ENGLAND'S ECONOMIC HEARTLAND

Connecting economies:

Northampton-Buckinghamshire-Thames Valley

Unlocking economic potential through improved connectivity

// SUMMARY

Stretching from the East Midlands down to the Thames Valley, the corridor between Northampton and southern Buckinghamshire contains some of the true jewels in the crown of Global Britain. Also encompassing Milton Keynes, Luton and parts of Central Bedfordshire and Oxfordshire, its world leading assets include:

- Silverstone, the home of British motorsport and a world class tech cluster
- Pinewood, where countless blockbusters have been produced, including 007
- Milton Keynes, one of the fastest growing and innovative 'new cities' in Europe
- The UK's 'golden triangle of logistics' - pivotal for our international trade – in the north of the corridor
- Aylesbury, the birthplace of the international Paralympic movement
- Bicester Village, a magnet for international tourists from as far away as China
- Bletchley Park, home to the world-famous Codebreakers
- London Luton Airport, the fifth busiest in the UK and one of the largest private aviation hubs in Europe

And if you extend the corridor a little further to the south, just over EEH's 'boundaries', you'll also find the second busiest airport in the world at Heathrow, alongside the dynamic regional economic centre of Reading and the M4 corridor.

New research by Cambridge Econometrics has highlighted how improving connectivity can help the UK capitalise on this extended economic corridor, which is already worth nearly £100 billion: supporting growth in productivity and innovation; unlocking more affordable commercial space; and connecting expert labour to skilled jobs.

There is a golden opportunity to harness the economic synergies found throughout the corridor, which are not yet being fully exploited due to poor transport connectivity - particularly along its central spine.

CONTENTS

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 are the brochures outlining the economic narrative and priority interventions for the following corridors:

- Milton Keynes
- Peterborough-Northampton-Oxford
- Southern EEH
- Luton-Bedford-Corby (to be published autumn 2024)

A Northampton-Milton Keynes-Aylesbury-High Wycombe-Old Oak Common Rail corridor. See pages 18-19

B Improvements to the West Coast Main Line. See page 21

C Maximising opportunities from East West Rail. See page 21

D Delivery of the Aylesbury-Milton Keynes rail link. See page 20

E Varsity Way active travel spine. See page 24

F Butterfield Business Park Mobility Hub, Luton. See page 26

G Improving connectivity around Bicester, including M40 junctions / A41 and a solution for London Road. See page 30

H Luton Railway Station Improvements. See page 26

I Improvements to the A421 corridor. See page 22

J A505 Vauxhall way corridor improvements. See page 26

K Orbital-road and gardenway improvements in Aylesbury. See pages 28-29

L Expansion of Luton-Dunstable Busway and wider bus Connectivity improvements, Including to Luton airport. See page 25

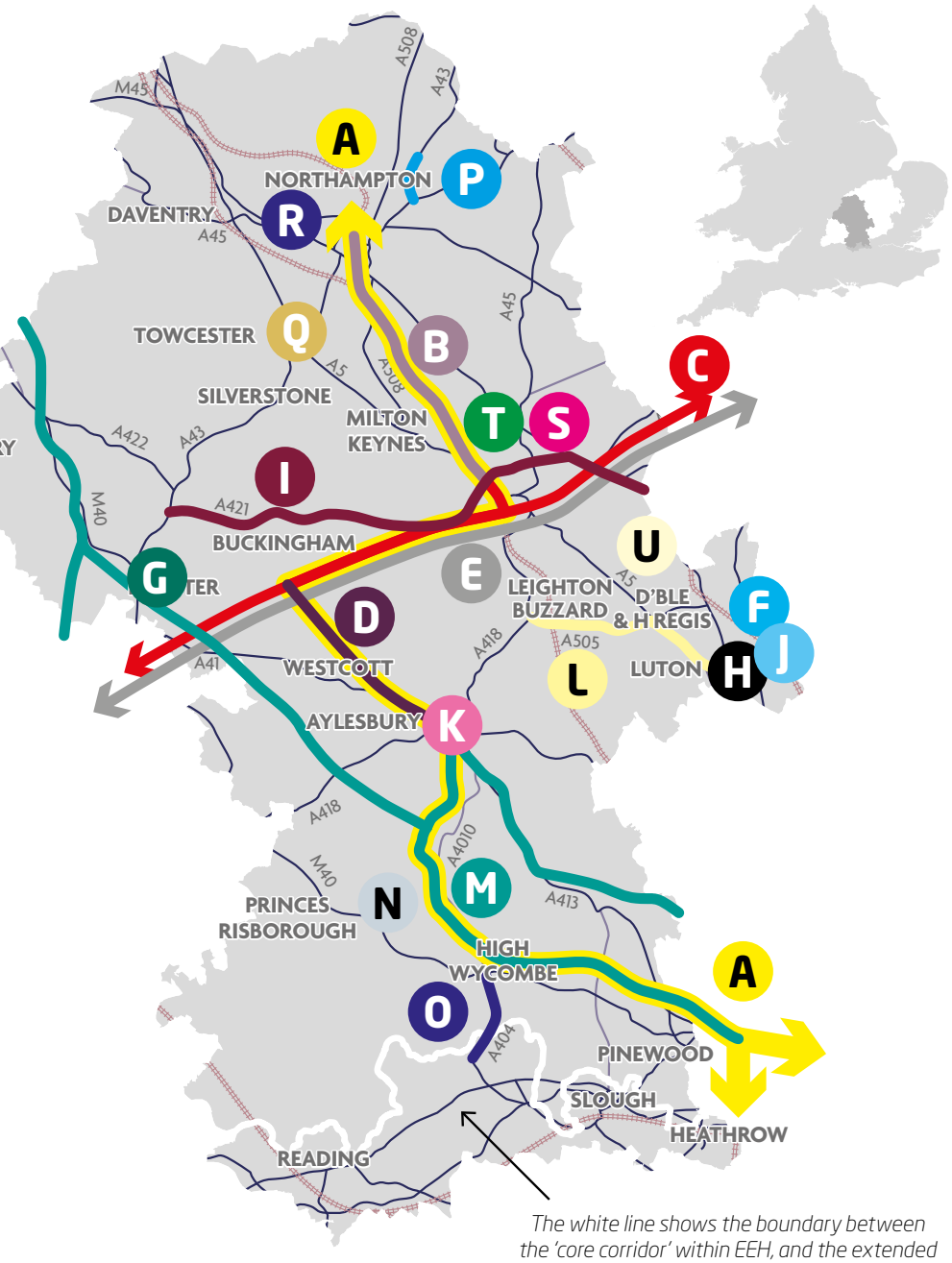
M Chiltern Main Line improvements including train lengthening and rolling stock. See page 21

N Princes Risborough relief road. See page 30

O Improvements along the A404 corridor including the A404/M40 Junction 4 Handy Cross Roundabout, Westhorpe Interchange and Bisham Roundabout. See page 27

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 extended corridor, which is covered by Transport for South East (Berkshire) and Transport for London (Heathrow). EEH works closely with both.

P Northampton-Kettering road connectivity. See page 23

Q Towcester connectivity including A5 relief road. See page 22

R Strategic road connectivity in Northampton. See page 23

S M1 Junctions 13-14. See page 31

T Interventions in and around Milton Keynes including A5 Kelly's Kitchen; Milton Keynes MRT; and Bletchley Eastern Entrance. This brochure contains a summary of these interventions on page 31 - for more information see our Connecting Economies: Milton Keynes brochure.

U Solution for the A5 Hockliffe. See page 27

THE 35% CLUB

The corridor accounts for 35% of the EEH region's population, 35% of its GVA and 35% of its jobs.

GVA: £60.2BN (2021)

Economic growth between 2011-19 (measured by GVA, in real terms) was 16%, below the national average by 19%. The GVA of the extended corridor including Reading, Slough and Heathrow is £96.8bn.

JOBS: 936,100 (2022)

Over the pre-pandemic years of 2011 to 2019, the corridor experienced a jobs growth of 14%, in line with the national average. Almost 30% of EEH's R&D intensive jobs are in the corridor. There are 1,358,400 jobs in the extended corridor.

POPULATION: 1.89 MILLION (2021)

Population growth between 2011-21 was 11.7% more than the national average of 7.43% and amounting to 221,700 additional people. The population of the extended corridor is 2.56m.

PRODUCTIVITY

The corridor has a slight productivity gap to the national average (-4%) though the inclusion of Reading, Slough and Heathrow makes the figure positive (+11%). Productivity levels vary widely: Productivity in Milton Keynes is the second highest in EEH at 21% higher than the national average, and it also strong around the south of the corridor, but other areas all have significant gaps.

INEQUALITIES

Northampton, Daventry and Milton Keynes all contain neighbourhoods which are amongst the 10% most deprived in the country (2019). There are also significant pockets of deprivation in parts of Buckinghamshire including Aylesbury and High Wycombe. For example, Aylesbury has several neighbourhoods in the top 10% most-deprived areas nationally in terms of education, skills and training.

// ENGLAND'S ECONOMIC HEARTLAND

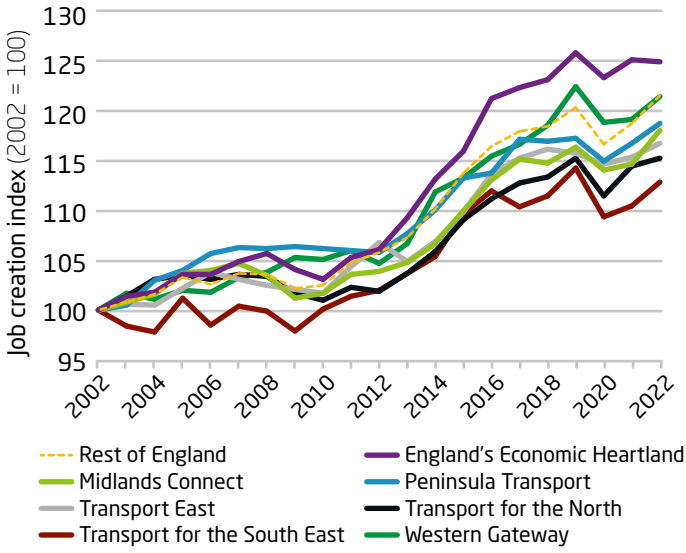
There's a reason why we're called England's Economic Heartland. Stretching from Swindon and Oxfordshire in the west through to Cambridgeshire and Hertfordshire in the east, our region is unrivalled in the country for the number of economic specialisms and clusters existing within it. Its success brings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

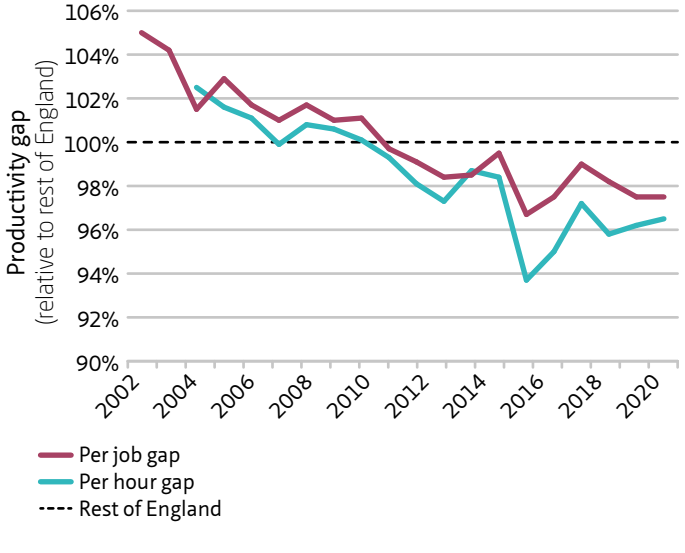
ECONOMY

For methodology see our website and p35

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

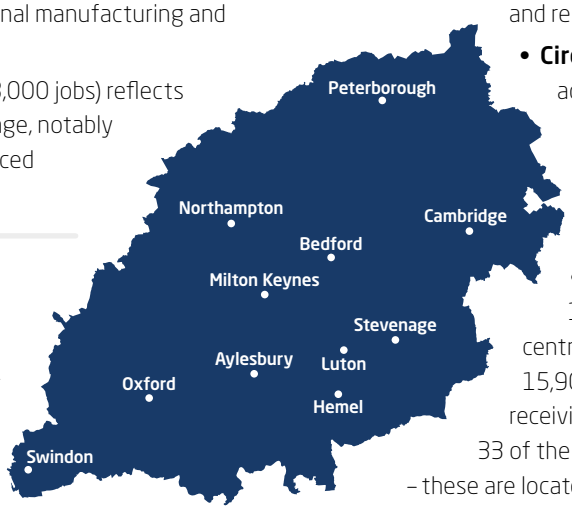
- **Total emissions:** Per capita CO_2 emissions were 4% higher than in the rest of England in 2021, & have declined at a slower rate (-24% 2005-21, rest of England -27%)
- **Transport emissions:** Transport accounts for 37% of total EEH emissions (rest of England 31%), and decreased more slowly (-8% 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



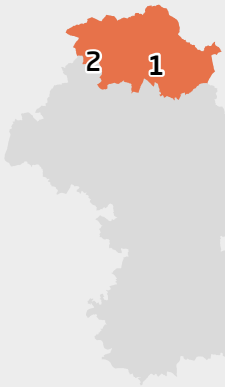
INNOVATION

- **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



Settlements include: 1. Northampton and 2. Daventry

GVA: £11.8bn (up 20%) / Population: 351,200 (up 14%) / Jobs: 189,000 (up 9%) / Firms: 17,000 (up 47%)

Sectors: Logistics and freight (20,100 jobs, 14% of EEH total) / Advanced Physics and Engineering (17,400, 7%) / Wood Products (3,400) / Electricity (1,200) / Textile Products (1,700) / Chemicals & Materials (3,200) / Business Support Services (19,100)

Innovation clusters: Supply Chain Logistics / Immersive Technologies / Agency Market / E-Commerce

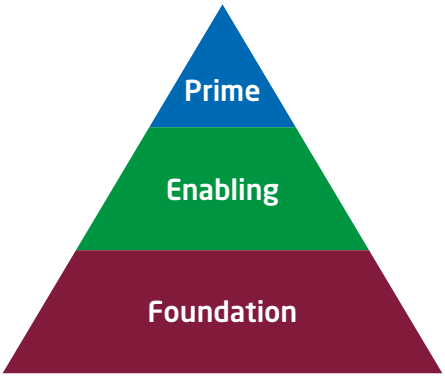
Economic assets include:

- MAHLE Powertrain, UK's first Real Drive Emissions vehicle test chamber
- DIRFT, recognised as one of the UK's most successful intermodal logistics parks
- The University of Northampton, the Waterside development and the Vulcan Works Creative Hub £14m project in the town's Cultural Quarter
- Every single F1 engine to have a Mercedes badge since 1995 has been constructed at its base in Brixworth, which supplies the current Mercedes F1 team as well as Aston Martin, Williams and McLaren

Insights:

- Pre-pandemic productivity growth (1.3% p.a. 2011-19) was EEH's 2nd fastest, & above the national average (0.6%), closing its productivity gap (now – 11%)
- The area has the second highest share among EEH areas for head office sites
- Commercial floorspace costs 40% below national average (third lowest in EEH)
- Housing is 11% more affordable than the national average, with housing delivery rates 19% above the national average
- Employment rate (77.3%) is above the national average (75.7%) and saw the third largest increase among EEH areas pre-pandemic (2012-19)

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:

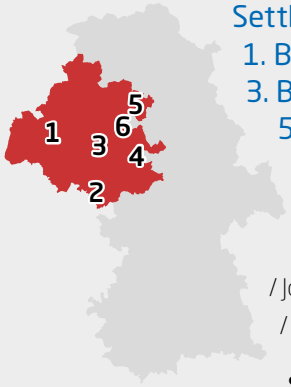
- **'Prime' sectors:** these are specialist, innovative, export-focused sectors, such as advanced engineering and scientific R&D (see page 5)
- **'Enabling' sectors:** these are established, high-productivity, high-wage sectors with a largely domestic focus, such as business management support and financial 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 4 for more details.

