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CONTENTS
The Heartland forms a broad arc between London and the Midlands, from Swindon and Oxfordshire in the southwest through to Cambridgeshire in the east, and from Northamptonshire and Peterborough in the north down to Hertfordshire in the south.

Covering a total area of approximately 13,354 sqkm and home to over 5.1 million residents, it has a high performing economy, which is a net contributor to the Treasury.

This document summarises the Regional Evidence Base that has been used to inform and determine the priority areas for action in the Transport Strategy. It sets out the economic, demographic, geographical and environmental context for the Heartland, as well as including narrative on the transport system at a sub-regional level.

The main source for this data is the Office for National Statistics alongside other official Government data, for example from the Department for Environment, Food and Rural Affairs. Information on housing growth is based on Local Plans and has been provided by our partners. The latest available data has been used wherever possible; therefore the period in which the data applies fluctuates throughout the document, although the majority of ONS data relates to 2018 or 2019.

England’s Economic Heartland brings together the region’s Local Transport Authorities in a strategic partnership that works with the region’s local enterprise partnerships to provide leadership on strategic infrastructure.
THE REGIONAL EVIDENCE BASE

The creation of a Regional Evidence Base ensures that the strategy, and our investment pipeline that will support delivery of the strategy, is founded on detailed and consistent baseline information.

This comprises:

- GIS-based databank (Projectview) – an EEH-managed database containing up to date information on adopted local plans and agreed economic plans. The databank is updated annually using information supplied by local planning authorities and local enterprise partnerships.

- Policy Scenario Model – an EEH-commissioned regional model that is used to assess the relative implications of alternative future scenarios. The agent-based model has the ability to consider both alternative development scenarios (scale and distribution of future growth) and alternative policy scenarios; the model’s back-casting ability enables the interventions required to achieve a particular outcome to be explored.

- Population Segmentation – part of the output from a technical study linked with First Mile/Last Mile project, this provides insight into the behaviours of the region’s residents in a way that complements this strategy’s user-centred focus.

- Pathway to Decarbonisation – making use of the National Infrastructure Systems Model (NISMOD) to inform the strategy’s approach to de-carbonising our transport system.

- Passenger Rail Study – a baseline assessment of the Heartland’s rail network and levels of service, providing an evidence-led review of existing rail infrastructure and identifying where strategic connectivity gaps exist.

- Outline Transport Strategy – the responses submitted provide insight into the key issues the strategy needs to address for our residents and businesses.

The databank in particular provides a consistent baseline for our region and in so doing ensures that the strategy complements and supports the work underway at the local level, or with the sub-regional growth boards.

All elements of the Regional Evidence Base are freely available to all EEH partners, including Government, its agencies and associated companies. Where new tools have been developed these have been designed to ensure ease-of-use by non-technical staff.

The scope and capability of the Regional Evidence Base continues to evolve in response to the needs of EEH and its partners, and in light of continuing changes in the national policy context.

A key part of the evidence in this document around the economic profile of the region comes from the Local Enterprise Partnerships within the region, most notably their Local Industrial Strategies (where these exist) and the Economic Vision for the Oxford-Cambridge Arc, published April 2019.

Other information on the profile of the Heartland can be found in the Integrated Sustainability Appraisal which accompanies the Transport Strategy. Journey time maps have also been produced for places of strategic interest, and are available on our website.

Engagement

In July 2019, EEH published its Outline Transport Strategy, marking the start of a conversation with the region’s partners, communities, stakeholders and businesses.

The responses form an important part of the evidence base on which the strategy has been prepared, providing as they do insight on the key issues that our partners, stakeholders, residents and businesses see as needing to be addressed. A breakdown of key messages from the engagement can be found in the Draft Transport Strategy, and there is a full report on our website.

EEH has also created an Influencers Group to inform the development of the Transport Strategy.

The group consists of external stakeholders with expertise in the environment, place-making and sustainable transport, alongside a member of Milton Keynes’ Youth Cabinet and a graduate civil engineer who was the winner of EEH’s Vision 2050 competition. This competition encouraged the new generation of transport planners to give their vision on the future of the Heartland’s transport system.

The EEH Influencers Group acted as a critical friend during development of the Transport Strategy, influencing both its policies and broader narrative. In doing so, it has helped to ensure the Transport Strategy considers a wide range of perspectives and avoids assumptions that in turn would have entrenched ill-informed policies.

Note on Local Government Reorganisation

On April 1, 2020, a new unitary Buckinghamshire Council came into existence, replacing Buckinghamshire County Council, and the district councils of Aylesbury Vale, Wycombe, Chiltern and South Bucks. The majority of Office for National Statistics (ONS) and other official data in this document was produced before these changes took place, and is therefore based on the former areas defined by the Buckinghamshire district authorities.

On April 1, 2021, two new unitary councils will be formed in Northamptonshire. West Northamptonshire will comprise the districts and boroughs of Daventry, Northampton and South Northamptonshire. North Northamptonshire Council will comprise the districts and boroughs of Corby, Wellingborough, Kettering and East Northamptonshire.
THE ECONOMY

At a glance

• The Heartland is an economic success story and plays a key role in the UK economy.
• It is characterised by highly productive, knowledge-intensive industries that make significant net contributions to the Exchequer.
• There are significant variations in economic performance across the region.

A world-leading region

England’s Economic Heartland is one of the world’s leading economic regions. Its success is founded on science and technological innovation, powered by a network of world-leading universities and research centres.

Its economic success benefits not only the region’s residents, but the UK more widely, with the Heartland being a net contributor to the Treasury.

The Heartland is a strongly knowledge-intensive economy. It contains 11 diverse universities, including the Universities of Oxford and Cambridge, two of the world’s greatest and most internationally recognisable centres of learning, and a network of cutting-edge science parks, research institutions, businesses and incubators.

The economic geography of the region includes the knowledge clusters of life sciences; creative and digital; aerospace and aviation; and advanced manufacturing.

Economic performance

In 2018 the region’s economy produced a GVA of more than £163bn.¹ This accounts for 10% of GVA in England (14% of English GVA outside of London), and 8.5% of UK GVA.²

Oxford, Cambridge, Milton Keynes, Northampton, Swindon, Peterborough and Luton are the region’s major economic centres, all with economies of £6bn or annum or over (2018). The region also comprises a wider set of overlapping travel to work areas including those centred on Bedford, Aylesbury, High Wycombe, Watford and Stevenage.

At £31,568, GVA per head in the Heartland is above the English average. Milton Keynes, Three Rivers and Watford all have GVA per head above £50,000.³

GVA in the Heartland’s 12 local planning authorities which are mainly rural (as defined by Defra; see Urban and Rural split below) amounted to £41bn in 2018, contributing a quarter of the Heartland’s total GVA.

Between 2013 and 2018 GVA across the Heartland grew by 25% compared to the English average of 21% and the UK average of 20%.

There is a diverse range of economic growth rates (2013-2018) across the region’s local planning authority areas. At 68.5%, Three Rivers’ economy had the highest growth rate, with its economy jumping from £2.8bn to £4.8bn.

The fastest growing rural economy was South Cambridgeshire (39%) with a 2018 GVA of £5.8bn.⁴

Despite high levels of GVA across the Heartland, only 11 out of 37 areas are above the English average for GVA per hour worked (€135.6). Three Rivers was the most productive area of the Heartland, at £58.9. Of the region’s six biggest economies, Swindon is the most productive, generating £49.4 per hour worked, while Oxford is the least productive, generating £28.7. In some cases this will be driven by a high number of hours worked on average in a given area, so although net GVA is high, productivity per hour is lower. In other cases, areas with relatively high labour productivity will be those with a major manufacturing site, a large utilities sector, or a focus on high-skill service sectors, reflecting the high labour productivity in these types of industries.⁵

Jobs

In 2019 the region supported just over three million jobs.⁶ 80% of the working age population were economically active, compared to the national average of 76%. The rate was highest in Daventry and West Oxfordshire (87%) and lowest in Luton (79%).

There are 250,000 enterprises⁷ in the region. The number of enterprises in the Heartland grew by 28.3% between 2013-2019, ahead of the UK average of 25.4%.

