ENGLAND'S ECONOMIC HEARTLAND

Draft Transport Strategy

BEDFORD BOROUGH COUNCIL

Buckinghamshire County Council

Cambridgeshire County Council

Central Bedfordshire

Hertfordshire

Luton

milton keynes council

Northamptonshire County Council

OXFORDSHIRE COUNTY COUNCIL

PETERBOROUGH CITY COUNCIL

Swindon BOROUGH COUNCIL

Buckinghamshire Thames Valley | LOCAL ENTERPRISE PARTNERSHIP
THE ENTREPRENEURIAL HEART OF BRITAIN

OxLEP driving economic growth

SEMLEP South East Midlands Local Enterprise Partnership

swindonwiltshire Local Enterprise Partnership

CAMBRIDGESHIRE & PETERBOROUGH COMBINED AUTHORITY

The Heartland is an economic success story and vital asset for the UK in its economic recovery and the decades which follow...

...founded on science and technology innovation, powered by world-leading universities...

...which we will harness to develop new solutions that will decarbonise our transport system....

...while championing investment in digital infrastructure to reduce the need to travel, transforming public transport and promoting active travel...

...increasing opportunities for our residents, supporting a green recovery and sustainable growth, and ensuring that our freight and logistics needs are met while lowering their environmental impact

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Further maps summarising the Heartland's economy, population, environment and transport system are available in the Heartland in Context document on our website..

FOREWORD

The publication of this Draft Transport Strategy comes at a time when we're still reflecting on the consequences of the global crisis caused by COVID-19.

In the short term the need to fight the virus has required the majority of us, whether as individuals, communities or businesses, to do things differently. We've seen an increase in the use of remote working for some, a drop in the number of trips on our roads, and an increase in people walking and cycling. We've seen carbon emissions fall, and air quality improve.

It is striking that during our engagement on the Outline Transport Strategy and in conversations since, we were told very clearly of the need for change: of the need to reduce our reliance on the car and promote a shift towards greater use of public transport, walking and cycling; that we need to use improved digital connectivity as an opportunity to reduce the need to travel, and that we should be bold in seeking to deliver a net-zero carbon transport system.

We were told that 'business as usual' was not acceptable; that we needed to put the user at the heart of our transport system; that we should focus on enabling sustainable development that leads to an improvement in quality of life and well-being, and achieves net environmental gain.

As our experience during the COVID-19 pandemic has shown, there is considerable scope to increase our use of flexible and remote working, to challenge received wisdom when it comes to the future of our transport system; to do things differently. Recent surveys suggest that many people don't want a complete return to the status quo.

The imperative for change in the Heartland is compelling.

And we find ourselves at a unique juncture, for we have arguably a once-in-a-generation opportunity to choose the way forward.

Our region's economic success is founded on science and technology-based innovation, powered by world-leading universities and research centres. By harnessing the inherent strength of England's Economic Heartland we have the potential to make real our ambition to deliver truly sustainable growth.

Our Draft Transport Strategy presents the step change required in order to deliver that ambition.

It sets out how we can use the need to achieve net zero carbon as the basis for a green recovery, one that sees our businesses at the forefront of doing things differently and in so doing develop new services and solutions that enable us to compete in world markets to the benefit of our residents and the UK.

It sets out how we can reduce our reliance on the private car by investing in strategic public transport infrastructure alongside investment in digital infrastructure, to better connect our communities; and how that investment needs to be complemented by investment in active travel measures locally.

It sets out how we need to ensure that our freight and logistics needs continue to be met, but in a way that reduces its environmental impact.

We have the opportunity to embed new behaviours when it comes to our travel choices, to bring individual transport networks together to form a transport system that offers choice, flexibility and reliability to the user.

Our strategy is bold in its ambition for our transport system over the next 30 years. We believe it represents the way forward for our residents, communities and businesses. We believe that it makes the case for investment in the right infrastructure and services that will enable the region to plan with confidence and certainty for the future.