Innovation Clusters: Sectors include all firms that do a particular activity, whether they are 'innovative' or not. That's why the Department for Science, Innovation and Technology'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: 'Research, Development and Innovation' 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.



Settlements include: 1. Banbury, 2. Bicester, 3. Brackley, 4. Buckingham, 5. Towcester and 6. Silverstone

GVA: £6bn (up 19%) / Population: 228,100 (up 15%) / Jobs: 103,200 (up 22%) / Firms: 12,700 (up 15%)

Sectors: Agri-food (6,300 jobs, 9% of EEH total) / Advanced Physics & Engineering (12,900, 5%) / Chemicals & Materials (1,100) / Arts & Recreation (5,800) / Retail (11,300) / Business Support Services (9,100)

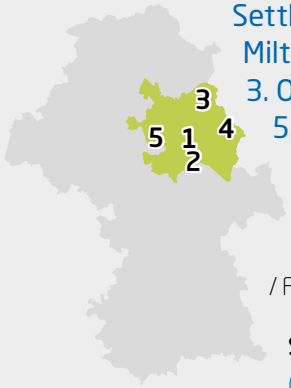
Innovation Clusters: Advanced Manufacturing / In-Orbit Space Manufacturing / Sensors / Life Sciences

Economic assets include:

- Silverstone, the home of Formula One in the UK. It is part of an enterprise zone, home to a high-tech cluster, testing facilities for materials and vehicles. This area is the heart of 'Motorsport Valley': Aston Martin's F1 team is based at Silverstone, while Mercedes is based in Brackley and Haas has a factory in Banbury
- Catesby Aerodynamic Research Facility, a worldwide benchmark for aerodynamic testing
- University of Buckingham, the only independent university with a Royal Charter
- Bicester Motion, a world-leading mobility technology cluster home to the brightest minds shaping the future of transportation
- Bicester Village designer outlet retail centre – a magnet for shoppers both from the UK and abroad – is expanding into an additional 2,690 square metres of floor space

Insights:

- The area has lowest unemployment rate (1.7%) among EEH areas
- 8,000 jobs are R&D-intensive, increasing by a rate of 1.9% p.a. over 2015-22, above the national average of 1.7%
- Commercial floorspace costs 3% below national average
- 14,600 additional homes delivered over the past decade (2012-22), with housing delivery rates more than twice the national average. Housing affordability matches the national average



Settlements include: 1. Milton Keynes, 2. Bletchley, 3. Olney, 4. Cranfield and 5. Deanshanger

GVA: £16.3bn (up 31%) / Population: 339,100 (up 17%) / Jobs: 204,800 (up 29%) / Firms: 17,400 (up 51%)

Sectors: Logistics & Freight (20,600 jobs, 15% of EEH total) / Higher Education (13,200 jobs, 13%) / Digital & Creative (14,300, 10%) / Advanced Physics & Engineering (21,300, 8%) / Management & Social Science (10,200) / Finance (9,600)

Innovation clusters: Autonomy and Robotics (6th largest in UK) / Data Intermediaries (7th largest) / Photonics (10th largest) / Advanced Materials / Data Infrastructure / Software as a Service (SaaS) / Software Development

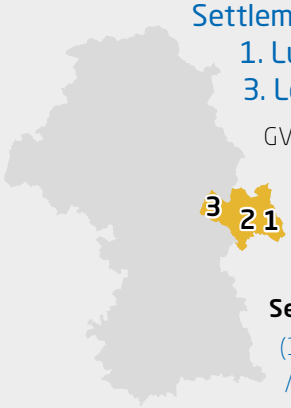
Economic assets include:

- The Open University, one of the largest universities in Europe and a leading innovator in digital learning & educational technology
- Cranfield University, a specialist postgraduate university with world-class expertise and including a global research airport
- The headquarters and factory of the Red Bull Racing Formula One team
- Highest level of electric vehicle infrastructure outside of London

Insights:

- Pre-pandemic (2011-19), rates of job creation (3.2% p.a.) were double the national average (1.7%), and higher than any other EEH area; driving economic growth (in real terms) of 3.4% p.a. over the same period, above the national average (2.2%) and second fastest among EEH areas. Employment rate of 82.3% exceeds the national average (75.7%), and is the fourth highest rate among EEH areas
- Productivity is substantially (21%) higher than the national average (and second highest amongst EEH areas), although productivity growth was a third of the national average pre-pandemic (2011-19)
- 38% of jobs are in EEH 'prime' sectors – the fourth highest share among EEH areas – while 41% are in 'foundational' sectors (the lowest share)
- 27 established knowledge clusters centred locally (second-most in EEH), three UK top-10 ranked, hosting 2,900+ knowledge-intensive firms and £36m of public research funding; 17,000 jobs (8% of total) are R&D-intensive – only three EEH areas host more
- A UK 'Smart City': a testbed for new ideas and a UK leader in technology and innovation
- The area accounts for 6% of EEH's population and saw population growth (1.6% p.a.) double the national average (0.8%) between 2011-21, fourth highest among EEH areas
- The second lowest old age dependency ratio in EEH, with 86% of residents young or working age (national average 81%)

Settlements include:
1. Luton, 2. Dunstable and 3. Leighton Buzzard



GVA: £7.4bn (up 28%) / Population: 359,600 (up 13%) / Jobs: 161,400 (up 15%) / Firms: 15,000 (up 42%)

Sectors: Logistics & Freight (10,100, 7% jobs of EEH Total) / Advanced Physics & Engineering (15,400,6%) / Real Estate (4,800) / Transport Services (4,600 jobs) / Business Support Services (36,500)

Innovation Clusters: Internet of Things / E-Commerce / In-Orbit Space Manufacturing/ Food Tech/ Electronics Manufacturing

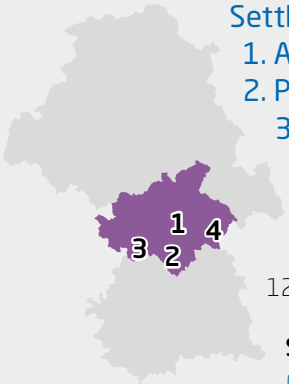
Economic assets include:

- London Luton Airport is the fifth busiest airport in the country, with 16.2 million passengers in 2023. It has ambitious expansion plans, with approval to increase capacity to 19m passengers, while it has applied for a development consent order for 32m by the mid-2040s. It is also one of the biggest private aviation hubs in Europe. Its enterprise zone is being developed to provide business space for sustainable research and finance, aerospace, engineering, advanced manufacturing and specialist support for airlines and airport operations
- University of Bedfordshire, a top 300 university in the world under 50 years old
- With Luton Town FC's recent success making headlines across the world, Power Court will be a new state-of-the-art football stadium which will also bring live music, new homes and a new retail and leisure offer to the town
- Luton and Dunstable guided busway, one of the longest guided busways in the world, with a total length of 8.3 miles, of which 4.8 is guided track

Insights:

- Economic growth (in real terms) was faster (3.2% p.a.) than the national average (2.2%) pre-pandemic, and was the third fastest growing EEH area
- Luton is projected to be the second fastest growing urban economy in 2024, behind only London, and the town often ranks UK top-10 for start-ups & survival
- The area has the lowest old age dependency ratio in the EEH, with 86% of residents young or working age (national average 81%)
- Housing is 3% more affordable than the national average, though house prices have grown (3.3% p.a. 2013-23) more than any other EEH area

Settlements include:
1. Aylesbury, 2. Princes Risborough and 3. Thame and 4. Tring



GVA: £5.4bn (up 9%) / Population: 208,600 (up 17%) / Jobs: 92,700 (up 17%) / Firms: 12,000 (up 22%)

Sectors: Agri-food (3,200 jobs, 5% of EEH total) / Circular Economy (1,000 jobs, 4%) / Advanced Physics and Engineering (8,300, 3%) / Management & Social Science (5,800) / Wood Products (1,500) / Business Support Services (15,100)

Innovation Clusters: Space economy

Economic assets include:

- The Westcott Space Cluster, located in the Westcott Venture Park enterprise zone, home to a growing nucleus of space-related companies developing new innovative technologies in rocket propulsion, 5G communications and in-orbit servicing and manufacturing. It includes the National Space Propulsion Test Facility, the only of its kind in the UK, and of two in Europe; the In-Orbit Serving and Manufacturing facility, the Drone Test and Development Centre, the Future Networks Development Centre and the Satellite Applications Catapult also has a presence
- Stoke Mandeville Hospital, the birthplace of the Paralympic movement, home to the National Spinal Injuries Centre, and the Health Research and Innovation Centre
- The Arla dairy near Aylesbury, one of the biggest and most technologically-advanced dairies in the world

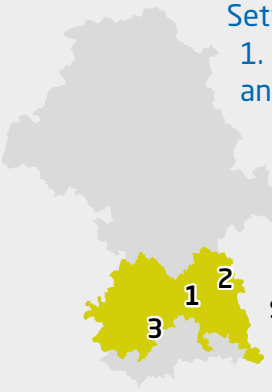
Insights:

- Only 5% of residents are low or unskilled (second lowest of EEH areas)
- Pre-pandemic (2011-19), rates of job creation (2% p.a.) exceeded the national average (1.7%). However, productivity growth was the third lowest of EEH areas pre-pandemic, opening up a -11% productivity gap relative to national average
- 88% of firms in the area were micro-sized in 2023 – the highest share in EEH
- The area saw the third fastest population growth (1.6% p.a.) in EEH, more than double the national average (0.7%) between 2011-21, with housing delivery rates twice the national average

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 35 for further notes.



Settlements include: 1. High Wycombe, 2. Amersham and 3. Henley

GVA: £13.5bn (up 8%) / Population: 400,400 (up 7%) / Jobs: 185,000 (up 13%) / Firms: 26,400 (up 17%)

Sectors: Digital & Creative (14,800, 11% of EEH total) / Life Sciences (7,600, 10%) / Circular Economy (1,900, 8%) / Advanced Physics & Engineering (19,200, 8%) / Management & Social Science (11,400) / Construction (11,200)

Innovation clusters: Digital creative/ E-Commerce / Artificial Intelligence / Life Sciences

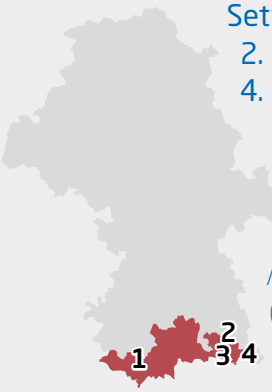
Economic assets include:

- Pinewood film and television studios, synonymous with some of the big and small screen's most enduring productions over its 85-year history, home to the legendary 007 Stage, a further 30 stages including the unique permanently-filled Underwater Stage, three TV studios, one of Europe's largest exterior tanks, acres of backlot and thousands of square feet of production office and workshop space. The National Film and Television School is located nearby in Beaconsfield
- Buckinghamshire New University in High Wycombe, with courses in applied, practice based and translational research and related advanced scholarship
- Henley Business School, among a small elite group of business schools world-wide which hold triple accreditations for the quality and capability of its faculty and outputs

Insights:

- The area is 14% more productive than the national average, and the third most productive EEH area
- It has the second highest share (88%) of firms that are micro-sized in EEH
- 73% of residents are employed in skilled work, the highest share in EEH
- Housing is 49% less affordable than the national average, making it the least affordable area in EEH
- Whilst population growth over 2011-21 aligned with the national average (0.7%), this was the slowest increase among all EEH areas

NEIGHBOURING AREA



Settlements include: 1. Reading, 2. Slough, 3. Windsor and 4. Heathrow

Sectors: Life Sciences (12,000 jobs) / Logistics & Freight (40,600) / Digital & Creative (51,400) / Circular Economy (5,700) / Advanced physics and engineering (29,500) / Management & Social Science (36,100) / Transport Services (14,200)

Innovation clusters: Wearables & Quantified Self (2nd largest in UK) / Photonics (6th largest) / Software Development (6th largest) / Streaming Economy (6th largest) / Internet of Things (7th largest) / Telecommunications (7th largest) / MedTech (8th largest)

Economic assets include:

- Heathrow Airport, second busiest airport in the world and busiest in Europe, with the most international connections of any airport. Heathrow Cargo Terminal handles more cargo than all other UK airports combined
- University of Reading, a global university with world-class science-based specialisms
- Atomic Weapons Establishment in Berkshire, hosting 4,000 staff engaged in defence-related R&D
- Slough Trading Estate, Europe's largest trading estate in single ownership, home to many of the world's most successful companies including Mars, Ferrari, DHL, Lanes Group and UCB

Insights:

- The area has 5.5bn m^2 of commercial floorspace, though this is no higher than a decade ago, whilst average costs are 47% above national average
- Housing is 16% less affordable than the national average, whilst house prices continue to grow (2.8% p.a. 2013-23) faster
- Its economy grew significantly faster (3.2% p.a., in real terms) than the national average (2.2%) during 2011-19
- Employees are 40% more productive than the national average, and productivity growth pre-pandemic (1.8% p.a.) was 3x national average

// 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.

This includes:

Growing productivity

Both Milton Keynes and the south of the corridor (Henley-High Wycombe-Amersham area and Reading-Slough-Heathrow) are productive regional economic hubs. The Milton Keynes area's productivity is 21% above the national average, driven by rapid job creation and economic growth rates. The Reading and Wycombe areas are 40% and 14% more productive than the national average respectively. These dynamics are absent from the other areas in the corridor which exhibit productivity gaps to the national average ranging from -11% (in the Aylesbury; Banbury-Buckingham-Towcester; and Northampton areas) to -24% in the Luton area. However, Northampton and Luton recorded the second and fastest respective pre-pandemic productivity growth rates in the EEH region.

Agglomeration effects, emerging from increased interactions and collaboration/competition between businesses, are an important potential driver of productivity growth.

Greater transport connectivity may enable the expertise and capital of established industries in Milton Keynes and Reading to radiate throughout the corridor. Infrastructure investments could therefore be an effective framework for supporting productivity growth in and around Reading, Milton Keynes and High Wycombe, as well as Northampton and Luton, and stimulating productivity improvements in and around Aylesbury and Banbury-Buckingham-Towcester areas.