The percentage of working people in the Heartland who were self-employed during 2019 was in line with the UK average of 15%, and highest in Buckinghamshire (18.1%) and Hertfordshire (17%).

The ratio of jobs to residents aged 16-64 across the Heartland was 0.94 in 2019, compared to 0.87 across England. At 1.80, Watford had the highest jobs to residents ratio in EEH, while other key economic centres such as Oxford, Cambridge, Northampton, Milton Keynes and Peterborough also had ratios above one.

Skills

The region has some of the highest concentration of world-class research and innovation assets in the world. These include the two of three highest ranking universities in the world in Oxford and Cambridge,⁸ which have been at the heart of the growth of the region’s knowledge-intensive economy, along with nine further universities and a network of science parks, research institutions, businesses and incubators.

However, skills shortages remain a significant constraint on business growth, resulting in hard to fill vacancies and skills gaps in the existing workforce.

45% of the region’s economically active population is educated to degree level or higher (WVQ4+), compared to 44% in the UK. This varies considerably across the region; 7.9% of the economically active population are educated to NVQ4+ in Oxford City, but conversely, only 27% in Broxbourne.⁹

Median weekly resident earnings in 2019 in the Heartland were £623, whilst workplace earnings averaged £591. The English average for resident/workplace earnings was also £591.

The difference between resident and workplace earnings in the Heartland is most likely explained by residents commuting out to high value jobs in London. At £716 per week, South Cambridgeshire offered the highest average weekly earnings to its workforce, while in the same county, Finland (£458) offered the lowest.

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¹ Regional gross value added (balanced) by industry; local authorities by NUTS1 region, 2018. The G, H and I categories of the Standard Industrial Classification (SIC).
² ONS Regional gross value added (balanced) by industry; local authorities by NUTS1 region.
³ Regional gross value added (balanced) by industry; all NUTS level regions, published December 2019.
⁴ GVA per head is a useful way of comparing areas of different sizes. However, it should not be used as a measure of productivity.
⁵ ONS Subregional Productivity February 2020. GVA per hour worked is considered by the ONS to be a more comprehensive indicator of labour productivity and the preferred measure of output per hour worked.
⁶ ONS: Number of employees and self-employed by NUTS3, January to December 2019
⁷ ONS: Number of enterprises by NUTS3 level regions, published December 2019
⁸ Times World University rankings 2020
⁹ ONS Subregional Productivity February 2020.
// Key business clusters in the innovation ecosystem

Map created for illustrative purposes only.
Growth in GVA (2013-2018) by planning area

Oxfordshire
White Horse
West
Vale of

GVA per hour worked

Oxford
Cherwell
Northamptonshire

GVA growth

Oxfordshire
South

The growth rate across England is 21% and across EEH is 25%.

The average across England is £35.6 per hour and across EEH is £35.1.
Average workplace earnings across EEH were £591 – the same as across England.

The number of jobs per residents aged 16 to 64 in 2019.

KEY:
- More than 1.20
- 1.0-1.20
- 0.80-1.0
- Under £500

Median weekly workplace earnings of full-time workers, 2019.

Upper tier authority boundaries

The EEH region had an average jobs density ratio of 0.94 compared to 0.87 across England.
At a glance

- While the region is regarded as prosperous there are significant pockets of deprivation across the Heartland.
- The Heartland has a significant rural population.
- EEHs population segmentation work allows us to understand the different transport needs of consumers in the region.

The Heartland is home to 5.1m people, approximately 9% of the total population of England. Within the region approximately 48.7% of population are male and 51.3% female, comparable with the national rates, as is the marriage rate, with about half of the population married.\(^{12}\)

The ethnic make-up of the region also closely resembles the national average. The population of the region is 84.3% white, 2.8% mixed ethnicity, and 12% black, Asian and minority ethnic (BAME).\(^{12}\)

Luton is the most ethnically diverse place in the Heartland, where 3.9% identifying as BAME, and 1.9% as mixed ethnicity,\(^{2}\) and 12% black, Asian and minority ethnic (BAME).\(^{12}\)

The region has a lower proportion of the population classed as disabled compared to the national average. Fifteen per cent of people living in the region are disabled, with Peterborough having the highest proportion (15.7%), compared to the national average of 17.6%.\(^{2}\)

Population Segmentation

Through its work to improve the first and last mile of journeys, EEH commissioned work to interrogate information held in the Experian Mosaic database to develop understanding of the characteristics of the region’s population. This insight allows us understand the different transport needs of consumers in the region, and their preferences, so that future transport solutions can be tailored to their needs. Mosaic is a powerful cross-channel consumer classification system, often used by the private sector to target marketing campaigns.

The most prominent personas (names are from Mosaic) in the Heartland are “Aspiring homemakers” (13%); Domestic Success (13%); and “Prestige Positions” (12%).

Each persona offers insight into the opportunities and challenges for the region transport system from the user perspective.

For example, aspiring homemakers (which make up to 28% of the population in places such as Marston Vale), are characterised as younger households, in full time employment, settling down in housing priced within their means, which may be in the suburbs. They are likely to have a need to perform escorted trips with children which may constrain mode choice. However, their homes are likely to be more suited to the introduction of private electric vehicle charging facilities (and cycle parking) and they are receptive to new technology and new transport modes.

The annex on page 56 at the back of this document includes information on the different personas in the Heartland, a description of their characteristics, and the implications these have for the transport system.

Urban and rural split

The region comprises a relatively low number of primary economic centres, a large number of small and medium sized market towns and large rural areas resulting in a diverse range of transport needs, opportunities and challenges.

The biggest population centres are Milton Keynes, Northampton, Luton, Swindon, Peterborough, Oxford and Cambridge, followed by a number of larger towns such as Bedford, High Wycombe, Stevenage, Watford, Aylesbury and Hemel Hempstead.

As of the 2011 census, just under two million people lived in the 15 most populated cities and towns in the Heartland, accounting for 41% of the total population.\(^{14}\)

A quarter of the population live in rural areas, where (under Defra’s definition), settlements contain fewer than 10,000 people. This is significantly higher than the England and Wales average of 18.5%.\(^{17}\)

Defra’s ‘Local Authority Classification’ method for measuring rural populations identifies ‘rural hub towns’ ranging in population from 10,000-30,000 people and classes them as part of the rural population. Under this classification, 34% of Heartland residents live in ‘rural or rural hub’ areas, compared with 23% in England and Wales.\(^{17}\) This would suggest that the Heartland has comparatively more people living in smaller market towns than in other parts of England and Wales. The combined population of the Heartland’s rural hub towns at the 2011 census was 417,708 – nearly 9% of the EEH population.\(^{2}\)

Life outcomes

While the Heartland is considered a relatively prosperous region, there are significant variations in life outcomes within it.

The average life expectancy at birth across the Heartland region is 80.1 years for males and 83.6 years for females, higher than the national average (79.3 years for males and 83.2 years for females).\(^{13}\)

Buckinghamshire has the highest life expectancy at 81.7 years for males and 85.1 years for females. However, the life expectancy for both males and females in Luton, Milton Keynes and Peterborough is lower than the national average.

There are also significant variations within local planning authority areas. For example, the life expectancy of boys in the Northfield Brook estate in Oxford is 75.5, almost 15 years lower than their peers in Oxford North - just six miles away.\(^{2}\)

Age profile

The Heartland’s median age (mid-2017) is 39.2 compared to 39.8 across England. Between 2001 and 2017 the Heartland’s median age increased by 6.8% compared to 5.2% across England.\(^{14}\)

There are significant variations in age profile across the Heartland. Oxford has the youngest population in the United Kingdom (29.7 median), whereas Daventry has the Heartland’s oldest population, with a median age of 45.3.

A different way of measuring the age structure in the Heartland is through the ratio of people of State Pension age compared to the working age population. Data here broadly mirrors the characteristics above, but also offers insight into future trends to 2043.\(^{2}\)

The number of people of State Pension age per 1,000 people of working age in the Heartland is 290 compared to the English average of 295. By 2043 (and taking into account changes in pension age) this is forecast to be 305 compared to the national average of 372.38. West Oxfordshire is predicted to have more than 850 pensioners per 1,000 people of working age.\(^{2}\)

Defra’s Local Authority Classification of Local Authority and other higher level geographies for statistical purposes

Maps showing deprivation at neighbourhood level can be found in Appendix D to the ISA.
Health and physical activity

The percentage of adults who are overweight or obese in the Heartland region is slightly lower than the national average at 61.7%, compared to 62% nationally. Lower levels of obesity are seen in Buckinghamshire, Cambridgeshire and Hertfordshire, which are all significantly better than the national average. Conversely, levels in Northamptonshire and Peterborough are significantly worse than the national averages.

