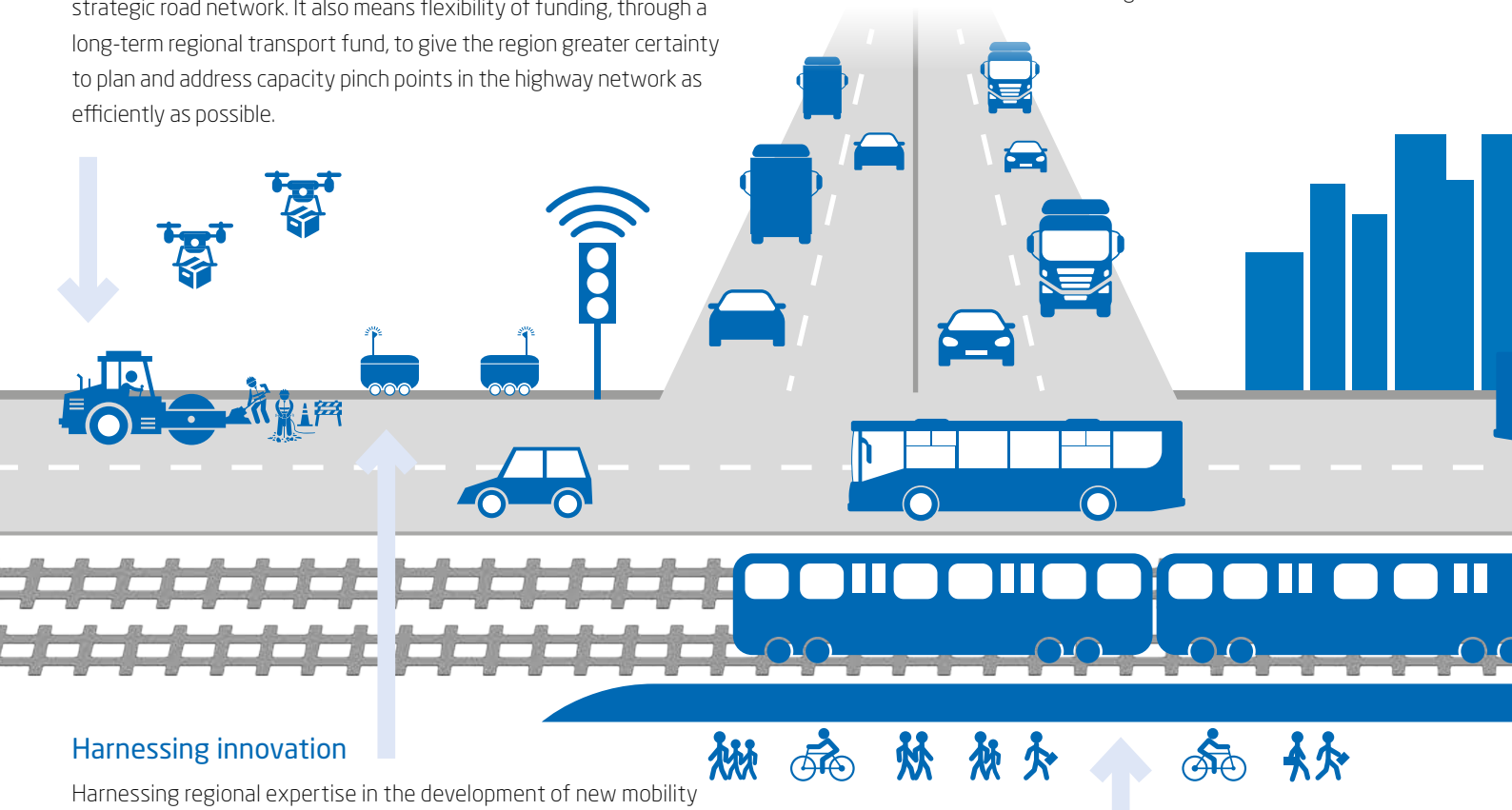
This brochure details the priority infrastructure – some major, others comparatively minor investments – which are required to improve connectivity across its geography. However, it is not just securing funding for new infrastructure that is important, we must be able to make the most of our existing infrastructure and maximise the benefits that we can extract out of new infrastructure- stretching the benefits to as many of our communities and businesses as possible.