Unlocking affordable commercial floorspace

Commercial floorspace costs in the Reading and High Wycombe areas are high (11% and 47% above the national average respectively). While firms in these areas are productive, they may be constrained in their ability to expand by the elevated costs of floorspace. Investments in transport infrastructure would connect these businesses to the abundance of affordable commercial floorspace across the rest of the corridor with all other areas exhibiting costs below the national average and stocks in excess of 1.6bn square metres (m2). 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.

Supporting planned housing growth

Over the decade of 2012-22, housing delivery rates across the Thames Valley to Northampton corridor have been higher on average than the national delivery rate. Only in the Wycombe area – surrounded by the protected Chiltern Hills – have housing delivery rates been 16% less than the national average. In general, housing gets more expensive as one travels south along the corridor. Investment in quality transport links would alleviate housing pressures in resource constrained areas by providing a wider set of residential location choice.

The world famous Silverstone circuit


The National Film and Television School in Beaconsfield, a short distance from Pinewood Studios

For a quick guide to the relationship between connectivity, productivity and economic growth turn to page 34.

Connecting expertise

The Milton Keynes and Reading-Slough-Heathrow areas are both home to significant advanced engineering, digital and creative, and logistics and freight prime sectors, employing nearly 70,000 people in R&D intensive roles between them.

The areas in between, which include the towns of Aylesbury and High Wycombe, contain pockets of prime sector clustering (for example, there is a large life sciences presence in and around High Wycombe, and advanced physics and engineering around Westcott), have highly skilled populations equating to a surplus of skilled labour.

Milton Keynes and the Banbury-Buckingham-Towcester area to the north of the corridor also share a specialisation in the advanced physics and engineering sector. There is a growing advanced physics and engineering sector in and around Luton which would benefit from closer integration to these established industries.

While not as widely dispersed across the corridor, there are digital and creative prime sectors in and around Reading, Wycombe, and Milton Keynes. Southern Buckinghamshire is home to the world famous Pinewood film and television studios – an expanding site with over 250 businesses – as well as the Nation Film & Television School. Streamlining the transport connections between these areas would provide businesses and workers in and around Reading and Milton Keynes with easier access to these key economic assets and facilitate the flow of expertise and labour between these industries.

Boosting innovation

The Reading-Slough-Heathrow area has 45 established innovation clusters, eight of which are UK Top-10 ranked, concentred in digital and advanced technology sectors. This cluster profile is closely comparable to the Milton Keynes area, a 'Smart City' which has the second most established innovation clusters in the EEH region (only behind Cambridge). Greater intra – corridor transport connectivity has the potential to spread R&D capacity throughout the region while also enabling established clusters in and around Milton Keynes and the Reading area to benefit from closer ties to emerging clusters and labour markets across the corridor.

The Westcott space cluster near Aylesbury is at the forefront of UK space strategy and research while the Luton area also has scientific and technological assets related to aerospace and air travel. There is an opportunity, with improved transport connectivity in the corridor, to link wider aerospace assets and research (ie, Harwell, Westcott, Heathrow, Luton Airport etc). In addition, the Banbury-Buckingham-Towcester area is a nexus for R&D in automotive technologies and is home to the Catesby Aerodynamic Research Facility and Silverstone Park.

The Northampton area's immersive technologies clusters would gain from greater access to the R&D resources in the Milton Keynes (and Reading) area, while its established supply chain logistics and agency market clusters could provide valuable support services. There are also advanced materials, life sciences, and artificial intelligence clusters in and around the Banbury-Buckingham-Towcester, and Wycombe areas, that are research intensive and would be enhanced through greater access to the technology clusters in Milton Keynes and Reading-Slough-Heathrow.

Supporting logistics and freight

The Milton Keynes area is a logistics and freight hub employing more than 20,000 people. The sector is inherently dependent on transport infrastructure for the carriage of road, rail, and air freight.

Beyond Milton Keynes, improved transport connectivity has the potential to support an efficient logistics network spanning the length of the corridor.

In the north, the Northampton area is already home to more than 20,000 logistics and freight jobs. In the south, the Reading-Slough-Heathrow area employs more than 40,000 workers across a prolific logistics and freight sector that includes Heathrow Airport and cargo terminal (handling more cargo than all other UK airports combined). Strengthening the transport connections between these logistics and freight centres would improve the mobility of skilled labour, increase competition and collaboration between businesses, and enable firms from across the corridor to leverage existing infrastructure (ie, the Heathrow facilities) more effectively. Simultaneously, enhanced transport infrastructure would also facilitate the diffusion of established industry expertise and capital to the emergent logistics and freight centre in and around Luton.

London Luton Airport

HEADLINE CONCLUSIONS

Given the strength of their economic synergies, the ability to travel along the central spine of the corridor between Northampton, Milton Keynes, Aylesbury, Wycombe and Reading-Slough-Heathrow is notably challenging, limiting opportunities for agglomeration benefits and access to skilled labour.

While the section of East West Rail being delivered in 2025 will provide an alternative option for rail journeys from Milton Keynes to Wycombe and Reading, via Oxford, these journeys could still be unattractive due to the need to interchange and consequent impact on total journey time. It should also be noted that direct rail journeys from the west (ie Reading) into Heathrow on the Elizabeth Line are not possible and require further interchange.

While relatively close in terms of distance, journeys between High Wycombe and Aylesbury to Milton Keynes are difficult due to the lack of direct rail connectivity and unreliability on the road network (for example, the most direct journey between High Wycombe and Milton Keynes requires travelling through the middle of Aylesbury, one of the most congested towns in EEH).

This means there is a strong case for improving connectivity along the central spine of the corridor, both by road and rail. Direct rail connectivity between Northampton and Milton Keynes in the north of the corridor, and Aylesbury and High Wycombe in the south, would be made possible by delivery of a rail link between Aylesbury and Milton Keynes. This in turn would unlock the opportunity of a direct passenger service between Northampton, Milton Keynes, Aylesbury, High Wycombe and south Bucks, terminating at the new Old Oak Common Station, which will provide ultra-high frequency services to Heathrow, Slough and Reading.

This would better connect two of the greater South East's fastest-growing centres in Milton Keynes and Reading (while improving access to Heathrow). However, there are also numerous other sector-specific opportunities for collaboration and integration between different areas of the corridor, including around the corridor's life science and engineering specialisms. Economies of scale could be realised by better connecting all of these capabilities.

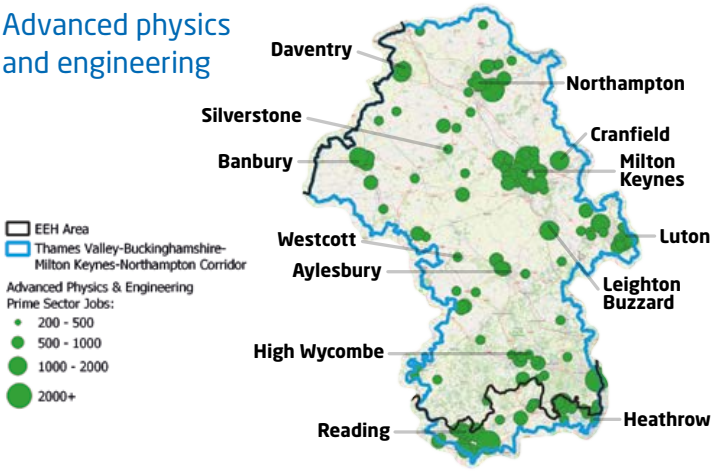
The central part of the corridor also has a workforce with very high skill levels, though many tend to work in London. Emerging trends suggest this workforce may wish to look closer to home for both work and access to services. Providing them with the opportunity to move north-south along this corridor should provide them with a wider range of choices.

Aylesbury town centre, home to the eye-catching Waterside Theatre (left) and a campus of Buckinghamshire New University (right), is also one of the most congested areas of the EEH region