The percentage of physically active adults varies across the Heartland region. Higher levels than average are recorded in Oxford, Cambridge and parts of Hertfordshire and Buckinghamshire. Conversely, physical activity in Luton, parts of Northamptonshire, and Peterborough are significantly worse than the national average.

Poor air quality is a significant public health issue. There are around 80 Air Quality Management Areas in place across the Heartland to improve air quality, with the vast majority relating to the harmful impact of Nitrogen Oxides (NOx) caused by road traffic.

See map on page 26 and 27.

Internet use

According to a representative survey carried out in 2019, more than 300,000 Heartland residents over the age of 16 hadn’t accessed the internet for at least the last three months. This equates to 7.4% of the adult population, compared to 9.1% in the UK.

Peterborough (9.6%), and Buckinghamshire and North Northamptonshire (9.2%) are the only three areas of the Heartland to have non-internet use higher than the national average.

Swindon has the highest percentage of internet users in the Heartland, at more than 95%.

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Swindon has the highest percentage of internet users in the Heartland, at more than 95%.
Defra Local Authority rural/urban classification and rural hub towns

Map created for Illustrative purposes only.

KEY:
Department for Environment, Food & Rural Affairs’ rural/urban classification by local planning authority.

Predominantly rural (more than 50% of population live in rural areas)
Predominantly urban (more than 74% of population live in urban areas)
Urban with significant urban (26% to 49% of population live in rural areas)
Predominantly rural plus more than 50% of population live in rural area
Upper tier authority boundaries

Places on the map have been identified by Defra as rural hub towns.

Indices of deprivation in the Heartland

Areas of highest deprivation
Includes neighbourhood(s) which are amongst the 10% most deprived nationally
Areas of lowest deprivation
Includes neighbourhood(s) which are amongst the 10% most deprived nationally

Map created for Illustrative purposes only.
// Median age in Heartland

Map created for Illustrative purposes only.

// State pension ratios in 2043

Map created for Illustrative purposes only.

The median age across England is 39.8 and across EEH is 39.2.

The ratio across the UK is projected to be 372 by 2043, and 365 across EEH. These projections account for the planned changes to State Pension age under existing legislation.

The median age across England is 39.8 and across EEH is 39.2.

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The median age across England is 39.8 and across EEH is 39.2.
// Air Quality Management Areas

Map created for illustrative purposes only.
At a glance

- EEH has identified places of strategic importance in the Heartland based on a number of factors.
- We also recognise the importance of strategic linkages to our neighbouring areas.
- Housing affordability is a significant issue across the region, which is undergoing transformational levels of housing growth.

A key input into the development of the strategy, EEH’s Opportunities Mapping has been used to identify the following as being of strategic importance:

- Regionally Significant Hubs – our largest urban areas, centres of economic activity in their own right and where additional growth is planned
- Areas of Economic Opportunity – areas that form the focus of economic opportunities moving forward, a combination of existing centres of activity and new opportunities (including Enterprise Zones)
- Areas of Significant Change – existing urban areas where the scale of planned growth is significant relative to their size
- Areas of Potential – areas where intervention is required to improve social equality and access to opportunities.

The places identified contain neighbourhoods within the 10% most deprived in England.

See map on pages 30 and 31

<table>
<thead>
<tr>
<th>Place of strategic importance</th>
<th>Regionally Significant Hubs</th>
<th>Area of Economic Opportunity</th>
<th>Area of Significant Change</th>
<th>Area of Potential</th>
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<td>Aylesbury Woodlands (Enterprise Zone)</td>
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<td>Eynsham</td>
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Place of strategic importance

Hatfield/Welwyn Garden City
Haverhill
Hemel Hempstead
Hertfordshire IQ (Enterprise Zone, Hemel)
High Wycombe
Hitchin/Letchworth Garden City
Huntingdon, Godmanchester and Alconbury
Kettering
Milton Keynes
Millbrook/Cranfield
Northampton
Northampton Waterside (enterprise zone)
Northstowe
Luton
Luton Airport
Oxford
Peterborough
Pinewood Studios
Princes Risborough
Science Vale/Didcot
Silverstone
St Albans
Stevenage
St Neots
Swindon
Waterbeach
Watford
Wellingborough
Westcott
Wisbech
Birmingham is a key commuting destination for the northern part of the region. For example, a large percentage of cars and vans produced in the region are exported via Southampton.

Reading, Slough and wider Thames Valley
Reading – bordering South Oxfordshire and just 25 miles from Oxford – is a commercial centre in the Thames Valley region, with an economy worth more than £8bn in 2018. It is home to the University of Reading. Slough – bordering Buckinghamshire – is one of the most productive economies in the UK and also had an economy worth £8bn in 2018. Further afield, the EZ2 Enterprise Zone sites at Basing View and Longcross specialise in innovation, 5G communications, cyber security and sustainable technologies.

London
Unsurprisingly, London is the most significant external destination for commuters in the Heartland. It also contains the strategic London Gateway port, amongst others. Heathrow, just over the Buckinghamshire border, is the UK’s only hub airport and a major contributor to the regional economy, directly employing 80,000 people. It is the third busiest airport in the world and responsible for more air freight than all other UK airports combined. Old Oak Common in west London – which will be a major interchange for HS2 and the Heathrow Express - is the UK’s largest regeneration project, which aims to transform the former railway and industrial area into a new neighbourhood supporting up to 65,000 jobs and 25,500 new homes.

Harlow
Harlow has a £2bn economy (2018) and is situated in the Cambridge to London Innovation corridor. Its Enterprise Zone specialises in the ICT, Advanced Manufacturing and Life Science sectors.

Ipswich, Felixstowe and Suffolk
Ipswich has a £4.4bn economy (2018). Suffolk is home to several sites in the Space to Innovate Enterprise Zone which specialises in agritech, food and health, offshore energy, ICT and digital and creative sectors and the development of the Green Economy. Four of these sites are in Ipswich, and also at Suffolk Business Park in Bury St Edmunds. The Port of Felixstowe is Britain’s biggest and busiest container port, and one of the largest in Europe.

Norwich and Norfolk
Norwich has a £4.2bn economy (2018). It is home to several sites in the Space to Innovate Enterprise Zone which specialises in agritech, food and health, offshore energy, ICT and digital and creative sectors and the development of the Green Economy. This includes two near Norwich and one in King’s Lynn.

Leicester and Leicestershire
Leicester has a £3bn economy (2018). Leicestershire has two Enterprise Zones: MRA Technology Park and the Loughborough and Leicester Science and Innovation. Loughborough University Science and Enterprise Park is one of the UK’s largest science parks while the MRA Technology Park is a world leading automotive research and development park. Market Harborough is on the border with Northamptonshire.

East Midlands Airport
East Midlands Airport accounts for 12% of all UK aviation freight (second to Heathrow).

Warwickshire and Coventry
Coventry and Warwickshire are home to brands such as Jaguar Land Rover, Tata and Aston Martin. A National Transport Design Centre is being built at Coventry University.

Birmingham
Birmingham is a key commuting destination for the northern part of the region. Located in the centre of the UK it is a key transport and logistics hub. The Birmingham City Centre Enterprise Zone comprises 26 sites across the city centre and is focussed on the ICT, Creative Industries and Digital Media sectors.

Wiltshire
Swindon is part of the Swindon and Wiltshire Local Enterprise Partnership, with an economy worth a total of £13bn; with a strong advanced engineering and high value manufacturing, ICT and visitor economy. It is home to several large businesses such as Siemens, Herman Miller and Knorr Bremse. In October 2019 Porton Science Park became one of the country’s six new Life Sciences Opportunity Zones (LSOZ).

Bristol
Bristol has a £15bn economy (2018). Bristol Temple Quarter Enterprise Zone is focused on creative, high-tech and low-carbon industries and is based around Bristol Temple Meads railway station.