We want to hear your thoughts on our Draft Transport Strategy through this consultation which runs through until midnight on October 6, 2020.

Your views matter and will be used to shape the final version of our Transport Strategy, which will be published at the turn of the year.

The time for action is now. We must harness the opportunities of the current situation - and our region's own unique strengths – to connect people and transform journeys in a way which allows our residents, businesses and environment to prosper..

We look forward to hearing your views,

Mayor Dave Hodgson,
Chair, Strategic Transport Forum

Mayor Dave Hodgson addressing the EEH annual conference 2019, where our* Outline Transport Strategy *was launched.

// Heartland at a glance

TRANSPORT HIGHS AND LOWS

Heartland residents travel an average of 16.6km to work, compared to 15km nationally (2011 census). Residents in **Huntingdonshire** travel the longest distance on average to work (20.9km), while **Oxford** residents travel the shortest distance (12.1km).

4% of Heartland residents usually cycle to work, compared to 3% nationally (2011 census). **Cambridge** has the highest rates of cycling in the English speaking world - 29% of residents cycled to work at the time of the census, while mode share is also high in **Oxford** (17%).

9% of Heartland residents walked to work at the time of 2011 census, compared to 10% nationally. 17% of residents in **Oxford** walked to work, the most in the region, followed by **Cambridge** (15%).

Around 40% of EEH's local authority areas have seen growth in bus patronage in the past 10 years, bucking the national trend. **Oxfordshire** (60.9) and **Swindon** (53.9) have the highest number of bus journeys per head in the Heartland.

At 25km, the **Cambridgeshire Guided Busway** is the longest in the world.

5% of Heartland residents travelled to work by rail (2011 census) mirroring the national average. The rate was highest in **St Albans**, where 18% of residents usually travelled to work by train.

Rail passenger numbers in the Heartland rose by 20% from 2012/13-2017/18 (142m to 169m), in line with the national average. The highest increase was at **Bicester Village Station**, whose numbers grew 828% after it was redeveloped and new services opened between Oxford and London. **Cambridge** is the busiest station in the region with a footfall 11.5m in 2017/18, an increase of 30% since 2011.

At the time of the 2011 census, 11% of working residents primarily worked from home, compared to 10% nationally. Working from home was strongest in **Chiltern and South Bucks** (16%).

59% of Heartland residents drive themselves to work, compared to 55% nationally (2011 census). In **South and East Northamptonshire** 69% of residents drive themselves to work – the most in the region.

5% of residents in the Heartland (and nationally) get to work as a car or van passenger (2011 census). Ride sharing was highest in **Corby**, at 11%.

The M25 Junction 16-15 near **Iver** is the Heartland's busiest stretch of road carrying more than 200,000 vehicles per day.

The 62 mile 'East of England' stretch of the A1 from Peterborough to Hertfordshire contains two sections built to motorway standard, but a 26 mile section in the middle, includes five roundabouts (including four within a short distance in **Bedfordshire**), and numerous unnumbered junctions and accesses, leading to significant reliability issues.

Transport-related emissions rose 10% between 2012- 2017, compared to 5% nationally, and accounted for 47% of the Heartland's total carbon dioxide emissions, compared with 37% nationally. Emissions per capita were highest in **south Bucks**, at 7.9 tonnes per head (compared to 1.9t across the UK). **Cambridge** and **Oxford** have the joint lowest emissions from transport per capita in the region, at 0.9 tonnes.

FUTURE OF MOBILITY

The Heartland is leading the UK's development of connected vehicles for real world application. In **Oxfordshire**, 'Project Darwin' based at **Harwell** is a four-year trial programme paving the way for next generation connectivity solutions for CAVs. **Oxbotica**, founded by two Oxford professors, is one of the world's leading autonomous driving software companies. The UK's first trial of autonomous vehicles on public roads took place near **Milton Park**. RACE at **Culham** is at the forefront of CAV testing. In Bedfordshire, **Millbrook Proving Ground** has 70km of test tracks and is hosting the UK 5G test bed for connected transport.