Well-functioning roads

The region's existing road capacity must be well maintained and managed so the maximum amount of benefit can be leveraged for all road users, in line with local place-based ambitions. For local authorities this means receiving appropriate levels of roads maintenance funding which take account of the impact of climate change and also that of traffic which has been generated by the strategic road network. It also means flexibility of funding, through a long-term regional transport fund, to give the region greater certainty to plan and address capacity pinch points in the highway network as efficiently as possible.

Addressing issues on strategically important roads

During 2023, National Highways, in partnership with EEH and the Department for Transport completed the Oxford-Cambridge Connectivity: Roads Study. The work identified areas on the region's major road network (MRN) and strategic road network (SRN) which performed most poorly against expected service levels. The study identified a series of priority areas on the Heartland's road network that must be either addressed or investigated further.



Harnessing innovation

Harnessing regional expertise in the development of new mobility solutions will not only benefit the region, but also provides the UK with a competitive edge, unlocking benefits well beyond transport. It is a key part of the transition to net zero. The work underway in and around Oxfordshire, Cambridgeshire, Hertfordshire and Milton Keynes provides the region with access to experience on which it can build. But for innovation to be scalable, it must be supported by the right funding and supportive business models. EEH, through its innovation board champion and innovation working group is playing a key role in several regional projects: helping to ensure funding is in place; regulatory reform is supported where necessary; and by raising the profile of opportunities as they emerge.

A leading role in rail reform

Legislation to create Great British Railways must enable the role of sub-national transport bodies, as locally-formed partnerships of elected leaders and mayors, to be identified explicitly as partner organisations to the integrated rail body. EEH, Transport East and Transport for South East have created the Wider South East Rail Partnership. It can guide the way the rail industry, STBs and Transport for London are working together to maximise the potential of the rail network in the wider south east of England: a critical part of the UK's rail network in terms of patronage, through-journeys (by both passenger and freight) and revenue.

Collective responsibility for the success of infrastructure

Our local and combined authorities, and national government and its agencies, have signalled the importance they attach to the work of sub-national transport bodies. Our work extends far beyond advising on our region's priorities. We are working to maximise the value of infrastructure throughout its lifecycle, from concept and planning (including providing our local and combined authorities with capacity and capability, and addressing the skills pipeline), to construction and operation (including door-to-door connectivity and integration). A multi-year funding settlement from DfT would help EEH and its partners leverage the benefits that come from organisational certainty and allow our region to take collective responsibility in delivering the benefits of infrastructure investment.

Bus funding and models

In our role supporting members in our region to realise their ambitions for public transport, EEH is working with partners to ensure cross-boundary opportunities for bus are fully realised. In the context of local government funding pressures and a region with relatively small cities, market towns and large rural populations, our local authorities need to fully understand the viability of of franchising, the opportunity involved and whether there will be access to additional funding to cover this. Flexibility of approach is crucial. Government must learn the lessons of the past, including the uneven BSIP funding, and avoid creating a two-tier system between authorities which franchise and those which opt not to to.