Neighbouring areas of strategic importance
EEH recognises the key strategic importance of the areas neighbouring the region. The table to the left identifies places considered to have key economic linkages to the Heartland.

Housing
Housing affordability is a major issue in many parts of the region. Between September 2014 and September 2019 median house prices in the Heartland grew by 36% compared to 19% across England and Wales. Luton (52%), Stevenage (47%) and Corby (46%) experienced the highest housing price growth.

The ratio of median house prices to median annual resident earnings is 9.57 compared to a 7.40 average for England and Wales (as at September 2019). Three Rivers district was the least affordable place with a ratio of 15.16. Fenland (6.51) was the most affordable area in the Heartland.

Nine of 37 local planning areas were significant net exporters of residents in 2018, where there were more than net 500 residential moves out of an authority than into it. In particular, Oxford, Luton and Northampton had net outflows of more than 3,000 people.

Between 2012 and 2018 the region’s population grew by 5.5% (269,700 people) compared to the UK average of 4.3%.

During this period, 23 of the 37 planning authority areas within the region experienced population growth rates higher than the average for England and Wales. In particular, Aylesbury Vale (12.3%), Corby (12.2%) and Central Bedfordshire (9.2%) experienced levels of population growth substantially higher than the average for England and Wales.

Conversely, 14 of the 37 local authority districts within the region had all experienced lower levels of resident population growth than the average for England and Wales. The slowest growing planning authority areas in the Heartland were Wycombe (1%), Oxford City (1.8%), Broxbourne (2.4%) and Cambridge City (2.6%).

The majority of current Local Plans of the 37 planning authorities in the Heartland cover a period from the early 2010s to the early 2030s. Together, the current plans will deliver a total 535,000 new dwellings, increasing the region’s existing housing stock by around 25%.

Local Plan growth equates to 27,822 new homes per year. If this level of planned growth was to continue until 2050, an additional 862,000 new homes would be delivered over the next 30 years.

Across the Heartland, there are a total of 199 Local Plan sites that are each delivering over 500 dwellings.

See map on pages 34 and 35

92. ONS. House prices and house price growth - territory level, England, March 2020
93. ONS. House prices and house price growth - area level, England, March 2020
94. ONS. Housing affordability in England, April 2020
95. EEH. East Midlands
96. EEH. Ipswich

See map on pages 36 and 37

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// Housing affordability ratio

The ratio across England is 7.57 and across EEH is 9.57.

// Internal migration within Heartland

Significant net inflow of people from other local authority areas (more than 500)

No significant change

Significant net outflow of people to other local authority areas (more than 500).

The statistics include all age groups and exclude any moves within a single LA and any international moves either into or out of the UK.
The Heartland covers approximately 10% of England’s landmass. Its natural and built environment is a key asset. Significant parts of the Heartland are designated Areas of Outstanding Natural Beauty or other protected designations, while the quality of its built environment—from modern and historic town and city centres to scenic rural villages—form a core part of the region’s offer and attractiveness.

Around 10% of the Heartland is designated as Areas of Outstanding Natural Beauty. The region contains the entirety of the Chilterns AONB, which covers 6% of the Heartland, Oxfordshire, Buckinghamshire, Herfordshire and Bedfordshire. The North Wessex Downs AONB (south of Swindon) and Cotswolds AONB (west of Oxford) each cover around 2% of the Heartland.

In July 2018, the Chilterns Conservation Board submitted a request to Natural England for a review of the designation and requested that National Park status be considered. More recently, in 2019, the Glover Report, commissioned by Defra, made a strong recommendation that Chilterns should become England’s next National Park.

The North Wessex Downs AONB (south of Swindon) and Cotswolds AONB (west of Oxford) each cover around 2% of the Heartland.

One UNESCO World Heritage Site: Blenheim Palace, located in Woodstock, Oxfordshire.

Six registered battlegrounds: These are protected venues of battles which were crucial turning-points in English history. The Heartland’s battlegrounds relate to the War of the Roses and English Civil War.

25 English Heritage sites including the popular West Park gardens in Bedfordshire, Uffington Castle in Oxfordshire (site of the famous White Horse, the oldest chalk-cut hill figure in Britain) and Kirby Hall in Northamptonshire, one of England’s greatest Elizabethan houses.

60 National Trust sites (approx): The majority of National Trust land is held ‘inalienably’, giving it special protection. According to Natural England’s Agricultural Land Classification, much of the agricultural land in the Heartland is rated as of good to moderate quality (grades 3a-3b). Land to the north east of the region between Peterborough and Cambridge, is of the best and most versatile in the region, rated very good to excellent (grades 1-2).

As part of the Environment Agency’s Oxford to Cambridge Local Natural Capital Plan, a baseline assessment of natural capital is being completed across the Oxford–Cambridge Arc, in partnership with the Local Nature Partnerships. The outputs of this assessment will include a fine scale map of the dominant habitats and land cover across the majority of the region.

The Environment Agency additionally intends to produce mapping of baseline ecosystem services provision across the majority of the region, however this will not be available until the second half of 2020.

Historic environment

The Heartland has a rich historical legacy dating back to ancient times. This is demonstrated by the high number of protected historic sites and buildings to be found in the region, and within the quality of its built environment.

There are a number of designated assets throughout the region, including:

- One UNESCO World Heritage Site: Blenheim Palace, located in Woodstock, Oxfordshire.
- Six registered battlegrounds: These are protected venues of battles which were crucial turning-points in English history. The Heartland’s battlegrounds relate to the War of the Roses and English Civil War.
- 25 English Heritage sites including the popular West Park gardens in Bedfordshire, Uffington Castle in Oxfordshire (site of the famous White Horse, the oldest chalk-cut hill figure in Britain) and Kirby Hall in Northamptonshire, one of England’s greatest Elizabethan houses.
- 60 National Trust sites (approx): The majority of National Trust land is held ‘inalienably’, giving it special protection. According to Natural England’s Agricultural Land Classification, much of the agricultural land in the Heartland is rated as of good to moderate quality (grades 3a-3b). Land to the north east of the region between Peterborough and Cambridge, is of the best and most versatile in the region, rated very good to excellent (grades 1-2).
- 1,191 conservation areas: Oxfordshire, Cambridgeshire and Northamptonshire all contain 200 or more conservation areas. A breakdown of the numbers of conservation areas per local transport authority can be found in the ISA Report.
- 1,392 Scheduled Monuments: Scheduled monuments include Roman remains, burial mounds, castles, bridges, earthworks, the remains of deserted villages and industrial sites.
- 378,953 listed buildings: The biggest concentrations of listed buildings are found in the historic centres of Oxford and Cambridge, but there are also notable concentrations in all other built-up areas and in numerous smaller towns and villages covering the entire Heartland.

Carbon emissions

Total CO2 emissions in the Heartland stood at 28,834kt in 2017, equivalent to 8% of the UK total. Carbon dioxide emissions have fallen at a slower rate than the national average—17.4% compared to 21.7% between 2012-2017.

Transport-related emissions are a particular challenge for the region, rising 10% between 2012-2017, compared to 5% nationally. In 2017, the Heartland’s transport emissions stood at 13,507kt, equating to 47% of the Heartland’s total carbon dioxide emissions, compared with 37% nationally. Emissions per capita are higher in areas containing significant parts of Strategic Road Network, although there is also a correlation between high emissions and high car mode split.
// AONBs, green belts and the national nature reserves

Map created for illustrative purposes only.

// Transport carbon dioxide emissions per capita

Map created for illustrative purposes only.

Across the UK transport emissions per capita averaged 1.9t and across EEH 2.4t.

KEY:
- Transport carbon dioxide emissions per capita, 2017 (in tonnes).
- Upper tier authority boundaries
- Under 2t
- 2-4t
- 4-6t
- 6-8t
Oxfordshire and Swindon

Oxfordshire and Swindon’s economy was worth nearly £31bn in 2018, nearly 19% of the Heartland total. Oxfordshire is home to the University of Oxford, the world’s top-performing university, and Oxford Brookes, which also has a campus at Swindon. The Oxfordshire ‘Knowledge Spine’ broadly runs from Bicester, through Oxford and into the Science Vale area in and around Didcot, which includes two enterprise zones.