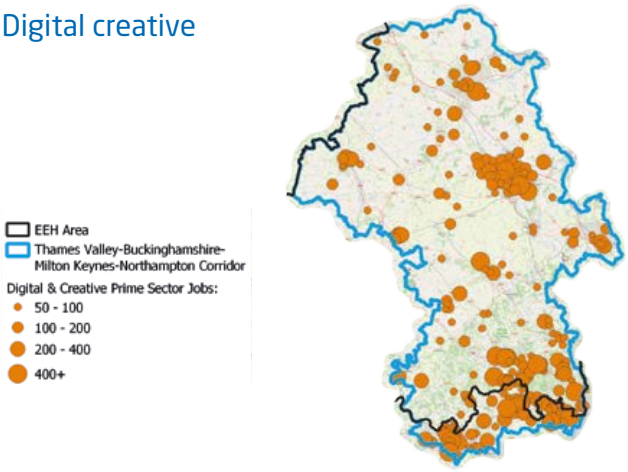
PRIME SECTORS

See page 5 for prime sector definitions

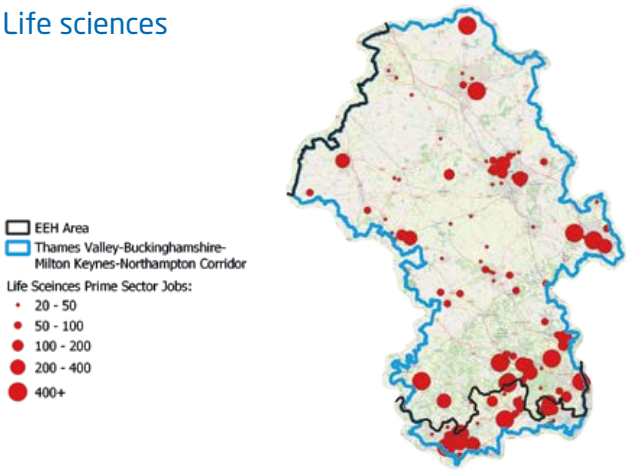
Advanced physics and engineering



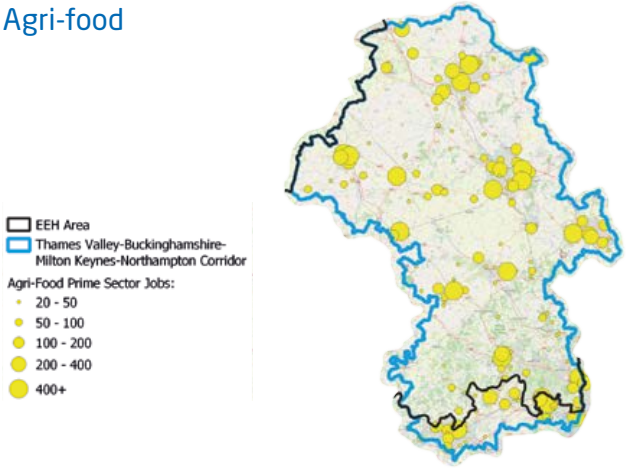
Digital creative



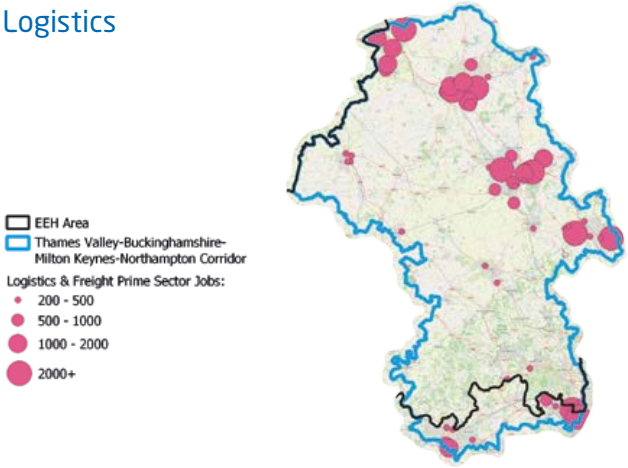
Life sciences



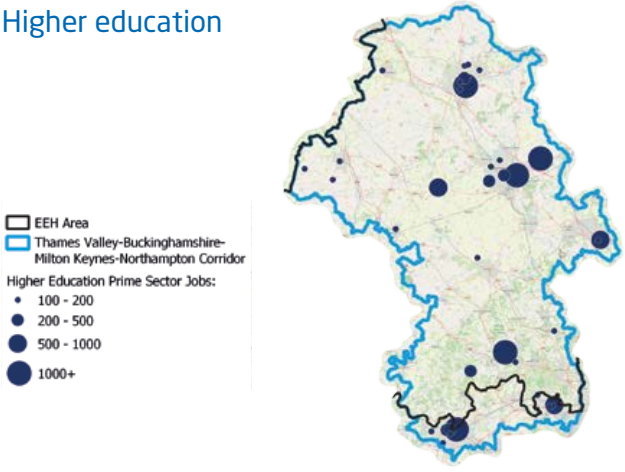
Agri-food



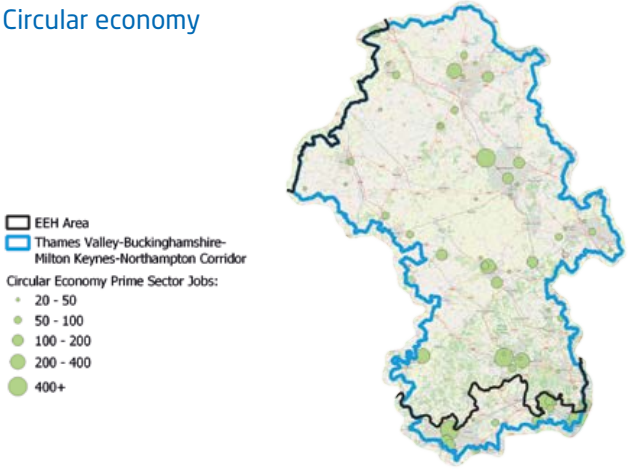
Logistics



Higher education



Circular economy

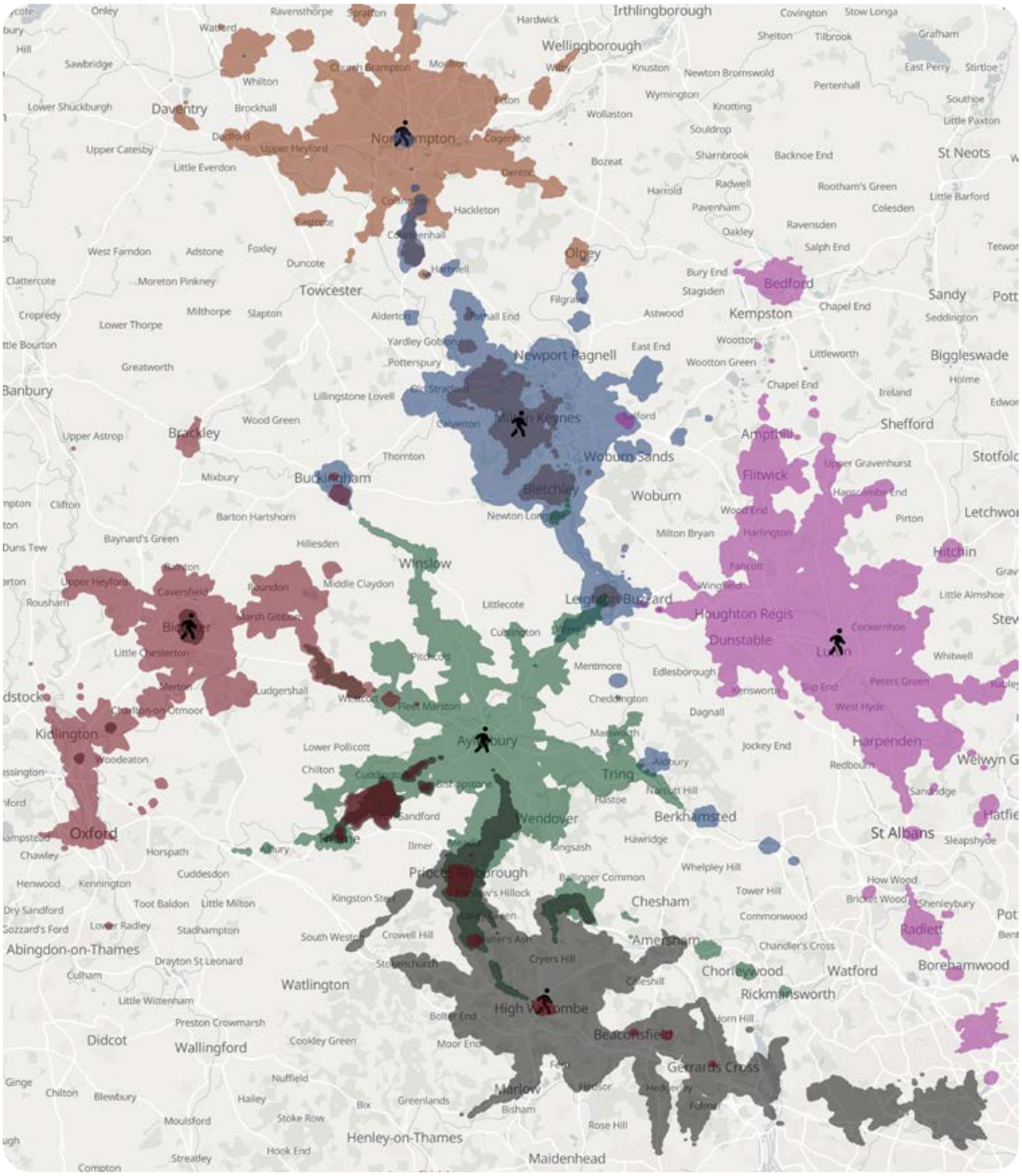


// CONNECTIVITY IN CONTEXT

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

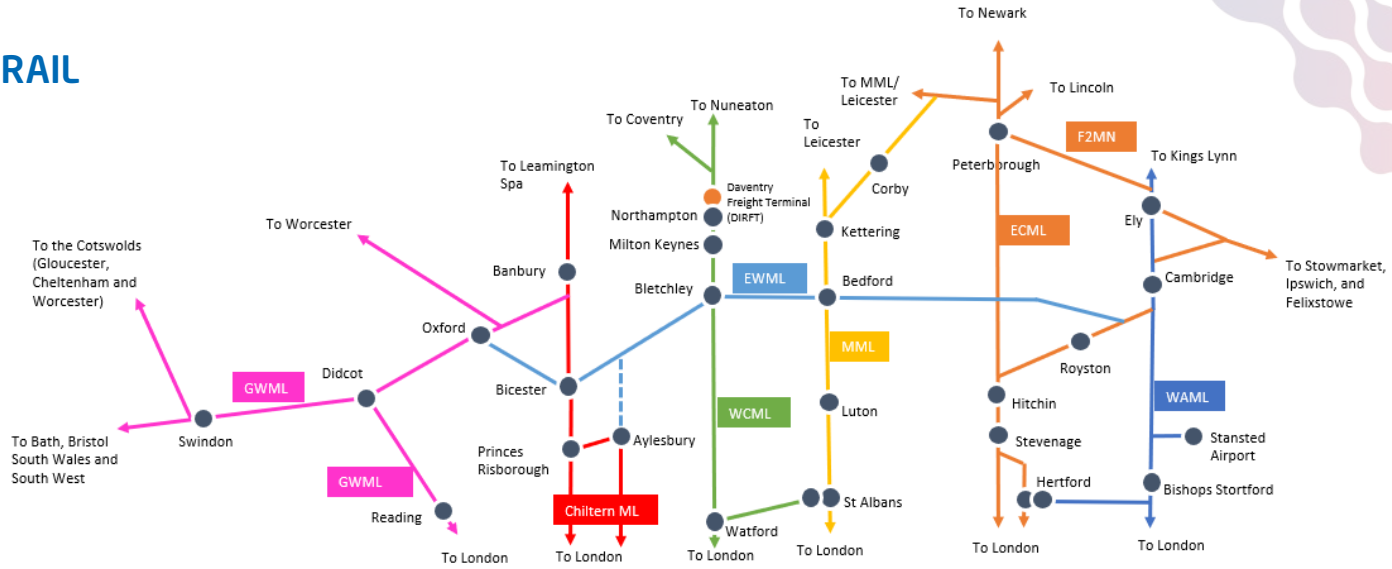
This map factors in average journey times and service frequencies to give a balanced indication of places which can be travelled to within 60 minutes on a weekday morning from a journey starting on foot and using bus and rail. The journeys are from Northampton (orange); Milton Keynes (blue); Bicester (maroon); Aylesbury (green); and Wycombe (grey). The journeys have been started near the main rail station (Bicester Village was used for Bicester). For methodology and assumptions see p35.



BUS

High frequency (over 20 buses per hour) local bus routes serve Northampton, Luton and Milton Keynes. However, direct inter-urban bus connections between the largest three settlements are relatively limited (less than five buses per hour). There is limited service provision in the north west of the corridor, in areas such as Silverstone, Brackley and Banbury. A relatively high frequency (more than 10 buses per hour) inter-urban bus service exists between Leighton Buzzard, Aylesbury, Princes Risborough and High Wycombe.

RAIL



The diagram above shows the main lines within the EEH region (including the proposed East West Rail line between Oxford and Cambridge). The corridor's key settlements are spread between three, separate radial main lines (Chiltern, West Coast and Midland), with poor connectivity between each. East West Rail will significantly improve this, making seamless interchange between lines vital. However, in the absence of its previously-expected link to Milton Keynes (shown by the dotted line), Aylesbury will remain effectively cut off by rail to its west, north and east.

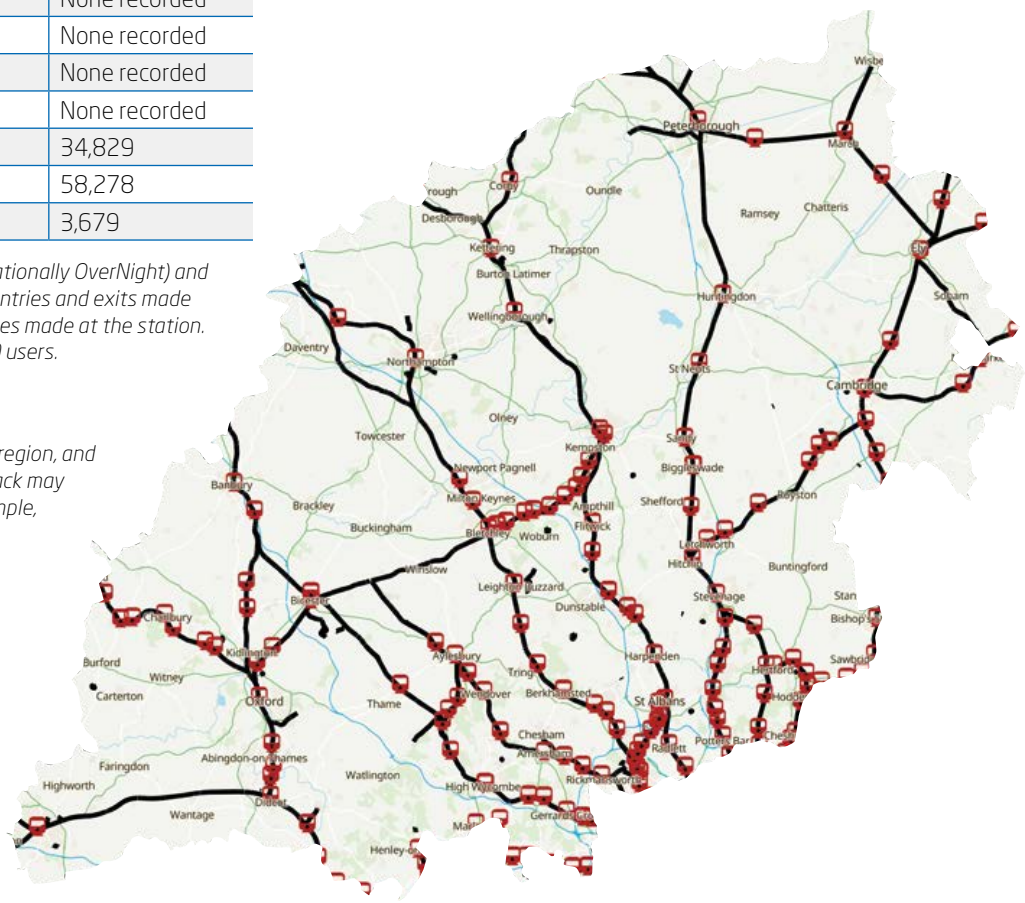
Station usage

Station	2022-23	Interchanges 2022-23
Milton Keynes	4,509,584	189,748
Luton Airport Parkway	3,767,790	5,783
Luton	3,282,132	51,288
Northampton	2,407,228	946
High Wycombe	1,917,270	91,589
Banbury	1,813,406	234,856
Bicester Village	1,610,596	616
Amersham	1,563,462	None recorded
Leagrave	1,380,408	None recorded
Leighton Buzzard	1,142,588	None recorded
Beaconsfield	964,906	None recorded
Gerrards Cross	901146	34,829
Bletchley	734,210	58,278
Aylesbury	873,932	3,679

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. Table includes stations with more than 750,000 users.

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 during the morning peak, overlaid with housing sites allocated in current local plans.

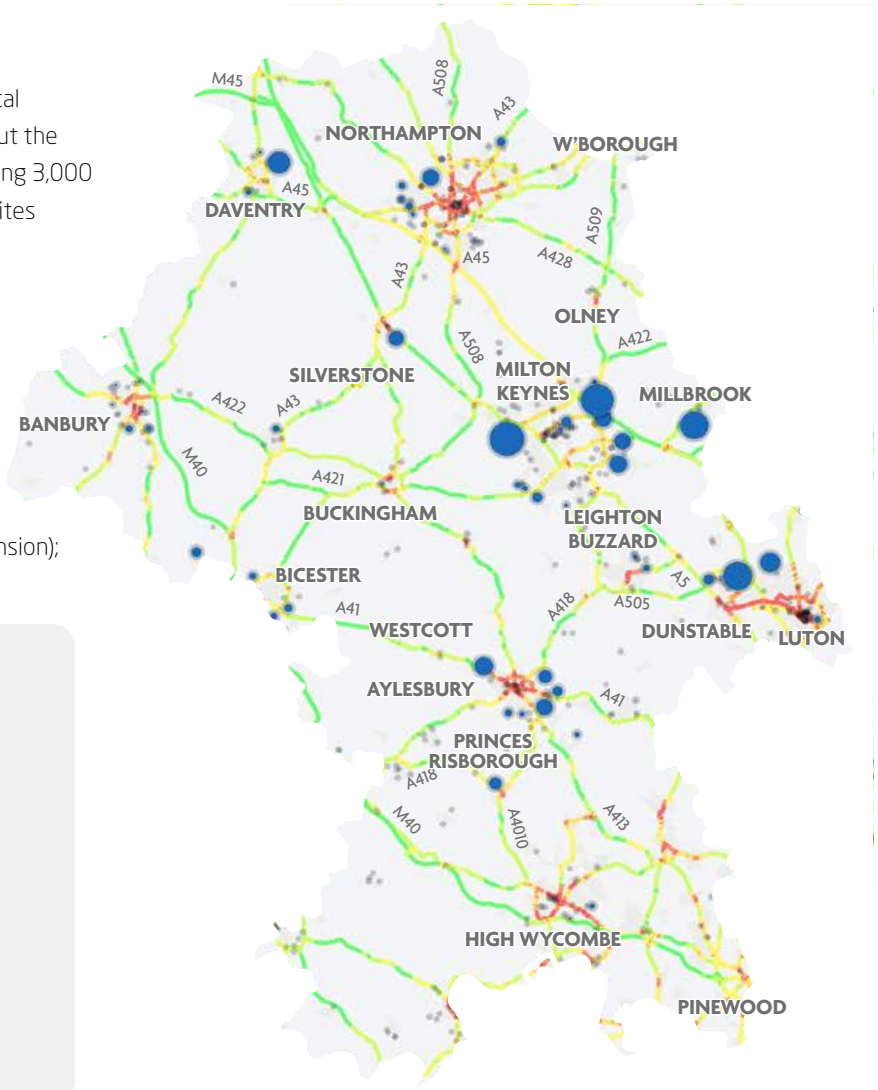
High levels of congestion can be found in many of the corridor's urban centres. Economic centres with high congestion include Northampton, Luton, Aylesbury and Wycombe, while smaller settlements such as Buckingham, Leighton Buzzard and Princes Risborough also have notably slower road speeds at peak times.

Other notable areas of congestion outside of the main settlements include:

- A505 between Luton and Dunstable
- M1 Junction 15 & 15a south of Northampton
- A509 through Olney
- M40 Junction 1 South of Denham
- M40 Junction 10 (onto A43) Northwest of Bicester

HOUSING

The map is overlaid with housing sites allocated in current local plans. There are major development sites allocated throughout the corridor, including multiple large sites in Northampton (including 3,000 homes at Kings Heath); Milton Keynes (where there are five sites each totalling more than 3,000 homes, including 6,079 in the 'western expansion area' and 5,750 in Milton Keynes east); Luton and Dunstable (with two sites to the north totalling nearly 9,000 homes); Bicester (four sites each with more than 1,000 homes) and Aylesbury (where the three biggest sites total nearly 9,000 homes). Several smaller towns also have significant levels of development, including Daventry (including one site of 4,000 homes), Towcester (2,750 homes at its southern extension); and Princes Risborough (2,261 homes at its expansion area).



Legend:

Congestion score morning peak hour (see pages 35 for full definitions)

- 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
- 6,000 homes
- 4,000 homes
- 2,000 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.