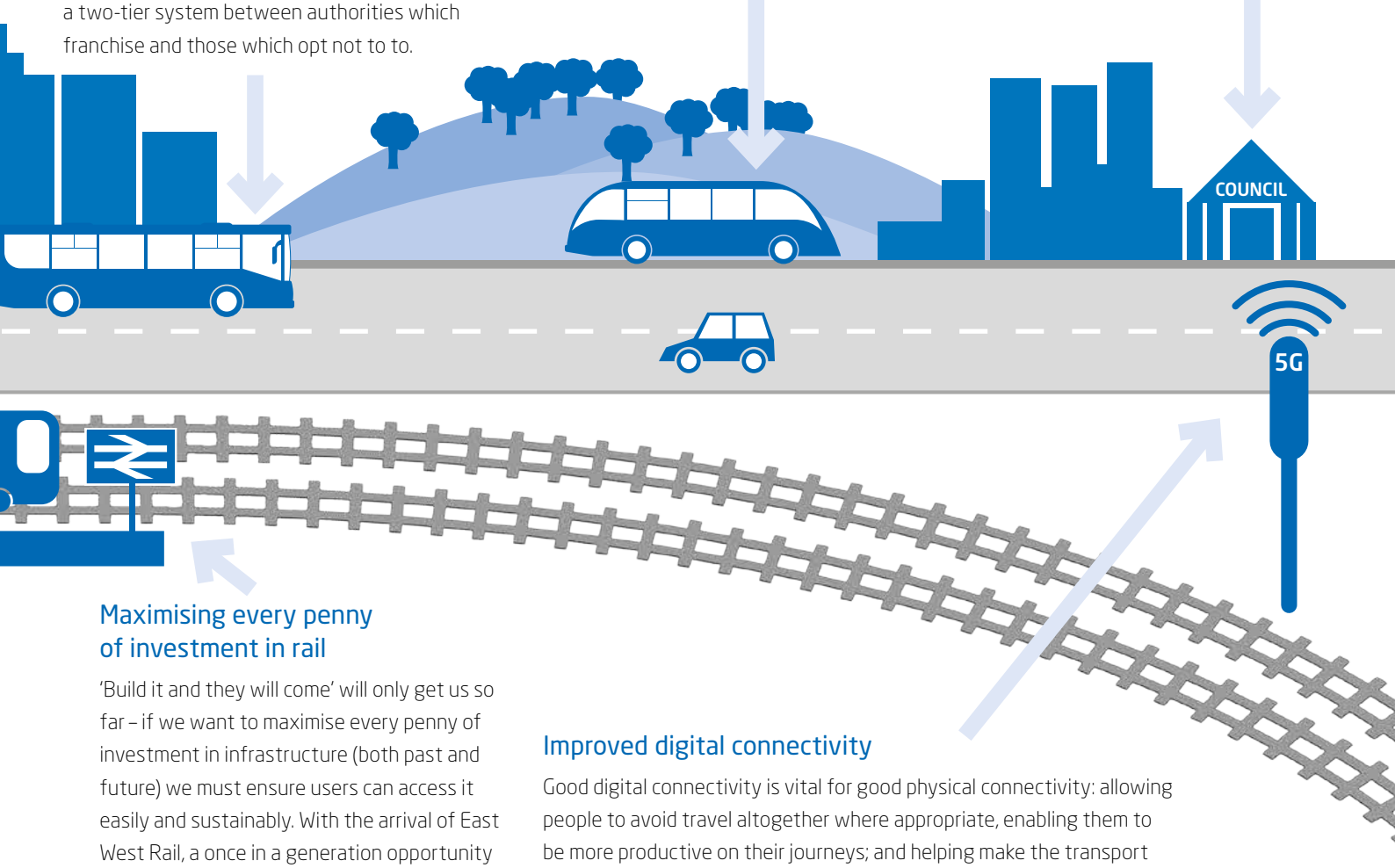
Mind the gap on MRT funding

Several of our local authority partners are developing ambitious mass rapid transit schemes for their places. However, funding to progress MRT falls 'through the gap' due to it not being covered by roads or rail funding. Dedicated support and funding from government is required to advance these schemes – potentially to the point where they can then attract private sector investment.

Long-term local transport funding

It is vital that the long term funding which benefits the strategic road network and our railways is matched by long term settlements for local transport.

Long-term funding should be available everywhere in the country: empowering local leaders to plan and deliver tailored place-based and people-focused improvements to the transport system.