Swindon – the second biggest single economy in the Heartland behind only Milton Keynes - connects the Heartland with the Western Gateway through Bristol to south-east Wales. Swindon and Oxford are around 25 miles apart, and their respective economies are considered complementary. Economic analysis for the National Infrastructure Commission refers to a ‘Greater Oxford-Swindon’ area, ‘specialising in scientific R&D, high-tech manufacturing and knowledge services’.

This is reflected by business interactions in the sub-region: MINI car parts made in Swindon are assembled at BMW in Oxford; Johnathan Matthey’s manufacture of fuel cells in Swindon draws on Oxford’s higher education excellence; Oxford Brookes University delivers its further and higher education in both cities and the Oxford University Bodleian Library’s extensive purpose-built Book Storage Facility is located at Swindon.

Oxfordshire joins Cambridgeshire in being home a world-leading bioscience cluster, with an estimated 180 R&D companies and over 150 companies in associated industries. It has world-class R&D facilities, with four new innovation centres at the Oxford Science Park and a significant number of time lost as a result of interchange. Current investment in the electrification of the Great Western Main Line and in the introduction of a new fleet of Inter-city Express trains has resulted in journey times between Swindon and London of 49 minutes. However, faster, quicker and more frequent trains will add pressure on the Didcot to Swindon section of the Great Western Main Line, making it more difficult to accommodate regional and freight rail services alongside the inter-city express trains.

Western and Central Sections of East West Rail will deliver significant connectivity enhancements to destinations east of Oxford such as Milton Keynes, Bedford and Cambridge whilst bringing other important towns and cities within one change of train. Oxford has the third busiest railway station in the Heartland, with total entries and exits in 2017-18 totalling nearly eight million, up more than 25% from 2012-13. Swindon and Didcot had footfalls of more than three million, and Banbury more than two-and-half million. Bicester Village’s footfall grew 82% after it was redeveloped in 2015 with new services to Oxford and London. In 2017-18 there were more than 20m passengers rail journeys made in Oxfordshire, a growth of 3% over the previous five years – the highest growth in the Heartland (Swindon grew 1.3% to 3.5m).

Oxfordshire and Swindon sit on the busy road and rail transport corridor between the south coast ports, the Midlands and the north and enjoys good links to London and the West Midlands via the M4 and M40. It is also well positioned for the M41/M5 axis, affording connectivity with Bristol and the South West, also with key economies in Wales. Swindon sits at the fulcrum of the economic blocs of EWH and Western Gateway. However, the Swindon-Oxford area suffers a lack of connectivity to and from the east.

There are currently no direct rail services between Oxford and Swindon. This means that the rail journey between Oxford, to Swindon and beyond to the South West (such as Bristol and Cardiff) require an interchange at Didcot Parkway. Despite journeys being only 15 minutes for both connections between Oxford – Didcot and Didcot – Swindon, the lack of a direct connection results in a generalised journey time of 2 hour 13 minutes, reflecting a significant amount of time lost as a result of interchange.

Current Local Plans for Oxfordshire and Swindon make provision for around 125,000 new homes. This includes around 22,000 homes in Swindon, including 10,000 at the ‘Eastern Villages’ adjacent to the A420. Average house prices in Swindon are below the national average. Housing affordability in Swindon complements the need for a greater range of housing in the Oxfordshire-Swindon corridor and the wider Heartland area. The ratio of median house price to median gross annual residence-based earnings is 7.02 in Swindon, compared to the Oxford average of 9.97 (and 12.55 in Oxford).

In Oxfordshire, the districts of Cherwell, South Oxfordshire and Vale of White Horse include provision for more than 20,000 new homes each, most notably at Bicester and Didcot. To the west of Oxford, 2,200 dwellings are planned for the Cotswolds Garden Village near Eynsham. Further Garden Village developments are in the pipeline.

Oxford experiences greater urban density, with around 25% of journeys in Oxford made by car, compared to 31% in Swindon. Traffic in Oxford is managed using a range of measures to help reduce travel and journey times, including road pricing, low emission zone (LEZ) and low emission zones (LEZ). In 2015, the city’s public transport modal split was 39% car, 36% walking and cycling, 13% bus, and 12% rail or other forms of public transport. Oxford city centre has a 15 minute walk to the central station.

In Swindon, the closest major public transport hub is Swindon Bus and Rail Station, which connects the town to London and other parts of the UK. The station is served by National Express, Arriva, First and Stagecoach coach services, as well as Thameslink trains. The A419 in Swindon, and around Faringdon and Kingston Bagpuize in Oxfordshire, is used by a high volume of through traffic which can result in long delays to journeys by road.

In Swindon, the town’s largest employers include Johnson Matthey, which is involved in the production of fuel cells, and the University of Bath, which has a strong presence in the biotechnology sector. The town also has a significant number of start-up businesses, particularly in the technology sector.

In Oxford, the largest employers include the University of Oxford, which is one of the top universities in the world, and a number of major financial institutions, such as HSBC and Goldman Sachs. The city is also home to a number of research institutions, such as the Oxford Centre for Diabetes Research and the Oxford University Department of Physics.

In conclusion, Oxfordshire and Swindon are two of the largest economies in the Heartland and share a number of key attributes, including a strong emphasis on science and technology, a well-connected transport network, and a high level of business interaction. However, they also have some important differences, such as Oxford’s greater focus on higher education and research, and Swindon’s greater emphasis on manufacturing and engineering.

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40. For the purposes of this paper, we have combined Swindon with the Oxfordshire Growth Board. Large parts of this narrative come from the Transport Plans/Strategies of the constituent transport authorities, the Arc Economic Vision, Local Industrial Strategies, alongside EWH data.
42. Swindon and Wiltshire Emerging Local Industrial Strategy
44. Swindon and Wiltshire LEP Emerging Industrial Strategy
Over 25% of Oxford residents who work in Oxford cycle to work, with a further 25% walking and 20% using the bus. Many people commute to Oxford by bike from nearby settlements, particularly Kidlington, Yarnton, Botley and Abingdon. Elsewhere, cycle routes along inter-urban routes are largely non-existent, the notable exception being the cycle track alongside the A40 linking Kidlington and Wheatley to Oxford. The speed of traffic using inter-urban routes without cycle facilities is a major deterrent to cycling.

Cycling levels in Swindon and smaller towns in Oxfordshire are generally much lower than in Oxford.

Hertfordshire

Hertfordshire’s economy was worth nearly £14bn in 2018, under a quarter of the Heartland’s total GVA. The county shares economic synergies with the rest of the Heartland, particularly in the fields of life science, aerospace, green technology, creativity and logistics.

The eastern part of Hertfordshire is a key part of the Innovation Heartland, particularly in the fields of life science, aerospace, green technology, creativity and logistics.

Hertfordshire is also home to Warner Bros Studios and Eustree Studios, both globally renowned for their state-of-the-art film and TV production, and located in close proximity to Pinewood Studios in south Buckinghamshire.

Current Local Plans for Hertfordshire make provision for around 100,000 new homes. Growth is most significant in the districts of East Hertfordshire, North Hertfordshire and St Albans, including to the east of Hemel Hempstead, and along the A1 and A1(M) corridor encompassing Baldock, Stevenage and Welwyn Garden City. 4,000 homes are planned in the Gtson area, north of Harlow.

Hertfordshire is polycentric in nature, and movement patterns in the county are complicated due to its numerous medium sized urban areas.

The county is home to Eisai and Welwyn Garden City is the base for Roche’s UK business, as well as multiple sites in the county at Stevenage and Ware, Hatfield is also prominent in Welwyn Garden City and Hatfield. GSK has a large presence in the county, particularly in the area of aesthetic and ophthalmology.

A total of 72 million rail passenger journeys were made in Hertfordshire in 2017-18, accounting for more than 40% of all rail journeys made in the Heartland area. Of these 21% were for journeys which started and finished within the Heartland.

At the time of 2011 census, Hertfordshire residents travelled an average of 15.8km to work, below the Heartland average of 16.5km but above the England and Wales average of 15.6km. This varies from 13.1km in Watford to 19.4km in North Hertfordshire. Eleven per cent of residents travelled by train to work, significantly above the Heartland and England and Wales average of 5%.