It identified the following as being potential focus areas for smart junction technology:

- M40/A41 junction, Bicester
- M40/A43 junction, Ardley
- A45/A5076 junction, Northampton
- A421/A5130 junction, Milton Keynes
- Aylesbury*

**The study said that several urban or built-up areas in the region, such as Aylesbury, have strategic inner ring roads which support strategic transport demand. Smart junction technology can therefore look to distinguish and prioritise between local and strategic or through movement demand or between local modes such as public bus, walking and cycling and all other traffic.*

DIGITAL CONNECTIVITY

A Settlements include: Northampton and Daventry

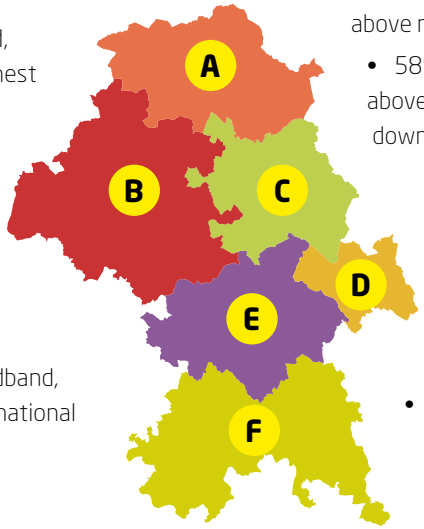
- 85% of residences are covered by ultrafast broadband, above the national average (69%)
- 61% of firms are covered by ultrafast broadband, above national average of 43% (and second highest of 18 EEH areas), whilst download speeds are 6% faster

B Settlements include: Banbury, Bicester, Brackley, Buckingham, Towcester and Silverstone

- Only 47% of homes are covered by ultrafast broadband, the lowest coverage in EEH
- Only 25% of firms are covered by ultrafast broadband, the lowest among all 18 EEH areas, almost half national average (43%). Download speeds are in line with national average

C Settlements include: Milton Keynes, Bletchley, Olney, Cranfield and Deanshanger

- 84% of homes are covered by ultrafast broadband, above national average (69%)
- 53% of firms are covered by ultrafast broadband, above the national average (43%), whilst download speeds are on average 6% faster



D Settlements include: Luton, Dunstable and Leighton Buzzard

- 83% of homes are covered by ultrafast broadband, above national average (69%)
- 58% of firms are covered by ultrafast broadband, above national average (43%), whilst average download speeds are 28% faster

E Settlements include: Aylesbury, Princes Risborough, Thame and Tring

- 62% of homes are covered by ultrafast broadband, below the national average (69%)
- Only 31% of firms are covered by ultrafast broadband, below the national average (43%). Download speeds are however 10% faster

F Settlements include: High Wycombe, Amersham and Henley

- 61% of homes covered by ultrafast broadband, below the national average (69%)
- 44% of firms are covered by ultrafast broadband, in line with the national average (43%), though download speeds are on average 13% slower

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.

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.

// 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.

NORTHAMPTON-MILTON KEYNES-AYLESBURY-HIGH WYCOMBE-OLD OAK COMMON RAIL CORRIDOR

By harnessing delivery of HS2 and East West Rail between Oxford and Milton Keynes, a once-in-a-generation opportunity could be unlocked to deliver a new rail corridor between Northampton, Milton Keynes, Aylesbury, High Wycombe and Old Oak Common that better connects some of the jewels in the crown of the UK's economic and cultural offering, and maximises the investment in the Elizabeth Line to Heathrow, Slough and Reading.

This is the Global Britain Railway, connecting some of country's greatest international economic and cultural assets. It is the line of the globally-leading Motorsport Valley tech cluster, fuelled by nearby Silverstone, one of the most iconic sporting venues in the world; of Milton Keynes, one of the most successful new cities in Europe; of Bletchley Park and its Codebreakers; of Aylesbury, the birthplace of the international Paralympic movement and near the out of this world space cluster at Wescott; of High Wycombe and south Bucks, the headquarters of some of the biggest life science companies in the world, and Pinewood Studios, where countless box office hits have been produced, including British icon, James Bond; and (via a rapid interchange at Old Oak Common), Heathrow, one of the world's busiest international airports; and onto Reading, one of the South East's most vibrant economies.

This opportunity will be lost if the Aylesbury-Milton Keynes link is not, at a minimum, safeguarded, and ultimately, must be delivered. (see page 20).

It has been estimated that within catchments of stations along the route between Northampton and south Bucks there is currently a population of 1.3 million, 78,000 businesses generating 678,000 jobs, and an economy worth £50bn.

Realising this exciting new corridor requires upgrades to existing infrastructure and track paths, rather than wholescale new infrastructure (see graphic opposite). It is important to note that these interventions each bring very significant individual value in their own right. However, when taken together, they unlock a transformational opportunity for the region.

The new rail corridor would be transformational for the wider transport system.

It would:

- Give a second London terminus for the Chiltern Main Line at Old Oak Common that will provide onward travel to the capital and Heathrow Airport via the Elizabeth Line, as well as unlocking capacity for additional services by reducing reliance on platform capacity at London's Marylebone Railway Station
- Improve rail system resilience through provision of alternative routes during periods of disruption and future changes in needs for passenger and freight journeys
- Provide a genuine alternative to the car and relieve congestion – for example the most obvious route for a road journey between High Wycombe and Milton Keynes is via congested Aylesbury town centre, making journey times between the two slow and unreliable

The opportunity of services connecting into Old Oak Common was highlighted by Network Rail in its 2017 Chiltern Route Study (see page 20).

Next steps: EEH will work with partners to progress the case for the specific interventions required along the corridor, including through our ongoing Main Line Rail Priority Study.

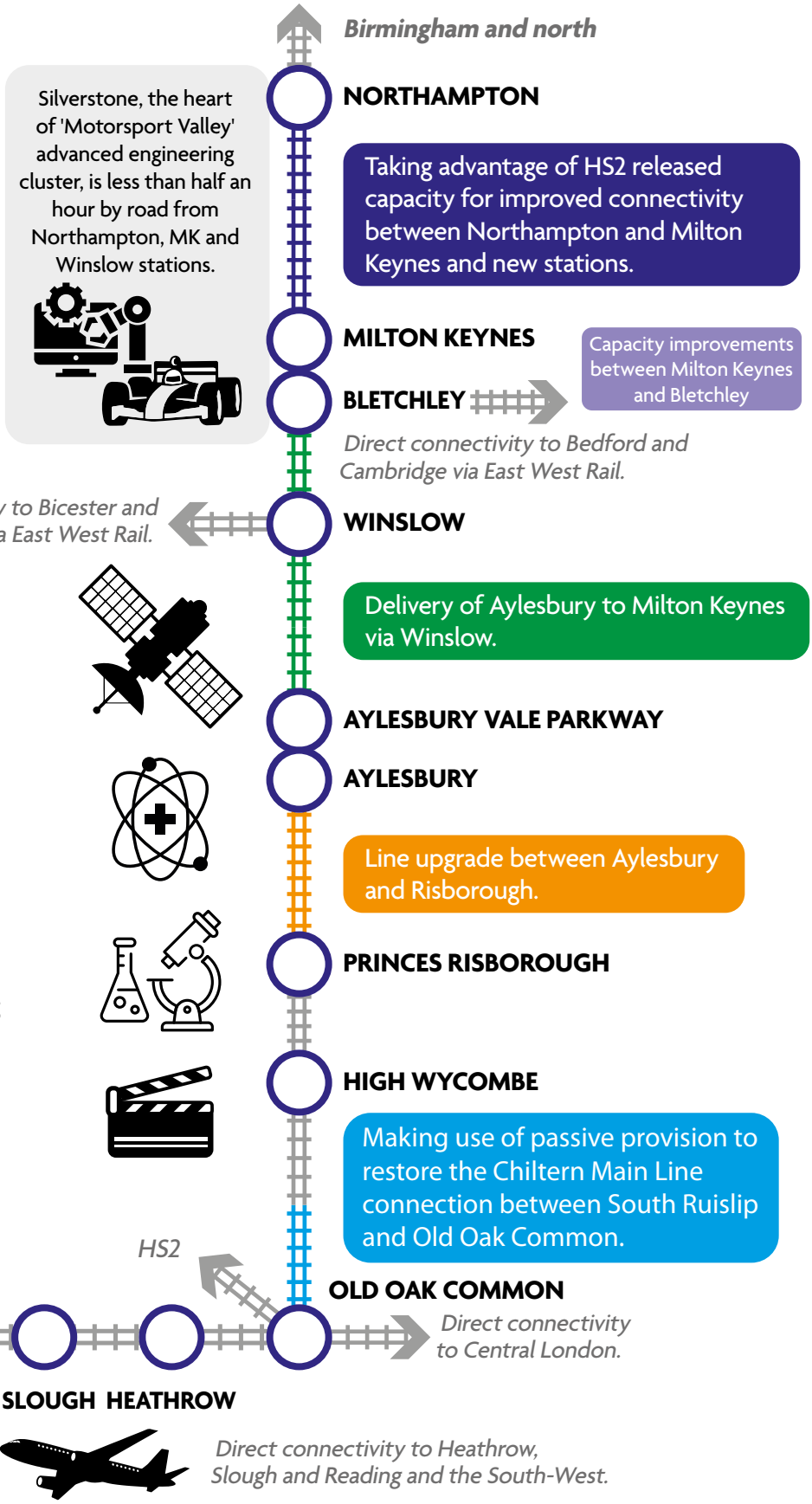
Northampton, the single most populated built-up area in EEH, with nearly 250,000 residents, and significant levels of planned housing growth.

Milton Keynes, an economic powerhouse and the third most populous built-up area in EEH, with plans for its population to grow to more than 400,000 people by 2050.

Aylesbury, birthplace of the Paralympics, with a growing medtech sector around Stoke Mandeville Hospital. Aylesbury Vale Parkway is only 10 minutes by road to the space cluster at Westcott. Aylesbury has a population of 90,000 and is undergoing significant growth, with 16,000 homes allocated in the local plan. Its road network is one of the most congested in the region.

High Wycombe (population 90,000) and south Bucks, home to a burgeoning life science and creative cluster, with Gerrards Cross station only 10 minutes by road to Pinewood Studios.

Old Oak Common, the new HS2 hub, which will offer high frequency services via the Elizabeth Line to the UK's international gateway of Heathrow Airport, Slough and the economic powerhouse of Reading.



DELIVERY OF THE AYLESBURY-MILTON KEYNES RAIL LINK

The Aylesbury-Milton Keynes link has always been an integral part of East West Rail.

Indeed, it was included within Network Rail's Transport and Works Act Order application, approved by the Secretary of State in 2020, granting permission for work to begin.

As the previous page stated, the Aylesbury-Milton Keynes link is essential for unlocking the opportunity for the Northampton-Old Oak Common corridor. However, it is also vital in its own right – and pivotal to Aylesbury's economic future.

For a town of its size, its connectivity by rail is notably poor – akin to a 'cul de sac' where the only option is to travel southwards into London, with no direct northern, western, or eastern connectivity. This is compounded by it having one of the poorest performing parts of the region's road networks (see page 28).

The Aylesbury link would be transformative for Aylesbury and surrounding communities, offering a realistic alternative to the car and closer links to other economic centres, not just Milton Keynes, but also (after completion of East West Rail and via no more than a single interchange) Oxford, Bicester, Bedford, Northampton, Birmingham and Cambridge (with Luton also being another potential journey dependent on quality of interchange).

The growth of Aylesbury and north Buckinghamshire includes nearly 20,000 new homes planned for delivery by 2033 (including 16,207 new homes in Aylesbury). Site allocation in the local plan was shaped with the expectation that the link would be delivered: it was only in 2021, eight years into the local plan, that the link was removed from the first phase of construction work. As Buckinghamshire Council develops the new Local Plan for Buckinghamshire, increased certainty in the delivery of a rail connection will be a key consideration in determining the location and scale of development to be provided not only around Aylesbury but across Buckinghamshire post 2033.

It is our understanding that the benefit-cost-ratio for the Aylesbury-Milton Keynes link is comparable to that of the rest of East West Rail. At a recent transport select committee on East West Rail, DfT Permanent Secretary Dame Bernadette Kelly, said, in our view correctly, that a BCR should not preclude schemes that are transformational, particularly where its benefits are difficult to capture using traditional appraisal methods. We would argue that the same rule should apply to the Aylesbury link.

Next steps: EEH will work with local authority and rail industry partners to help unlock the business case for upgrading the link, alongside other local authority and rail industry partners. This will need to take into account work already undertaken by rail industry partners, alongside evidence base work produced for EEH.

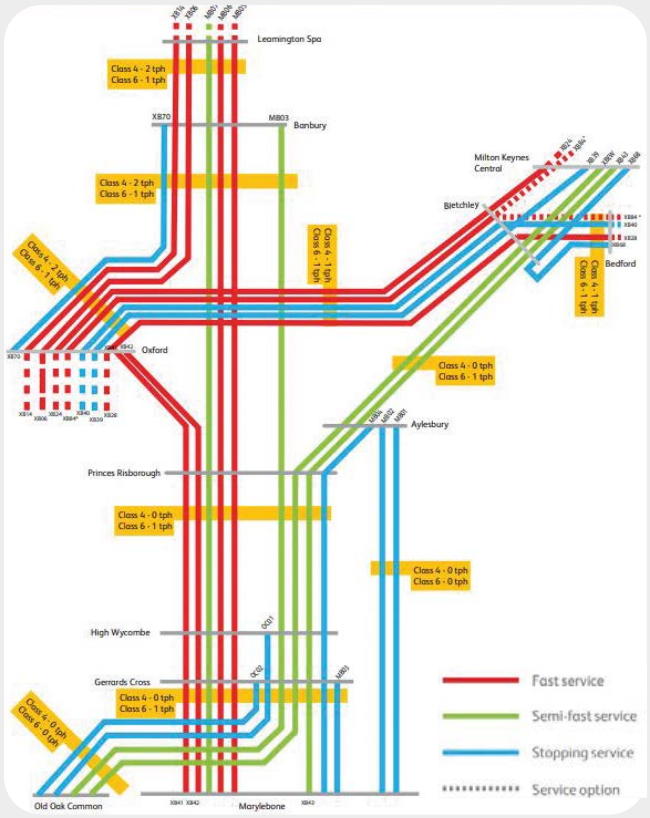
The Chiltern Route Study and East West Main Line Strategic Statement

The Aylesbury-Milton Keynes link has been expected for many years as part of delivery of East West Rail. Indeed, its delivery is 'assumed' in several Network Rail documents, including the Chiltern Route Study (2017) and East West Main Line Strategic Statement (2022). Both documents reference the opportunity of connecting into Old Oak Common. The Chiltern Route study includes the above diagram of how a future network may look.

The Strategic Statement says: "*The addition of East West Rail services to Aylesbury will be the first step in offering better connectivity to the north and east; all links which are not present today.*

"*The West Midlands and Chiltern (WM&C) Route Study has outlined aspirations for two trains per hour (TPH) operating between Milton Keynes and Old Oak Common (via Aylesbury and Princes Risborough), which could in part be formed for an extension of the proposed East West Rail service. This would improve the connectivity and economic opportunities to the people and businesses across Buckinghamshire to neighbouring counties and beyond.*

"*A more frequent service to wider destinations, in addition to the improved connectivity to the Chiltern Main Line and Old Oak Common station, enables an opportunity to deliver significant benefits to a wide range of locations beyond Aylesbury. Additionally, these improvements in connectivity and frequency would promote a significant modal shift from private road transport, which currently dominates the county's travel, to rail.*"



WEST COAST MAIN LINE IMPROVEMENTS

The West Coast Main Line is currently one of the busiest railways in the country, serving around 71 million people each year, alongside 40% of all UK rail freight traffic.