Arrival in **Banbury** has developed smart electric vehicles for the logistics sector. It is also involved in Roborace – the first driverless electric racing series.

Milton Keynes has England's highest ratio of electric vehicle public charging devices outside of London. The city's Electric Vehicle Experience Centre is the UK's first brand neutral centre dedicated to electric vehicles.

The business-led **Swindon** Hydrogen Hub seeks to promote commercial use of hydrogen technology in automotive and stationary applications

Milton Keynes is home to the iconic Starship robots - small, six-wheeled vehicles which move along pavements to bring small deliveries such as takeaway food to residents and workers.

Amazon's first commercial delivery via drone took place in **Cambridgeshire** in 2016.

Oxwash in **Oxford**, which aims to be the world's first net zero carbon laundry service, collects laundry using its fleet of e-cargo bikes.

The **University of Hertfordshire's** Smart Mobility Unit's Transport for Counties initiative is leading research into transport away from cities – those areas with a mix of market towns, edgelands of cities and small villages.

NATURAL AND BUILT ENVIRONMENT

Three Areas of Outstanding Natural Beauty cover 10% of the Heartland, of which the **Chilterns** (5%) is the biggest, followed by **North Wessex Downs** (2%) and **Cotswolds** (2%).

According to Natural England, much of the agricultural land in the Heartland is rated as of good to moderate quality, with the highest concentrations rated as 'excellent' occurring in **Cambridgeshire**.

The Heartland has a rich historical legacy dating back to ancient times, including numerous stately homes which attract tourists from around the world. **Blenheim Palace** is a UNESCO World Heritage site. With nearly half a million visitors per year, **Waddesdon Manor** is the most popular National Trust attraction in the region, and the sixth most popular in the country. **Fotheringhay** in Northamptonshire is the birthplace of Richard III and the place where Mary, Queen of Scots was executed. **Kirby Hall** near Corby is one of England's greatest Elizabethan houses.

Letchworth was the world's first garden city, influencing nearby **Welwyn** Garden City, and inspiring other projects around the world.

The famous White Horse at **Uffington Castle** is the oldest chalk-cut hill figure in Britain.

There are six registered battlegrounds in the Heartland, half of which can be found in Northamptonshire, including the **Battle of Naseby** – a decisive engagement of the First English Civil War.

The 177km Nene Way broadly follows the course of the River Nene and starts in **Badby**, Northamptonshire, ending in Sutton Bridge, Lincolnshire, passing en route through Northampton and Peterborough, the market towns of Thrapston, Oundle and Whittlesey, and villages such as Fotheringay.

The £1.5bn **A14** Cambridge to Huntingdon improvement scheme, which completed in May 2020, included one of the biggest and most complex archaeological projects ever undertaken in the UK. Amongst the discoveries made by 250 archaeologists working at the site were the UK's oldest brewery, and an incredibly rare coin featuring a Roman emperor who reigned for only two months.

Home to 3,600 animals, **Whipsnade** is the largest zoo in the UK.

The proposed **Bedford to Milton Keynes Waterway Park** is a 26km canal connecting the Grand Union Canal in Milton Keynes to the River Great Ouse, west of Bedford, transforming connectivity by walking and cycling in a key growth area.

It's said that only Buckingham Palace receives more Chinese tourists than **Bicester Village** shopping outlet – services to its railway station are made in Mandarin as well as English.

ECONOMY AND GROWTH

The Heartland economy was worth £163m in 2018. At £14.3bn, **Milton Keynes** had the biggest economy, followed by **Swindon** (£9.6bn), while the other population centres with £6bn-plus economies were **Oxford, Cambridge, Northampton, Peterborough** and **Luton**.

The Heartland's economy grew 25% in the five years to 2018, compared to 20% across the UK. **Three Rivers** recorded the strongest growth at 68%, while **Milton Keynes, Watford, Peterborough** and **East Hertfordshire** recorded growth of around 40%.