A total of 62% get to work by car, van or motorcycle, which is below the Heartland average, and in line with the England and Wales average. Numbers of people walking (9%) and cycling (2%) to work are also lower than the national average, although walking rates vary considerably – 13% in Watford and only 5% in Three Rivers.

Hertfordshire households own an average of 1.37 cars, in line with the Heartland average. East Hertfordshire, where 35% of households have two cars, has the highest number of cars per household at 1.51, while Watford has the lowest rate at 1.20.

North-south Major and Strategic Road networks include the A1, A10 and M1. The M1 carries high levels of freight, particularly from junctions 21 and 21a where the M25 meets the M1.

The A1 corridor has significant movements between the towns along it, particularly between the northern towns (Letchworth Garden City, Hitchin) and Stevenage, and between Stevenage and the southern towns (Welwyn Garden City, Hatfield).

The M25 runs through Hertfordshire from junctions 17 to 25, carrying high levels of traffic, including freight.

The A414 forms part of the Major Road Network and runs east-west across the county, linking towns between Harlow and St Albans.

The majority of trips along the corridor are by car, despite the parallel rail provision. In terms of east to west travel (which is notably weaker than north-south travel) the strongest flows are between towns in close proximity to each other; Hemel Hempstead, Watford and St Albans, along with Hatfield and Welwyn Garden City. Flows are less strong from the A1 corridor to the east, but there are still notable relationships between neighbouring towns.

Buckinghamshire

Buckinghamshire has an economy worth £15bn, making up 10% of the Heartland’s total GVA.

Silvertone, on the Buck’s Northants border, is the heart of the advanced tech sector in the region. It is home to 40 advanced manufacturing companies, testing facilities for materials and vehicles, the Silvertone circuits including the iconic F1 circuit, a rapidly growing enterprise zone, and the workforce training capabilities of the National College of Motorsport and a University Technical College. There are over 4,000 companies, employing 36,000 people, operating in this sector and based within a one-hour radius of Silverstone in ‘Motorsport Valley’.

This includes links between Hertford and Ware, and between these towns and Welwyn Garden City to the west and Broxbourne to the south. East-west travel is predominantly by car.

There are also notable flows from Luton and Dunstable into Hemel Hempstead, Harpenden, St Albans and Stevenage. In addition there are a considerable number of commuting trips coming into the county from the north London boroughs to destinations including Watford, Borehamwood and Cheshunt.

In the east of Hertfordshire, commuting patterns from Bishop’s Stortford are predominantly to central London (by rail) and Stansted Airport (by car). Stansted Airport, which serves 27 million passengers per year and is the fourth busiest airport in the country, is just over the border in Essex, five miles from Bishop’s Stortford. Movement is also seen between Harlow and adjacent areas in the south east and east of the county.

An extensive commercial bus network operates in the county. In addition to the bus network there are a number of express coach services that operate commercially and serve parts of the county. These typically operate on a less than hourly frequency and connect local towns to London, regional centres, airports and with the national coach network.

**Large parts of this narrative comes from Buckinghamshire County Council’s Local Transport Plan 4 2016-2036, the Arc Economic Vision, Local Industrial Strategies, and also information in EEm database**
Pinewoods Studios in south Bucks is a centre of excellence for film and TV production and has hosted internationally renowned franchises including Star Wars and James Bond. There are over 250 businesses on the site and major expansion is currently underway. The National Film and Television School (NFTS) in Beaconsfield is the pre-eminent film, television and games teaching institution in the UK with alumni including multiple Oscar and BAFTA award winners.

The county contributes to the region’s expertise in space through Westcott Venture Park, with particular strengths in upstream space – the manufacture of spacecraft and sending objects into space. Westcott is home to the National Propulsion Test Facility where the UK Space Agency is investing over £4 million to develop space propulsion engines, along with a 5G Catapult Centre and a new innovation and incubation centre. Westcott, which has enterprise zone status, is also home to a significant energy cluster. Buckinghamshire houses further innovation facilities focussed on lithium ion battery development.

Bucks’ growing med-tech sector complements the life science sectors elsewhere in the region. The county is home to a number of global industry leaders in healthcare such as GE Healthcare, as well as many others. The county is home to a number of local industry leaders, including Adept, which is home to a number of award winning games companies such as Jagex. It is also home to the Microsoft Research Lab, and is joined there by Google, Amazon and Apple. In Cambridge, the IT and digital technologies cluster is highly concentrated. Cambridge and Peterborough are also home strong publishing sectors, complementing expertise in Oxfordshire.

Cambridgeshire and Peterborough47

Cambridgeshire and Peterborough area had a GVA of £26.5bn in 2018, 16% of the Heartland economy. The Cambridge life sciences cluster is home to over 400 companies, with 15,500 people and contributing around £2.9bn annually to the UK economy.44 AztraZeneca and MedImmune (2018), Cambridge: driving growth in life sciences: Exploring the value of knowledge-clusters on the UK economy and life sciences sector.

The creative industries are also particularly strong in Cambridge, which is home to a number of award winning games companies such as Jagex. It is also home to the Microsoft Research Lab, and is joined there by Google, Amazon and Apple. In Cambridge, the IT and digital technologies cluster is highly concentrated. Cambridge and Peterborough are also home strong publishing sectors, complementing expertise in Oxfordshire.

47 Large parts of this narrative comes from the Combined Authority Transport Plan, the Arc Economic Vision, Local Industrial Strategies, alongside EH4 data.
49 Cambridgeshire and Peterborough Local Industrial Strategy.
Current Local Plans for Cambridgeshire and Peterborough make provision for 95,000 new homes. To the north of Cambridge, the sites at Northstowe and Waterbeach account for 18,000 homes. There is significant growth around Cambridgeshire and Peterborough on the A14/M1, and at St Neots, Alconbury and Peterborough along the A1/M1. It is notable that Northstowe, Waterbeach, Cambourne and Alconbury are all part of the Cambridge Compass Enterprise Zone.

At a broad spatial scale, Cambridgeshire and Peterborough enjoys relatively good transport connectivity, with strong links to major cities, ports and airports outside the Combined Authority area, and good connections between major urban areas within it.

From Peterborough and Cambridge urban areas, London can be reached by rail in under an hour. Stansted Airport can be accessed on direct rail services, and the A14 and M1 provide good strategic connectivity, including for freight travelling to the ports of Harwich, Ipswich and Felixstowe on the East Coast. Both roads are relatively high carriers of road freight with more than 10,000 vehicles a day.

However, connectivity within the Combined Authority area is more variable, and urban areas benefit from significantly better transport network connectivity than their rural counterparts. Congestion also acts to limit the effectiveness of the transport network. For example, the average speed on all major roads entering Cambridge during peak is less than 60% of the ‘free flow’ speed. On average more than 20% of bus services within剑桥shire and Peterborough run late, in large part due to congestion.

The A1 forms part of the Strategic Road network, and runs north- south through the Cambridge and Peterborough area, carrying relatively high levels of freight. The A47 between Peterborough and Wisbech, together with radial routes serving Cambridge, are all expected to see significant rises in congestion by 2041. Gayhurst junction currently shows slow AM peak speeds, the creation of a new larger junction has been committed for the RS2 period. Congestion will also worsen in and around other urban areas, particularly Ely, Wisbech and Huntingdon.

Connectivity within urban areas, and between major towns, is generally of a good standard. Both Peterborough and Cambridge have high frequency urban bus networks which extend to surrounding major towns. Due to the small footprint of most towns and cities many residents are within walking distance of key services and amenities.

Despite good public transport within urban areas, wider public transport links within and across the combined authority area can be poor. For example, train services between Cambridge and Peterborough take approximately 50 minutes, despite being just 40 miles apart. There is poor provision of bus services outside the major urban areas of Cambridge and Peterborough cities. Rural access to key amenities and transport links in rural areas is also often poor.

Cambridge residents travel on average just 12.5km to work. However, with an average of 20.9km, Huntingdonshire residents travel the furthest distances of anywhere in the Heartland.