The route south of Birmingham will benefit from released capacity following delivery of HS2. It is important that these benefits are felt by communities in Northampton and Milton Keynes, both through improved passenger services, as well as helping take lorries off congested roads through enhanced freight services.

A specific opportunity, subject to further feasibility studies, is to provide additional and improved stations in the Northampton area to serve new communities.

To achieve full train service benefits from released capacity will require infrastructure improvements to the West Coast Main Line. These are outlined in Network Rail's 2023 West Coast South Strategic Advice document. It highlights the importance of tackling capacity constraints between Bletchley and Milton Keynes, likely through major infrastructure upgrades approaching Milton Keynes station.

This in turn would help enable wider improvements such as the opportunity for new stations in the Northampton area, or new train services to Buckinghamshire via an East West Rail Aylesbury-Milton Keynes link (helping to realise the ambition for the wider Northampton-Milton Keynes-Aylesbury-High Wycombe-Old Oak Common corridor).

In addition, we are aware that service quality on the West Coast Main Line is falling below expectations. This must be addressed as soon as possible.

Next steps: Plan for progressing the business case for specific interventions, alongside local authority and rail industry partners, and taking into account relevant evidence base work.

CHILTERN MAIN LINE IMPROVEMENTS INCLUDING TRAIN LENGTHENING AND ROLLING STOCK

Chiltern Railways uses the oldest trains in the country, with an average age of around 30 years, operating purely using diesel traction.

This can lead to reliability problems, crowding on services and a poor customer experience. Reliance on diesel traction is also not sustainable, given the need to improve air quality standards and decarbonise our transport network.

There is a need to secure new rolling stock for the Chiltern routes in the short-term which will increase capacity and reliability with newer longer trains, alongside improving customer experience onboard. In the longer-term, there is a need to deliver rolling stock that operates on electric power, alongside the infrastructure needed to deliver this. This is likely to be through use of emerging technologies, such as battery power, alongside overhead equipment and charging infrastructure.

Next steps: Develop the business case for upgrading rolling stock and railway infrastructure for electric power. EEH will continue to support Chiltern Railways and other rail industry partners in developing these plans.

MAXIMISING OPPORTUNITIES FROM EAST WEST RAIL

East West Rail between Oxford, Bicester, Winslow, Bletchley and Milton Keynes will open in 2025, transforming east-west connectivity in the northern part of the corridor.

EEH supports delivery of the next phases of East West Rail to Bedford (via the Marston Vale line) and Cambridge at the earliest opportunity.

It is essential that the line is supported by superb door-to-door connectivity, enabling the maximum amount of people to access services as possible (EEH and its partners are engaging with East West Railway Company on its door-to-door strategy). This is particularly relevant to Winslow, a new station on this route, and stations in the Marston Vale. In addition, every effort must be made to avoid severance of active travel routes by the railway line.

It is disappointing that East West Rail between Oxford and Milton Keynes will open using diesel traction. It is vital that in the longer-term, East West Rail contributes fully to the UK's decarbonisation ambitions and operates as a net zero railway.

- Please refer to p30 for information on the need for a solution to the London Road level crossing in Bicester
- Please refer to p35 and the Milton Keynes Connecting Economies brochure for information on maximising the success of the link for Milton Keynes and Bletchley.

West Northamptonshire's Cllr Phil Larratt with former South Northamptonshire MP Andrea Leadsom at the official opening of the A5 roundabout in November 2023, a significant step towards the realisation of the relief road, pictured with representatives from Persimmon Homes and National Highways.

TOWCESTER CONNECTIVITY INCLUDING A5 RELIEF ROAD

Towcester has longstanding issues with the high levels of traffic passing through its historic town centre, causing environmental, safety and accessibility concerns to residents and businesses.

A new link road is being built between the A5 and A43 and will provide relief of traffic in and around Towcester and improve the lives of those who live, work and visit. This has allowed for investigation of ways in which to encourage through traffic, particularly goods vehicles to use the new link road and the A43 as an alternative to the A5.

This will alleviate some of the more disruptive traffic from the town centre, improving accessibility and quality of life in Towcester.

Next steps: National Highways needs to update its business case to help secure the funding needed to complete the final design stage and deliver the scheme.

IMPROVEMENTS TO A421 CORRIDOR

The A421 is a key east-west route in the region, running from Bedford to Buckingham, travelling through Milton Keynes.

It forms part of the major road network linking key parts of the strategic road network, including the M1 and A43 corridors, and is an alternative to the A5 corridor. It also provides the main link from Milton Keynes to Oxford, and is used by a relatively high volume of heavy goods vehicles.

Improvements to the A421 have been identified as part of EEH's connectivity studies programme and National Highways' Oxford to Cambridge roads study. Buckinghamshire Council is specifically working on a study of the A421 in its area. The road will be critical for future growth in north Buckinghamshire and on routes into Milton Keynes, where the road already suffers from capacity constraints.

Next steps: EEH and its partners will review next steps for more detailed work and continue to explore funding opportunities to address pressure on the A421.

NORTHAMPTON-KETTERING ROAD CONNECTIVITY

The A43 is an important regional north-south link providing access into Northampton from Kettering and Corby as well as connecting the A14 and A45 corridors along with wider access to the M1.

Improvements to the A43 corridor between the A45 at Northampton and the A14 at Kettering are being delivered in phases.

Following previous phases 1a (additional lanes at the Round Spinney roundabout), 1b (Moulton Bypass dual carriageway) and 2 (dualling from Moulton bypass to the entrance to the Overstone Gate roundabout); the phase three improvements will provide capacity enhancements to the A43 between Overstone Grange and Holcot/Sywell junction, reducing congestion on this section of the A43, providing benefits to the strategic movements as well as supporting planned developments to the north of Northampton.

The phase three scheme will include a shared-use cycle path, forming an extension of the existing cycling route provided via the earlier phases. It will increase local capacity, reduce congestion and support strategic housing growth including the Overstone Leys development.

While recent improvements works have reduced congestion along parts of the A43, there are still issues with slow moving traffic at pinch points north of Northampton, which the third phase of dualling works sets to address.

Next steps: The scheme forms part of the major road network and a strategic outline business case was submitted to the Department for Transport in May 2022. Work is now underway to further develop the design of the scheme and prepare an outline business case with West Northamptonshire Council acting as lead authority in partnership with North Northamptonshire Council.

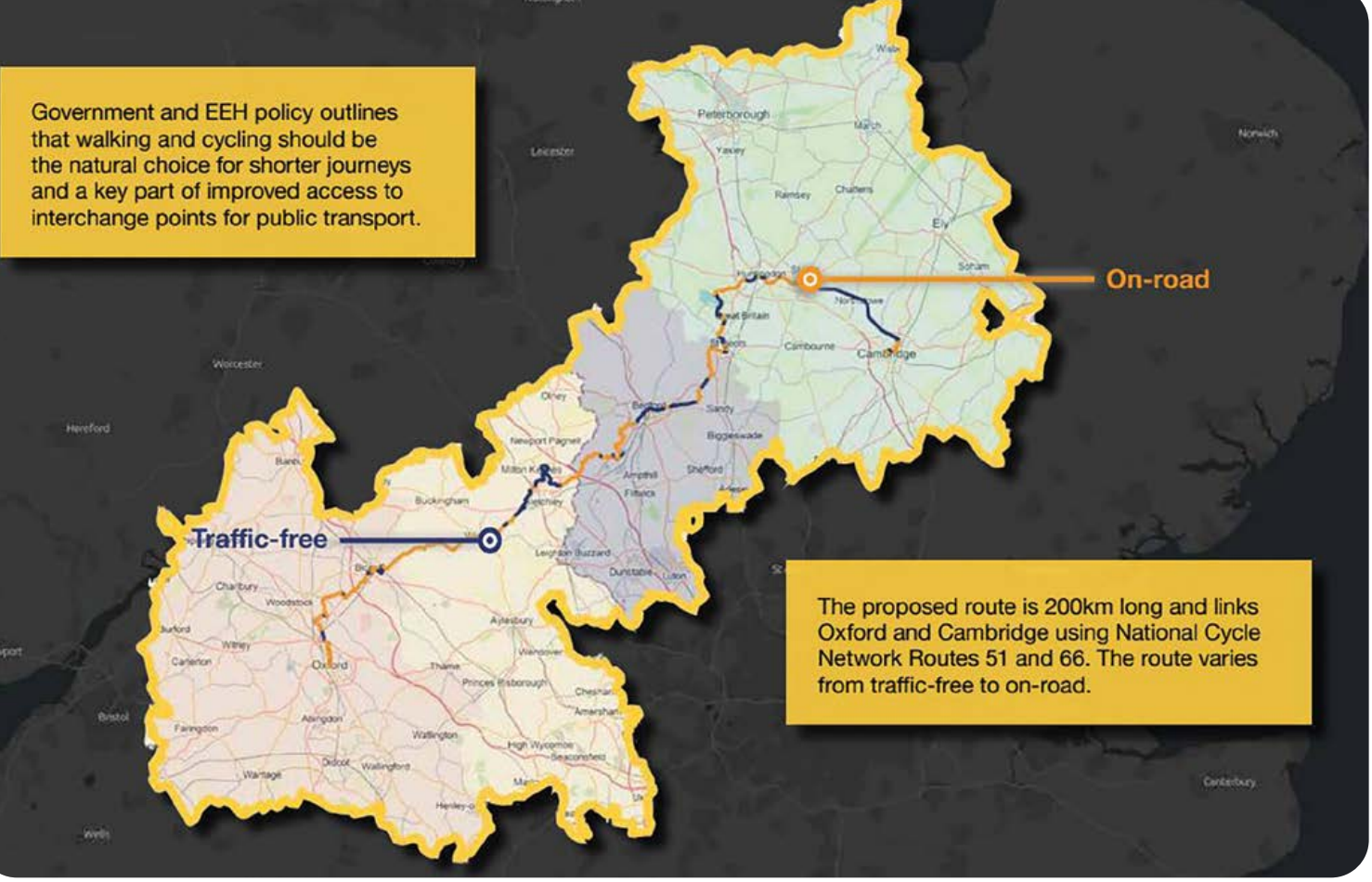
STRATEGIC ROAD CONNECTIVITY IN NORTHAMPTON

Northampton is the single largest urban area in England's Economic Heartland, and one of the most congested.

The area is a key freight and logistics hotspot, making the performance and capacity of its strategic roads of fundamental importance to the UK economy. In addition to the A43 phase three works, described above, the following interventions are required: Reliability and safety improvements on the A45 between Wellingborough and Northampton. Northampton Northern Orbital Road Infrastructure will provide capacity improvements to help relieve traffic congestion north of Northampton and within surrounding villages.

In addition, the new Strategic Rail Freight Interchange at SEGRO Logistics Park Northampton, employing 7,000 people and with five million square feet of warehouse space, will see thousands of tonnes of goods switch between rail and road beside junction 15 of the M1 every day. Its arrival only reinforces the need for improvements on A45 and A43, described above, and in the future, additional work to alleviate further pressure on M1 junctions.

Next steps: West Northamptonshire Council is exploring options for the provision of highway improvements to the north of Northampton to relieve existing settlements of the impacts of traffic and to facilitate more reliable journey times in this part of the town. Consultation on a number of options for part of this route was undertaken in 2017, further work is now underway to provide an updated understanding on the need, benefit, costings and potential funding sources. Options being considered are: the completion of the route between the northwest relief road (which is currently under construction) and the A43 to the north of Moulton; a longer route between junction 16 of the M1 and the A43 north of Moulton in the longer-term; and more localised, targeted, interventions to reduce congestion.



VARSITY WAY ACTIVE TRAVEL CORRIDOR

EEH's flagship Varsity Way project would see an east west active travel route linking Oxford to Cambridge via Bicester, Winslow and Milton Keynes (aligning closely with East West Rail).

It provides the opportunity for a 'green spine' across the Heartland; one that can act as a focal point for developing a region wide network of greenways, and attract tourists and leisure riders from across the country.

The existing route is part of the national cycle network (NCN). However, the condition of the route is varied, meaning there are opportunities where improving the route will encourage more active travel. Working with the sustainable travel charity Sustrans, partners and stakeholders EEH undertook a high-level options assessment of the route spanning from Oxford to Cambridge.

The assessment identified improvements which could be made to ensure the route is of good standard across the region to provide a high-quality link from Oxford to Cambridge. Currently 48% of the route is traffic free, with around 157km of route considered 'good' or 'very good' and 133km considered 'poor' or 'very poor'. The report identified opportunities for improvements for network coherence, safety, comfort, attractiveness and convenience in the form of interventions such as resurfacing, path widening, quiet-way treatment, traffic calming and signage improvements, amongst others. The options assessment provided a starting point to work with partners on realising the potential of the Varsity Way as an east-west active travel route (for example, connecting with the north-south Buckinghamshire Greenway) to allow people to more easily walk and cycle within and across the area and an opportunity to build a network of active travel routes and provide a legacy for East West Rail.

Next steps: EEH plans to undertake detailed feasibility and costings, collaborating with local partners, alongside a specific project relating to alignment of the route in the Marston Vale between Milton Keynes, Central Bedfordshire and Bedford. This includes options for it to potentially integrate with East West Rail, current and aspirational active travel networks, the proposed Bedford-Milton Keynes Waterway, and the proposed Universal Studios development.

Buckinghamshire Greenway

The Buckinghamshire Greenway is an accessible, high-quality active travel route that will connect people and communities running the full length of Buckinghamshire. It will be the walking and cycling backbone for everyday trips, connecting with both existing active travel routes and other new routes currently in development. It will also link up with rail stations and bus services, creating the opportunity for end to end sustainable journeys.

The Greenway will open up new opportunities for the people of Buckinghamshire to access education and employment, provide an attractive and safe active travel alternative to local car journeys and be a local leisure and tourism asset for Buckinghamshire, running through the Chilterns AONB and connecting to key tourist destinations.

Next steps: Buckinghamshire Council will continue to progress more detailed design for completion of the Greenway.

EXPANSION OF LUTON-DUNSTABLE BUSWAY SERVICES AND WIDER BUS CONNECTIVITY IMPROVEMENTS, INCLUDING TO LONDON LUTON AIRPORT

The Luton-Dunstable busway opened in 2013 and is considered a trailblazer for other guided busway schemes.

The route of 8.3 miles (including 4.8 guided track) connects Houghton Regis, Dunstable, Toddington, Luton and London Luton Airport, with core services between Dunstable and Luton up to every seven minutes at peak times. The busway ferried more than 21 million passengers in its first 7 years, and also provides a popular active travel corridor along its length for pedestrians and cyclists.

Given this success, there is a desire to expand the opportunity of Luton-Dunstable Busway services wider both to the west toward Leighton Buzzard, and eastwards as far as Stevenage (via Hitchin), with the option for services to extend further to major locations such as Stansted Airport. However, there are several highway capacity challenges and route choices would need to be investigated further.

Nevertheless, wider bus connectivity to places such as main line rail services at Leighton Buzzard, Luton, and Stevenage, using rubber wheeled vehicle options, is supported by wider regional transport studies and responsible local transport authorities within the area.