Maximising every penny of investment in rail

'Build it and they will come' will only get us so far – if we want to maximise every penny of investment in infrastructure (both past and future) we must ensure users can access it easily and sustainably. With the arrival of East West Rail, a once in a generation opportunity will be squandered if the region is unable to provide high quality door to door connectivity to stations, and avoid community severance wherever possible.

Improved digital connectivity

Good digital connectivity is vital for good physical connectivity: allowing people to avoid travel altogether where appropriate, enabling them to be more productive on their journeys; and helping make the transport system itself smarter and more efficient. In a region world renowned for its science and technology innovation, it cannot be right that a quarter of all our homes and more than half of our firms lack access to ultrafast broadband, with coverage particularly poor in many rural areas.

// NOTES AND METHODOLOGY

CONNECTIVITY: THE THEORY

Connectivity is critical to enabling economic expansion and cluster development, to ensure accessibility to key centres and enabling and attracting labour supply growth, and the sustainability of existing and new communities.

Broadly, there are two ways in which improved connectivity can unlock economic growth.

Static impacts are those which capture the various direct effects on existing firms and residents:

For firms:

- Reduction in costs of shipping and freight movements
- Reduction in costs of business travel
- Access to a larger labour pool, as previously unattractive commuting movements become more viable
- Access to a larger pool of customers in physical attendance at premises

For residents:

- Interventions that improve speed, safety and reliability of local transport networks and reduce congestion and pollution
- Improvements in inter-regional or inter-national connectivity provides local residents with better access to tourism and recreation opportunities
- Increases in access to employment opportunities, providing residents with a greater choice and selection of jobs
- Increased access to education and training opportunities

Dynamic impacts are the subsequent impacts of new economic activity entering a local market as a result of better transport connectivity. Their long-term effects can significantly outweigh the scale of the initial static effects:

- Firm-worker proximity benefits: Positive feedback between the presence of workers with specific skills, and firms that require said skills
- Firm-firm proximity benefits: The co-evolution of sector value chains, with the presence of downstream actors attracting upstream suppliers, and vice versa, or firms in similar sectors co-locating/clustering
- Agglomeration-growth cycle: whereby the productivity and competitiveness benefits of co-location allows firms to win greater market share and expand operations (see right)
- Some of the other induced effects of dynamic impacts include an increase in property prices (often seen as a negative) and an increased amount of money spent locally by better-paid workers (generally seen as a positive)

Productivity and agglomeration

A key theme for the EEH region is improving productivity: the ways in which individual workers are able to produce more, or higher quality, output, as measured by the revenues the firm is able to capture less the direct costs of the inputs. Some obvious reasons for productivity growth might be: more skilled workers, better equipment, and smarter processes. Some less obvious, but equally important, reasons might be lower costs of inputs and higher prices of outputs, both of which may be a result of local economic conditions, or the firm's increased market power.

One of the most important ways in which transport systems help drive productivity growth is through agglomeration. Agglomeration benefits are the benefits that firms experience from being connected to, and interacting with, a wide number of other economic actors. This brings two benefits: efficiency, and innovation.

Agglomeration drives efficiencies through economies of scale and matching benefits. Firms that are able to access and serve larger markets, and have greater choice of suppliers and workers are often able to run their businesses more efficiently than those with smaller markets and more limited choices. This boosts revenue, decreases costs, and helps productivity grow.

Agglomeration also helps firms innovate, through expanding the network of contacts with which they are able to interact. This helps them access the knowledge and ideas that they can use to improve their business. Innovation is a major driver of productivity; in fact, many of the most beneficial ways we conceive of productivity growing, be it through better equipment, a more efficient workflow, or a better end-product, are forms of innovation. Helping firms invest and innovate, either directly or by creating the right incentives and conditions, is probably the main way of driving productivity growth in the long-run.