Cambridge enjoys the highest mode-share of cycling in the country (29% at the time of the 2011 census), and although it enjoys the lowest reliance on car for commuting in the Heartland, the car remains the most popular commuting method. However, Cambridge is only one of two places in the Heartland (the other being Oxford) where the average household car availability is less than one (0.91). The rate rises to 1.55 in South Cambridgeshire, where almost half of households own two or more cars.

At 15%, walking rates in Cambridge are the second-highest in the Heartland (behind Oxford), but the district surrounding Cambridge all have far lower walking and cycling rates – at or in many cases below the regional average. In Peterborough, walking and cycling has a 17% mode share, 4% above the regional and national average.

Cambridge provides a good level of connectivity by rail to the south-east quadrant of the Heartland along the West Anglia Main Line and Great Eastern Main Line. Journey times into London King’s Cross are fast meaning orbital connectivity across the region is generally achieved via interchanging with London. Whilst direct connectivity to the Midlands does exist, services are infrequent and uncompetitive when compared with journeys by road. The hourly service linking Peterborough with Cambridge restricts the ability for northward travel from the city.

A number of schemes are being developed to improve capacity for both freight and passenger services along railway corridors in Cambridgeshire and east of Cambridge. Infrastructure interventions at Ely and along the line connecting Ipswich/ Felixstowe are identified as key enablers in maximising rail freight bound for the golden triangle and forming the Eastern Section of the East West Main line.

There were 25m passenger rail journeys made in the Combined Authority region in 2017-18, the highest of any area outside of Hertfordshire. Growth in rail passengers over the previous five years was very strong at 20%. With a fall of 11.5%, Cambridge Station is the busiest in the whole Heartland (conversely, Shippem Hill, to the east of Ely, is the least popular station in the Heartland, with only 276 passengers in a year).

The Central Area

The Central area covers the South East Midlands LEP area of Northamptonshire, Milton Keynes, Bedford, Central Bedfordshire and Luton.

It has a combined economy of more than £50bn, around 30% of total Heartland GVA in 2018. The region has particularly expertise in aerospace, high performance engineering, digital and logistics.

Milton Keynes and Northampton are the key economic centres of gravity within the Central region, although Luton and Bedford are also important economic destinations.

Bedfordshire’s Cranfield University is the nation’s flagship research institution in the Future Flight aerospace sector deal. To complement this, Central Bedfordshire is the home to the Aircraft Research Association (ARA) which has a global client base, and aerospace manufacturers Lockheed Martin, Rockwell Collins, MBDA Missile Systems and Bristley Propellers. Luton houses a cluster that specialises in aircraft manufacturing and maintenance, one of the top three hubs for business aviation services.

The Central Area also benefits from its proximity to the Midlands aerospace cluster, especially around Northampton, where several members of the Midlands Aerospace Alliance are based.

The Heartland’s world-leading high-performance technology and motorsport cluster, centred in Northamptonshire, is a particularly unique concentration of industries that specialise in the design and manufacture of innovative technologies, engines and products, incorporating low carbon engineering and the application of lightweight materials and composites. Cosworth and Mahle Powertrain are located in the Northampton Waterside Enterprise Zone which is one of the largest in the UK.

Millbrook Proving Ground in Bedfordshire is now employing 5G technology to its CAV testbed, allowing innovative real-time connectivity and location trials. As such it is proving to be a key site for development of autonomous electric vehicles (EVs). Milton Keynes is another key cluster for future transport systems in the region, with Smart Cities innovation stimulated by the Connected Places Catapult. It is home to advanced EV charging infrastructure – with around 150 charging points – and an EV experience centre – the first in the UK.

Other testing sites stretching across the region include the Multi User Environment Autonomous Vehicle Innovation project at Cranfield, and Northampton’s 1.5 mile route for fully autonomous vehicles between its town centre, Enterprise Zone, University Campus and Blackmills Business Park.

Milton Keynes has an emerging and growing creative and digital sector, with the second highest proportion of SMEs in high-tech and digital sectors in the UK.

In Milton Keynes, Northampton and Luton, the Central region has the three biggest settlements in the Heartland, with a combined population of around 700,000 people. High levels of planned growth are expected to place further pressure on transport infrastructure.

At peak times the larger settlements suffer from congestion, though driving into Milton Keynes is easier – coupled with relatively cheap car parking and the efficiency of the grid road network, the vast majority of commuters rely on the private car to get to work – though it is recognised that this is unsustainable.

Current Local Plans in the Central area make provision for 170,000 homes. This includes 40,000 in Central Bedfordshire (the most of any Local Plan in the Heartland), 25,500 in Milton Keynes and 19,000 in Northampton. Luton’s Local Plan has significant unmet need which is being fulfilled by Central Bedfordshire and North Hertfordshire.

Significant new housing developments include:

- To the north of Houghton Regis (7,000 homes)
- Milton Keynes’ Western Expansion Area (6,500 homes) and the broad arc to the east of Milton Keynes, including 5,000 homes on land east of the M1
- The Wixams to the south of Bedford (more than 6,000 homes)

50 Large parts of this narrative comes from the Transport Plans/ Strategies of the constituent transport authorities, the Arc Economic Vision, Local Industrial Strategies, alongside EHT data.
• The north-west of Northampton, including 4,000 homes near Upton Lodge
• East of Daventry, including 4,000 homes along Long Buckby Road
• The A509/A413 corridor encompassing Kettering, Wellingborough and Corby, including two sites of more than 4,500 homes each in Corby.

The Central area includes strong north-south road and rail links, providing good connectivity between the Midlands, Birmingham and the north, and London. The M1 passes from the Midlands through Northampton, Milton Keynes, Bedfordshire and Luton on its way to London via Hertfordshire, while the western part of the sub-region is in close proximity to the M40, and the eastern part in close proximity to the A1 and A1(M).

The M1 is a major carrier of road freight, in excess of more than 15,000 vehicles a day, with some major freight distribution hubs focussed around the M1. The A5 provides another north-south strategic road link. The performance of the A5 shows variance in AM peak speed times, with slower times around junctions. The highest traffic flows on the A5 are through Milton Keynes.

The A6 corridor, which forms part of the Major Road Network, runs through the central region linking Luton, Bedford, Wellingborough and Kettering. It has relatively high traffic flows and displays varying performance in terms of peak hour congestion with slow speeds around junctions and on the approach to urban areas.

The West Coast Mainline stretches from Birmingham and the north, through Northampton and Milton Keynes to Bedford and Bedfordshire. It has relatively high traffic flows and displays varying performance in terms of peak hour congestion with slow speeds around junctions and on the approach to urban areas.

The connectivity within the region and its central location have laid the foundations for a strong distribution sector (part of the ‘golden triangle of logistics’). This is largely routes-based, but with large rail-served freight distribution sites at places such as Eurohub near Corby and the Daventry International Rail Freight Terminal, the largest rail freight centre in the UK. The logistic sector has significant potential to benefit from the innovation and new technologies developed across the region.

Milton Keynes is a self-contained city, with 78% of those who live in the borough working in the borough as well. 77% of these residents use a car to get to work on a daily basis despite there being 5,000 jobs which are readily accessible by public transport, cycling or walking.

According to the 2011 census data, the average distance travelled to work by residents is lowest in Northampton (13.7km). It remains under the EEU average of 16.6km in Luton, Milton Keynes and Bedford, but increases to 20.6km in South Northamptonshire – the second highest in the Heartland.

The number of people travelling to work by car/van is largely consistent throughout the sub-region, ranging between 70-80%, with Luton an exception at 64%. In Corby, 11% of residents travel to work by car/van passengers – the highest rate in the Heartland. At 13%, Luton also has the highest rate of people who walk to work. Cycling rates remain low, including in Milton Keynes (3%), despite having a unique cycle network.

Around a quarter of households in Luton, Northampton and Corby don’t have access to a car but elsewhere car ownership is high. In South Northamptonshire, it is the joint highest in the Heartland, at an average of 1.68, with 40% of households owning two cars.

Milton Keynes Central had the fifth highest footfall in the Heartland in 2017-18, with 6.8m entries and exits. Bedford Midland, Luton Airport Parkway, Luton and Northampton stations all recorded footfalls of more than three million.
Sustrans oversees the National Cycle Network

**Road**
**Rail**
**Traffic-free**
**On-road**
### Aspiring Homemakers

The Aspiring Homemakers persona make up 13% of the population of EEH but up to 28% in some towns in the Heartland such as Marston Vale.