Any improvements would be developed with due consideration of other bus services in the region such as those serving Aylesbury and rural areas of Buckinghamshire to provide significantly improved bus connectivity into Dunstable, Luton and onward to the London Luton Airport.

For example, the current Service 61 from Aylesbury to Dunstable (via Tring) exists, but only goes on to Luton once a day – this option could be enhanced by improvements to bus service frequency.

High-flying Luton

As Cambridge Econometric's analysis has demonstrated, Luton has a dynamic and growing economy, and a key role to play in the region's success. There are several regeneration projects planned and underway, with more than £5bn of investment including a new stadium for Luton Town Football Club, who were promoted to the Premier League in 2023 and major redevelopment of the town centre.

Luton's airport is the busiest within the EEH region and fifth busiest in the country and its 'direct air rail transit' (DART) scheme has transformed connectivity between the terminal and Luton Airport Parkway Station on the Midland Main Line. Proposals to increase the capacity of London Luton Airport to 32 million passengers per annum (mppa), by making the best use of its existing runway, are at an advanced stage.

LUTON RAILWAY STATION IMPROVEMENTS

Used by more than three million passengers every year, Luton Railway Station is a key gateway to the town, making it vital the station provides a positive first impression and a welcoming and comfortable environment for rail users.

In the short term, a programme of access and accessibility improvements is being delivered at the station, under the governments 'Access for All' funding. This includes replacing the station canopies on platforms and the installation of a new bridge and three lifts to improve the station's accessibility. Construction is due to start in 2025.

However, given the quality of the existing infrastructure, a full redevelopment of the station is required. Doing so would maximise the value of nearby projects, including the major town centre regeneration focused on Bute Street, and Power Court – the new stadium for Luton Town Football Club, who have enjoyed unprecedented success in recent years.

Next steps: Luton Council, working with key stakeholders and politicians, will continue to make the case for much needed investment at Luton Station. The council will explore all opportunities to seek the investment needed to create a high-quality, welcoming , 21st century station that maximises the potential of development in the town and broader regeneration plans.

A505 VAUXHALL WAY CORRIDOR IMPROVEMENTS

The Vauxhall Way corridor is one of Luton's most important arterial roads and an essential part of Luton's strategic highway network and the Government's major road network.

With major developments proposed in the east of Luton area, coupled with future growth, the road will face overcapacity in the future, resulting in increased traffic, longer queue lengths and slower journey times to London Luton Airport. To address this, Luton Borough Council, with partners, is exploring the optimal highway solution to meet future demand sustainably, increasing opportunities for active travel and public transport.

The council, working with consultants and the Department for Transport is developing designs that will future-proof the link against future demand. These schemes include options for widening the road and enhancing capacity along the junctions that serve it. The scheme will deliver a connectivity solution that considers the needs of all transport users. Realisation of highway improvements along Vauxhall Way will transform local and regional connectivity.

Next steps: Luton Council awaits a positive decision from the DfT to grant programme entry (approval to outline business case stage). Following this agreement, the council will work with consultants and partners over the next year to refine the options include in the business case and agree the preferred scheme.

BUTTERFIELD BUSINESS PARK MOBILITY HUB

The 83-acre Butterfield Business Park, on the A505 on the edge of north-east Luton, was established in 2015 and has played a key role in supporting economic growth in the town and beyond.

More than 325,000 square feet of commercial space has been delivered, with plans for a further 454,000. A new interchange facility is proposed at the Butterfield Business Park site. This will intercept private vehicle trips destined for locations in Luton town centre along key routes. The A505 is a key corridor into Luton town centre, serving the towns of Hitchin, Letchworth, Stevenage and Cambridge as well as many smaller settlements in Hertfordshire and Central Bedfordshire. It is expected that the park and ride site will include electric vehcile charging and ancillary, microbility modes of transports, that located together will form a mobility hub.

Next steps: Planning Consent for the park and ride site was given in March 2024 with site clearance due to take place by the end of November 2024 and then site hand over in 2025. Construction of the parking surface is likely to take up to six months with other ancillary works to enable the site operation due to be completed in 2025. Funding for the project is coming from Bus Service Improvement Plan funding that awarded Luton £19.1m in 2022. A demand responsive transit (DRT) backed bus service will transport users to the town centre and station via the Luton-Dunstable Busway.

IMPROVEMENTS ALONG THE A404 CORRIDOR INCLUDING THE A404/M40 JUNCTION 4 HANDY CROSS ROUNDABOUT, WESTHORPE INTERCHANGE AND BISHAM ROUNDABOUT

Along the A404 corridor, the M40 Junction 4 (Handy Cross in High Wycombe), Westhorpe interchange (Marlow) and Bisham roundabout (in Berkshire, just south of Marlow) are well-known areas of congestion.

A comprehensive scheme is needed to ensure economic growth within the areas continues to be supported, alongside providing for a safe and efficient strategic road network.

Improvements to A404/M40 Junction 4 (Handy Cross) and Bisham roundabout were included in the Road Investment Strategy 2 (RIS2 - 2020-25) as RIS3 pipeline schemes (2025-2030). However, improvements to this key corridor may be delayed to 2030 or beyond.

The location of the A404 means that it connects High Wycombe in Buckinghamshire with the wider Thames Valley, providing access to economic centres, jobs and opportunities. This includes sector-specific connectivity such as linking several opportunities in life sciences and digital and creative (centred on nearby Pinewood Studios).

The corridor is also one of Buckinghamshire's most economically productive, and includes established high performing businesses operating out of Cressex Business Park (High Wycombe) and Globe Business Park (Marlow) – and new thriving business areas at Handy Cross Hub and Cressex Island. Businesses on Cressex and Globe Business Parks have created business improvement districts to act as a lobbying voice to address the congestion along this corridor and associated access and egress to their trading areas.

Congestion is the number one issue to address, impacting future inward investment and growth on both business parks and a reason that businesses consider relocating their operation and headquarters. Improvements to the A404/M40 are vital to realise the full potential of these key employment areas.

Investment in the corridor would also provide resilience for the wider road network, both inside and outside the EEH region, including outer orbital journeys outside of the M25. Handy Cross roundabout is a well-known hotspot for congestion, with journey times significantly impacted by queuing at the junction – both on local roads such as the A4010, and on the two main strategic roads.

This queuing also has environmental implications, with the Wycombe Air Quality Management area focused on the M40 near the Handy Cross junction, as well as the A404 approach from the town. This is likely to be compounded by housing growth in High Wycombe itself. Funding for improvements, alongside investment in the wider corridor and decarbonisation of road vehicle transport, are therefore critical.

Next steps: Continue to make the case for improvements to be part of the next national Roads Investment Strategy. Buckinghamshire Council is undertaking a high-level economic business case to support this.

SOLUTION FOR THE A5 HOCKLIFFE

Hockliffe was highlighted as a priority in the OxCam Roads Connectivity Study as strategic traffic including HGVs passes through the village creating environmental and quality of life challenges.

The locally led A5 Hockliffe Junction Improvement Study suggests that in the short term A5-A4012-B5704 junction improvements and signalised crossings, possibly combined with B5704 traffic restriction, would help to alleviate traffic impacts in Hockliffe.

However, in the long term a relief road from the A5 to B5704 would be more effective. It would reduce the impact of traffic and substantially enhance non-car access within the village with the existing route being detrunked (including a ban on HGV movements). Strategic traffic relief measures would also help to enable local planned development by ensuring appropriate network capacity is available for public transport services and movement of private vehicles.

Next steps: EEH is keen that National Highways progresses delivery of initiatives to address the priorities identified within the OxCam Roads Connectivity Study. This includes delivery of a long-term solution for Hockliffe which improves quality of life for local communities, while unlocking opportunities for planned, sustainable development.

ORBITAL-ROAD AND GARDENWAY IMPROVEMENTS IN AYLESBURY

Aylesbury has one of the poorest performing parts of the strategically important road network in the region.

Three major road network routes (A41, A413 and A418) meet and run through Aylesbury town centre, making congestion a significant issue. Indeed, analysis by INRIX lists Aylesbury as being within the top 250 most congested places in the world, a remarkable ranking given the market town is being compared to some of the biggest cities and metropolitan areas on Earth. Driving in Aylesbury during peak times costs motorists an additional 40 hours every year, compared to if they were travelling at other times of the day. The poor levels of service on Aylesbury's road network were also highlighted by National Highway's Oxford to Cambridge roads study - which identified it as one of the most important issues to be taken forwards in the region.

By its nature, the major road network in the centre of Aylesbury tends to be used by significant amounts of through-traffic. For example, Aylesbury is on the primary route for journeys between High Wycombe and Milton Keynes; and between north London and Oxford and Bicester. Completion of 16,000 additional homes set out by the Vale of Aylesbury Local Plan will only increase pressures on the network.

A key part of the Aylesbury Garden Town project therefore is the creation of a series of link roads, forming an orbital road around the town as set out in Buckinghamshire Council's Aylesbury Transport Strategy, and orbital Gardenway walking and wheeling route as set out in the Aylesbury Local Cycling and Walking Infrastructure Plan (LCWIP).

The orbital road would see a new alignment of the major road network around Aylesbury, taking cross-town and through traffic away from the town centre to a more appropriate peripheral route. The link roads are predominantly being delivered through local plan housing allocations, some of which are already in place.

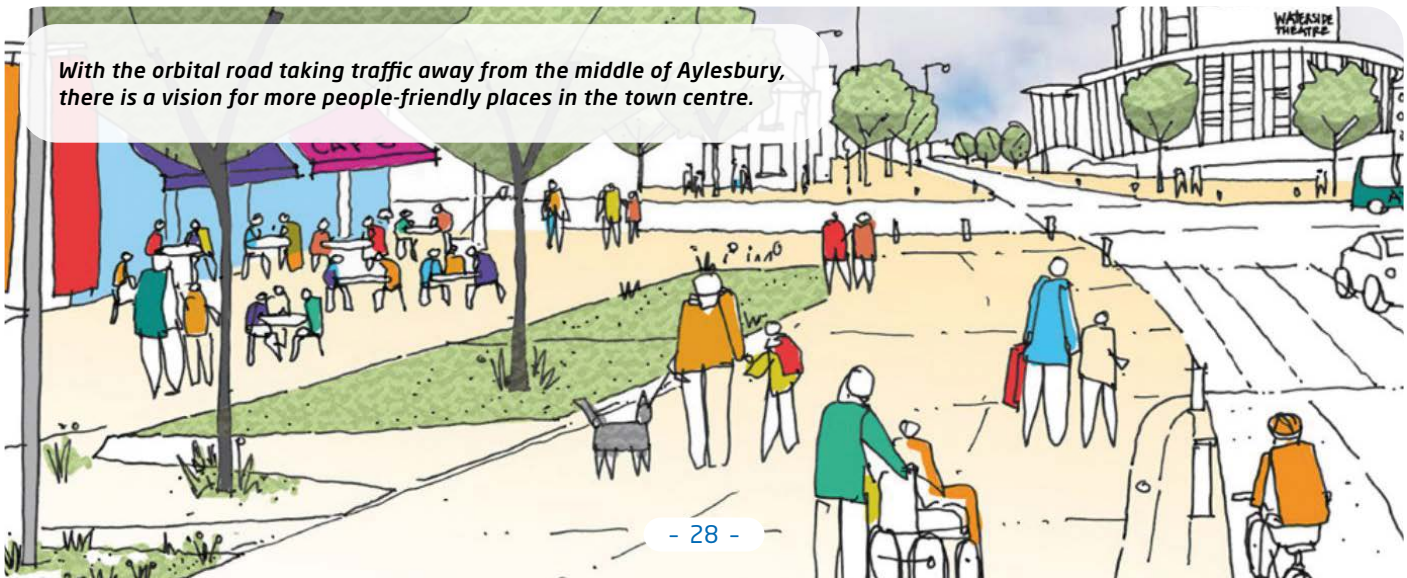
The orbital road will enable committed local plan growth, minimising the impact of growth on the town. It will support greater travel choice by providing for cycling, walking and public transport priority improvements to take place on the main radial roads closer to the town centre, while enabling town centre regeneration.

A key role of the link roads and gardenway is to connect new developments and create new links to existing built-up areas. The gardenway will include local parks, woodlands, playgrounds, community gardens, natural areas, waterways and heritage sites.

The new link road will also be designed to facilitate the gardenway by allowing for access and crossing (where necessary) for pedestrians, wheelchair users, bike riders and passenger transport users. Furthermore, the gardenway will provide key connections to the Buckinghamshire Greenway, which will form a key link in the National Cycle Network in years to come.

Next steps: Further design work on the remaining sections of the orbital road is now required. EEH will continue to support Buckinghamshire to promote and progress the schemes.

In addition, EEH's connectivity studies also identified the need to reduce the impact of traffic on the quality of life of communities on the major road network into and out of Aylesbury, including Wing (A418) and Waddesdon (A41). EEH continues to work with Buckinghamshire Council and other stakeholders to identify appropriate solutions for these areas.



With the orbital road taking traffic away from the middle of Aylesbury, there is a vision for more people-friendly places in the town centre.

Movement vision

- Strategic through traffic
- Reduce through traffic in town centre
- Gardenway
- Greenway links
- Strategic cycle routes*
- Local cycle routes*
- Park + Ride
- Bus station
- Train station
- Proposed HS2 route

** Routes identified in LCWIP study (June 2019) and other emerging schemes under development*

Above, the vision for the Aylesbury gardenway, and below, the wider movement vision which includes for strategic through-traffic.

IMPROVING CONNECTIVITY AROUND BICESTER, INCLUDING M40 JUNCTIONS / A41 AND A SOLUTION FOR LONDON ROAD

Bicester is a rapidly expanding town, with thousands of new homes planned and being built, including a mixed-use housing and employment 'eco-town' which could ultimately deliver around 6,000 homes to the north west of the town.

With a growing and dynamic economy, it is located to the north of Oxfordshire's 'knowledge spine', described in the county's local industrial strategy as stretching from Milton Park and Didcot, through to Oxford and then onto Bicester to the north. And, of course, it is home to Bicester Village, an international tourist destination to the extent that rail services have included announcements in Mandarin.

The town already benefits from good road and rail connections to Oxford, as well as towards London and Birmingham. Bicester is also set to benefit from increased rail connectivity as further stages of East West Rail are delivered, with new trains to Milton Keynes expected from 2025, and onward trains to Bedford and Cambridge expected in the longer-term.

However, there is a continued requirement to plan for improvements that will maximise the number of sustainable transport trips in the town, including linking in with programmed strategic transport improvements.

Firstly, targeted improvements to the road network are necessary, including upgrading the A41, M40 junction to the county boundary east of Ambrosden, through Bicester for all modes of transport, as well as place-making enhancements in the town centre. The current strategy includes a south east perimeter road, and the status of this proposal will be confirmed through the Oxfordshire Local Transport and Connectivity Plan, transport strategy and through the work on local plan review for Bicester.

In the wider area, there will need to be further improvements on the A34/ M40/ A43 strategic road route to the west of Bicester, including to ensure strategic freight movements are facilitated. In the short-term, upgrades to the M40/A43 are scheduled, which may need to be complemented by further improvements to the M40/ A34 junction in the longer-term. The M40 at Bicester was highlighted as performing poorly in National Highway's Oxford-Cambridge roads connectivity study.