For Cambridge Econometrics' full methodology,
including data sources, SIC codes and MSOAs used, see our website
www.englandseconomicheartland.com/connecting-economies

Datasets: Datasets used were the most recent available during spring 2024. Cambridge Econometrics used middle layer super output area (MSOA) level data, rather than local authority-level data. This was necessary as the corridors and areas within these brochures do not necessarily conform to local authority boundaries. However, MSOA data is not updated by ONS as regularly or as quickly as local authority-level data – hence why in some cases it may appear there is more recent data available, but this would be at a local authority rather than MSOA level.

Use of pre-Covid data: Throughout the brochure Cambridge Econometrics has used a mixture of pre-and-post Covid data. Pre-Covid data is used to assess the longer term trends and performance of an area, avoiding the significant distortion of the pandemic on the data.

Definition of sub-areas: Cambridge Econometrics defined 18 'sub-areas' across the EEH region, using workplace density and commuter zone analysis from ESRC-commissioned research. The areas are separate from administrative boundaries, using MSOA geographies. Where an area is 'ranked' in comparison to other EEH areas, it is therefore out of a total of 18 areas within EEH. The full list of MSOA areas which make up each sub-area is available on the EEH website.

Definition of sectors: Cambridge Econometrics has identified sectors using standard industrial classification (SIC) codes, held by the Office for National Statistics (ONS). Businesses self-report the most appropriate SIC code for their area of focus. There are hundreds of SIC codes, each representing a specialism, and Cambridge Econometrics has grouped these together to form sectors. By its nature, this requires a degree of judgement on the part of Cambridge Econometrics as what specific activities form a sector: classifying sectors, particularly those involved in science and technology innovation, is as much an art as it is a science. The full list of SIC codes which make up a given sector is available on the EEH website.

CONNECTIVITY SECTION DEFINITIONS

Definitions and sources for Connectivity Today section

Congestion map: Full definition

To produce the map, City Science first analysed INRIX data to provide an indication of average road speeds by car for various road types (eg dual carriage, single carriageway) across the entirety of the EEH motorway, A and B road network between on a weekday morning. Individual sections of road were then given a rating reflecting how their average speed compared to the EEH average for that road type. Analysis conducted uses the weekday morning peak period (i.e. 0700-1000) in June 2022. The vehicle type "car" was analysed as a proxy for understanding network performance. The full list of speeds (in mph) and scores is in the table below.

Road Type	A	B	C	D	E	F
Single Carriageway	>46	>36	>28	>24	>20	<20
Dual Carriageway / Motorway	>66	>59	>43	>30	>23	<23
Traffic Island Link	>41	>32	>26	>23	>20	<20
Roundabout	>38	>33	>29	>26	>23	<23
Traffic Island Link at Junction	>36	>31	>26	>22	>19	<19
Slip Road	>53	>45	>39	>33	>24	<24

Public Transport Catchment map:

The map, by City Science, makes a number of assumptions. Walking speed is 3mph as standard, though this can vary depending on incline. For calculating journeys by rail and bus, the period 7am-10am (weekday) has been divided by the number of services within that period to give a 'headway'. The average wait time is half the value of the headway (ie, the time you'd wait if you arrived exactly halfway between two train/ bus services). The travel time is the average across all services between 7am and 10am (ie, if there is a mixture of fast and slow services to a destination, it is an average of these). These assumptions ensure the map gives a balanced view of journey times, however it may not reflect the fastest possible time it would take to get to a destination. Example:

There are 12 services between Place A and Place B from 7am to 10am, equating to one service every 15 minutes. The average wait time is therefore 7.5 minutes. Half of the services are 'express' and take 30 minutes to get to Place B, the other half are 'stoppers' and take one hour. Therefore, the average journey time is calculated as 45 minutes. In this scenario, the total 'journey' would be 52.5 minutes, plus the time it would take to walk to a station/ stop from the starting / finishing position. The bus and rail timetable information comes from the Bus Open Data Service (BODS) and Rail Delivery Group respectively.

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