Aspiring Homemaker households are characterised as younger, in full time employment, settling down in housing priced within their means, which may be in the suburbs.

**Key challenges/constraints:**
- A need to perform escorted trips may constrain mode choice
- Their persona displays a lower propensity for use of electric vehicles

**Key opportunities:**
- Homes likely to be more suited to introduction of private electric vehicle charging facilities/cycle parking
- Receptive to new technology/new transport modes
- New movers provide opportunities for behaviour change
Country Living persona makes up 7% of the population of EEH, but up to 51% in some settlements such as Calvert.

Country Living households are well-off home owners in a small rural town, enjoying the benefits of country life. They two cars but also have high internet use.

Key challenges/constraints:
- poor access to key local facilities
- lower propensity for embracing new technology
- low propensity to use shared transport options

Key opportunities:
- homes likely to be more suited to introduction of private electric vehicle charging facilities/cycle parking

City Prosperity persona make up only 2% of the population of EEH, but up to 25% in Cambridge.

City Prosperity households have recently moved to live in the city centre and have well paid senior jobs. They are likely to be married couples, in managerial/senior positions, supporting students or older children, and are used to using online shopping and banking.

Key challenges/constraints:
- homes less likely to be suited to introduction of private electric vehicle charging facilities/cycle parking
- lower propensity for use of electric vehicles

Key opportunities:
- no children may make travel patterns more flexible
- excellent access to key local facilities
- regular users of online travel information
- propensity to use shared transport options
### Domestic Success

Those in the Domestic Success persona make up 13% of the population of EEH and are one of the most prevalent personas in many settlements except those of a more rural nature.

Domestic Success households are a thriving family who are busy bringing up children and following careers. They like to own new technology.

**Key challenges/constraints:**
- A need to perform escorted trips may constrain mode choice
- Lower propensity for use of electric vehicles

**Key opportunities:**
- Homes likely to be more suited to introduction of private electric vehicle charging facilities/cycle parking
- Regularly update their vehicle this provides opportunity to take advantage of technological change
- New movers provide opportunities for behaviour change

### Family Basics

Those in the Family Basics persona make up 9% of the population of EEH and make up to 21% of the population of some towns in the Heartland such as Aylesbury.

Family Basics households are characterised as those with limited resources who must budget to make ends meet. They are likely to have children, limited resources and squeezed budgets.

**Key challenges/constraints:**
- A need to perform escorted trips may constrain mode choice
- Lower use of online travel information
- Do not regularly update their vehicle reducing opportunity to take advantage of technological change
- Low propensity to use shared transport options

**Key opportunities:**
- Homes likely to be more suited to introduction of private electric vehicle charging facilities/cycle parking
- Receptive to new technology/new transport modes
Rental Hubs
Those in the Rental Hubs persona make up 8% of the population of EEH, though in Cambridge and Oxford this is over 24%.
Rental Hubs households are characterised by educated young people privately renting in urban neighbourhoods. They are likely to be single or sharing accommodation, often in young neighbourhoods.

Key challenges/constraints:
- homes less likely to be suited to introduction of private electric vehicle charging facilities/cycle parking
- do not regularly update their vehicle reducing opportunity to take advantage of technological change
- lower propensity for use of electric vehicles

Key opportunities:
- no children may make travel patterns more flexible
- new movers provide opportunities for behaviour change
- excellent access to key local facilities
- receptive to new technology/new transport modes
- propensity to use shared transport options

Rural Reality
Those in the Rural Reality persona make up 8% of the population of EEH but up to 66% in some rural settlements such as Chatteris.
Rural reality households are characterised by householders living in inexpensive homes in village communities or outlying houses. They may experience slower internet speeds.

Key challenges/constraints:
- poor access to key local facilities
- low propensity to use shared transport options

Key opportunities:
- homes likely to be more suited to introduction of private electric vehicle charging facilities/cycle parking
### Senior Security

Those in the Senior Security persona make up 7% of the population of EEH but up to 12% in some towns such as Swindon.

Senior Security households are characterised by being elderly and who are enjoying a comfortable retirement. These more elderly households have lower mileage and less likely to take up new technology.

**Key challenges/constraints:**
- Length of residency may result in more entrenched travel behaviours
- Poor access to key local facilities
- Lower propensity for embracing new technology
- Low propensity to use shared transport options

**Key opportunities:**
- No children may make travel patterns more flexible
- Homes likely to be more suited to introduction of private electric vehicle charging facilities/cycle parking

### Transient Renters

Those in the Transient Renters persona make up 7% of the population of EEH but over 14% in some settlements such as Milton Keynes and Northampton.

Households are characterised by single people privately renting low cost homes, often in terraced housing, for the short term.

**Key challenges/constraints:**
- Do not regularly update their vehicle reducing opportunity to take advantage of technological change
- Low propensity to use shared transport options

**Key opportunities:**
- No children may make travel patterns more flexible
- New movers provide opportunities for behaviour change
- Receptive to new technology/new transport modes
### Urban Cohesion

Those in the Urban Cohesion persona make up 4% of the EEH population but up over 10% in some settlements such as Oxford and Bedford.

Households are characterised as residents of settled urban communities with a strong sense of identity. They are likely to be multicultural and reside in the suburbs. Younger family members are likely to have an interest in new technology.

**Key challenges/constraints:**
- do not regularly update their vehicle reducing opportunity to take advantage of technological change; Current trends indicate low take up of electric vehicles
- lower propensity for use of electric vehicles

**Key opportunities:**
- excellent access to key local facilities
- receptive to new technology/new transport modes.

### Prestige Positions

Those in the Prestige Positions persona make up 12% of the EEH population but over 25% in some settlements such as Calvert and Hardwick.

Households are characterised by living in a high value detached home, being employed in managerial or senior positions and supporting students/older children.

**Key challenges/constraints:**
- length of residency may result in more entrenched travel behaviours

**Key opportunities:**
- regularly update their vehicle this provides opportunity to take advantage of technological change
- propensity to use new fuel types (e.g. electric or hybrid)
### Suburban Stability
Those in the Suburban Stability persona make up 5% of the EEH population, only raising to around 10% in settlements such as Sandy. Households are characterised by living in a suburban mid-range home, which they've lived in for several years with older children.

**Key challenges/constraints:**
- Length of residency may result in more entrenched travel behaviours

**Key opportunities:**
- Regularly update their vehicle this provides opportunity to take advantage of technological change

### Vintage Value
Those in the Vintage Value persona make up 4% of the EEH population with many settlements having this small proportion of this persona across the Heartland. Households are characterised by people living alone, in small homes or flats, and on low income and need of support.

**Key challenges/constraints:**
- Homes less likely to be suited to introduction of private electric vehicle charging facilities/cycle parking
- Length of residency may result in more entrenched travel behaviours
- Higher propensity for mobility difficulties
- Low level of technology use

**Key opportunities:**
- No children may make travel patterns more flexible
- Propensity to use new fuel types (e.g., electric or hybrid)
### Modest Traditions

The Modest Traditions persona accounts for 2% of the EEH population but to 4% in some settlements such as Swindon and Milton Keynes.

Families typically live in smaller terraced properties located in the outskirts of urban areas. They tend to be composed of couples with no children (or with children who have left home). They are quite likely to have access to a car.

**Key challenges/constraints:**
- relatively low disposable incomes limit the choices available
- lack of interest in new technologies
- poor access to local shops and facilities mean they are required to travel to access services
- above average incidence of mobility difficulties

**Key opportunities:**
- no children may make travel patterns more flexible

### Municipal Challenge

Those in the Municipal Challenge persona make up 2% of the EEH population but up over 3% in some settlements such as Swindon, Bedford and Oxford.

Households are characterised by mature residents living in affordable suburban housing.

**Key challenges/constraints:**
- homes less likely to be suited to introduction of private electric vehicle charging facilities/cycle parking
- higher propensity for mobility difficulties

**Key opportunities:**
- no children may make travel patterns more flexible
- good access to key local facilities
- receptive to new technology/new transport modes