Secondly, with increased future East West Rail services there will need to be new routes for those wishing to cross the rail line that passes through the centre of Bicester. In particular, finding a long-term solution to providing an alternative to the current level crossing road access at London Road will be essential given increasing crossing down-time as new train services come forward. The solution must provide alternative sustainable access for all modes of transport currently using this route, building off the extensive optioneering work undertaken to date. A final proposal should be addressed through the plans for the next stage of East West Rail, taking into account local access needs.

Next steps: EEH will work with Oxfordshire County Council and strategic partners such as National Highways to develop necessary road improvements. It is essential that East West Railway Company works with Oxfordshire County Council to ensure an acceptable solution for London Road is agreed as soon as possible and delivered before the sections to Bedford and Cambridge are opened.

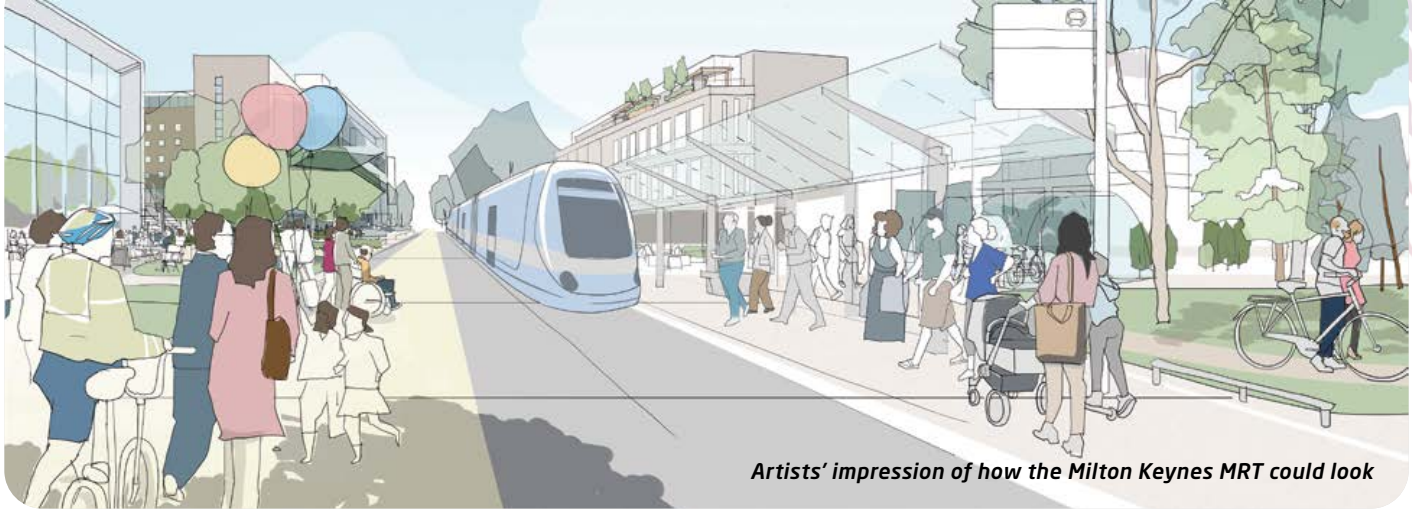
PRINCES RISBOROUGH RELIEF ROAD

The long term vision of the Princes Risborough relief road is the creation of an alternative alignment to the existing A4010 around the town, facilitating smoother journeys between High Wycombe and Aylesbury.

It would support the delivery of around 2,500 new homes allocated within the current Wycombe local plan and remove the negative impact of through traffic on the existing A4010 alignment through the town centre.

The scheme design includes new active travel infrastructure to support greater walking and cycling accessibility for the town, especially to Princes Risborough and Monks Risborough stations.

Next steps: The road is being planned and delivered in phases. The first phase is well advanced, with planning permission granted. Later stages are the route to the north that will be delivered through planned development, and the route to the south called the Culverton Link Road.



Artists' impression of how the Milton Keynes MRT could look

INTERVENTIONS IN AND AROUND MILTON KEYNES

A separate Connecting Economies brochure has been produced for Milton Keynes, highlighting its significant economic importance and the interventions required in and around the city to realise its potential (in addition to those found in this brochure).

In summary, the specific interventions required in and around Milton Keynes are:

Milton Keynes mass rapid transit

Milton Keynes City Council's 'Strategy for 2050' proposes population growth within the authority's boundaries from around 290,000 today to 410,000 by 2050. It also proposes up to 90,000 new jobs across the city.

A mass rapid transit system is being planned to support the growth of the city and offer residents, businesses and visitors a convenient, sustainable, cost-effective and efficient alternative to private vehicles.

Maximising opportunities from East West Rail

Milton Keynes is located at the heart of East West Rail.

Key to maximising its benefits for Milton Keynes are:

Bletchley Eastern Entrance: With the arrival of East West Rail, it is imperative that an eastern entrance is built, creating a high quality station gateway that will be the main arrival point for people travelling into Bletchley by both bus and rail.

Bletchley North-East chord: Currently, direct East West Rail services east of Milton Keynes to Bedford and Cambridge would not be possible. To facilitate a through route for East West Rail to Milton Keynes Central, and alleviate rail capacity constraints between Bletchley and Milton Keynes, a north-east chord is required.

Marston Vale: East West Rail will be transformational for the existing cities, towns and villages, alongside the planned new settlements and communities, along its route. But whether in a city such as Milton Keynes or a rural location such as the Marston Vale, it will only realise its true value if people can easily and sustainably access stations. EEH strongly supports the urgent need for first mile/last mile funding for local authorities.

Aylesbury link and wider Northampton to Old Oak Common: As described on pages 18 and 20.

A5 Kelly's Kitchen improvements

The A5 accommodates long distance movements through the region as part of the strategic road network. In EEH, it connects Luton, Milton Keynes, Towcester and Daventry. In Milton Keynes, the A5 runs from the Kelly's Kitchen roundabout to the south and Old Stratford roundabout to the north (with the Old Stratford roundabout being located in West Northamptonshire). Upgrades are required. An integrated land use, highway and transit solution will be needed, alongside interface with park and ride sites and mass rapid transit. This is underpinned by Milton Keynes 2050 Strategy, which includes proposals for both junctions to the north and the south of the study area.

- Please refer to the Milton Keynes brochure for more details

ACCESS TO M1 JUNCTIONS 13-14

The M1 is part of the strategic road network and is a key north-south route in the EEH region and a high freight carrier.

Reliability and safety improvements at junctions 13 and 14 are of urgent importance with planned growth forecast to worsen pressure on the junctions and journey time reliability (the junctions would also experience additional pressures as a result of the proposed Universal Studios development). There are regular minor incidents at peak times on this section of the M1 which result in congestion.

A joined up approach to the planning of future improvements at the junctions, including access to them, is critical for both national and regional opportunities.

Junction 13, near Ridgmont, is a key access point onto the M1 for drivers travelling to/from Bedford and Central Bedfordshire along the A421 (linking the A1 and M1). It was identified as one of the most important to be taken forward for further development by National Highway's Oxford-Cambridge roads study.

Next steps: Following the evidence gathered in the roads study, EEH is working with National Highways and DfT to ensure that interventions are progressed..

// PRINCIPLES FOR SUCCESS

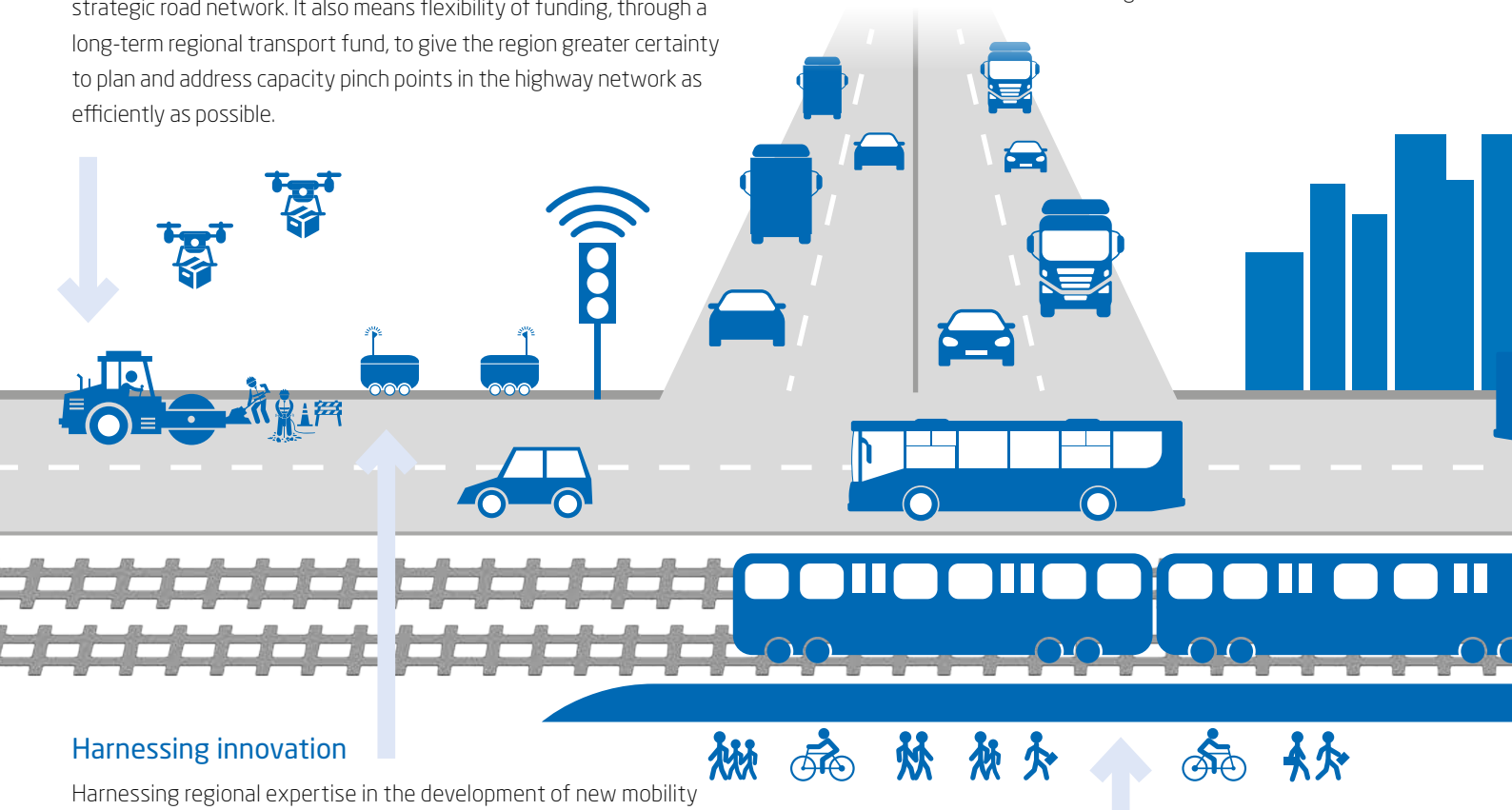
This brochure details the priority infrastructure – some major, others comparatively minor investments – which are required to improve connectivity across its geography. However, it is not just securing funding for new infrastructure that is important, we must be able to make the most of our existing 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.

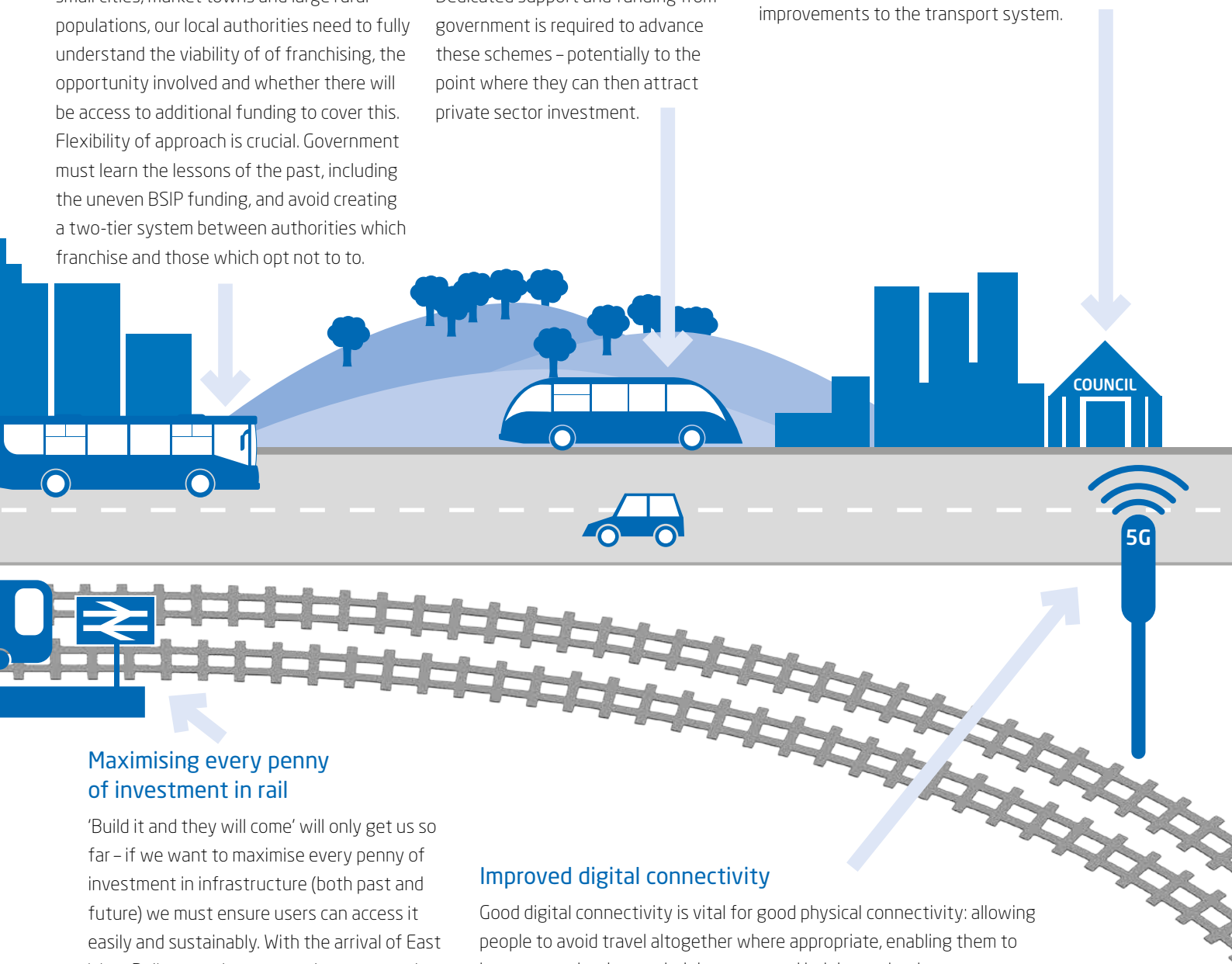
Mind the gap on MRT funding

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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