The ratio of jobs per residents aged 16-64 in the Heartland was 0.94 in 2018, compared to 0.87 across England. At 1.8, the jobs density was highest in **Watford**, followed by **Cambridge** (1.39) and **Oxford** (1.33), while six other local planning authority areas also offered more jobs than working age residents. The ratio was lowest in Central Bedfordshire (0.6).

At £591 per week, average workplace earnings in 2019 across the Heartland mirrored that of the rest of the country. Workplace earnings were highest in **South Cambridgeshire** (£716), and lowest in **Fenland** (£458) – both in the same county.

The Heartland is home to 11 universities making a step change in the region's contribution to the national economy. **Oxford University** is top of the Times' World University rankings, while **Cambridge** is third.

The Heartland is renowned for its life science clusters. **Cambridge** Biomedical Campus is one of the largest of its kind in the world, with 27,000 people expected to be employed at the campus by 2031.

In **Swindon**, pharmaceutical manufacturing employs eight times as many people as the national average.

Stoke Mandeville Hospital in **Aylesbury** is the spiritual home of the Paralympics, and includes the nationally renowned spinal injuries centre. It is home to a growing med-tech cluster.

World famous **Silverstone** is the heart of the advanced tech sector in the region, with over 4,000 companies, employing 36,000 people, based within a one-hour radius of the iconic circuit. The majority of Formula One teams (and many other motorsport teams) are based in close proximity to 'Motorsport Valley', as are their suppliers and several universities which teach motorsport engineering.

The Heartland is a world leader in space - **Harwell** is recognised the gateway to the UK space sector.

Westcott is home to the National Propulsion Test Facility where the UK Space Agency is investing over £4 million to develop space propulsion engi

Countless blockbusters, including James Bond and Star Wars, have been filmed at the world renowned **Pinewood Studios** in south Bucks. The National Film and Television School – considered one the best film schools in the world - is located nearby.

The Harry Potter franchise was filmed at **Leavesden Studios**, and its Harry Potter Studio Tour is a major tourist attraction. It recently underwent a £110m refurbishment, and is now considered one of the best film studios in Europe. Elstree Studios are in nearby Borehamwood.

Luton Airport saw a 74% increase in passenger numbers from 2012 to 2018. Its Direct Air to Rail Transit (DART) will open 2021. Luton is the biggest private aviation hub in the UK, and fourth biggest in Europe. Leading aerospace businesses are clustered around the airport and into Bedfordshire and Hertfordshire.

Milton Keynes and **Northamptonshire** sit within 'the golden triangle' of logistics, while there are also significant logistics clusters around north Oxfordshire and Swindon.

The expansion of **Daventry International Rail Freight Terminal** will make it one of the busiest inland intermodal terminals in Europe.

Local Plans across the Heartland make provision for 535,000 new homes, equating to an annual growth rate of 27,000 homes. **Central Bedfordshire's** Local Plan has provision for the most homes at 39,000 – averaging 1,968 new homes a year during the life of the Local Plan.

There are around 200 Local Plan sites in the Heartland of more than 500 dwellings. With 10,000 homes planned, **Northstowe** in Cambridgeshire is believed to be the largest development in the region.

The east of Hertfordshire, home to **Stevenage** Bioscience Catalyst and GSK, sits in the centre of the 'Innovation Corridor' between Cambridgeshire and London.

POPULATION

The Heartland is home to 5.1m people. Between 2012-2018 its population grew by 5.5% compared to 4.3% across the UK. The former district of **Aylesbury Vale** (now part of Buckinghamshire Council) recorded the greatest population growth of 12.3%.

34% of Heartland residents live in small market towns and their rural hinterlands, compared with 23% nationally (2011 census). **East Cambridgeshire, South Northamptonshire** and **West Oxfordshire** are classed by DEFRA as having 100% rural populations.

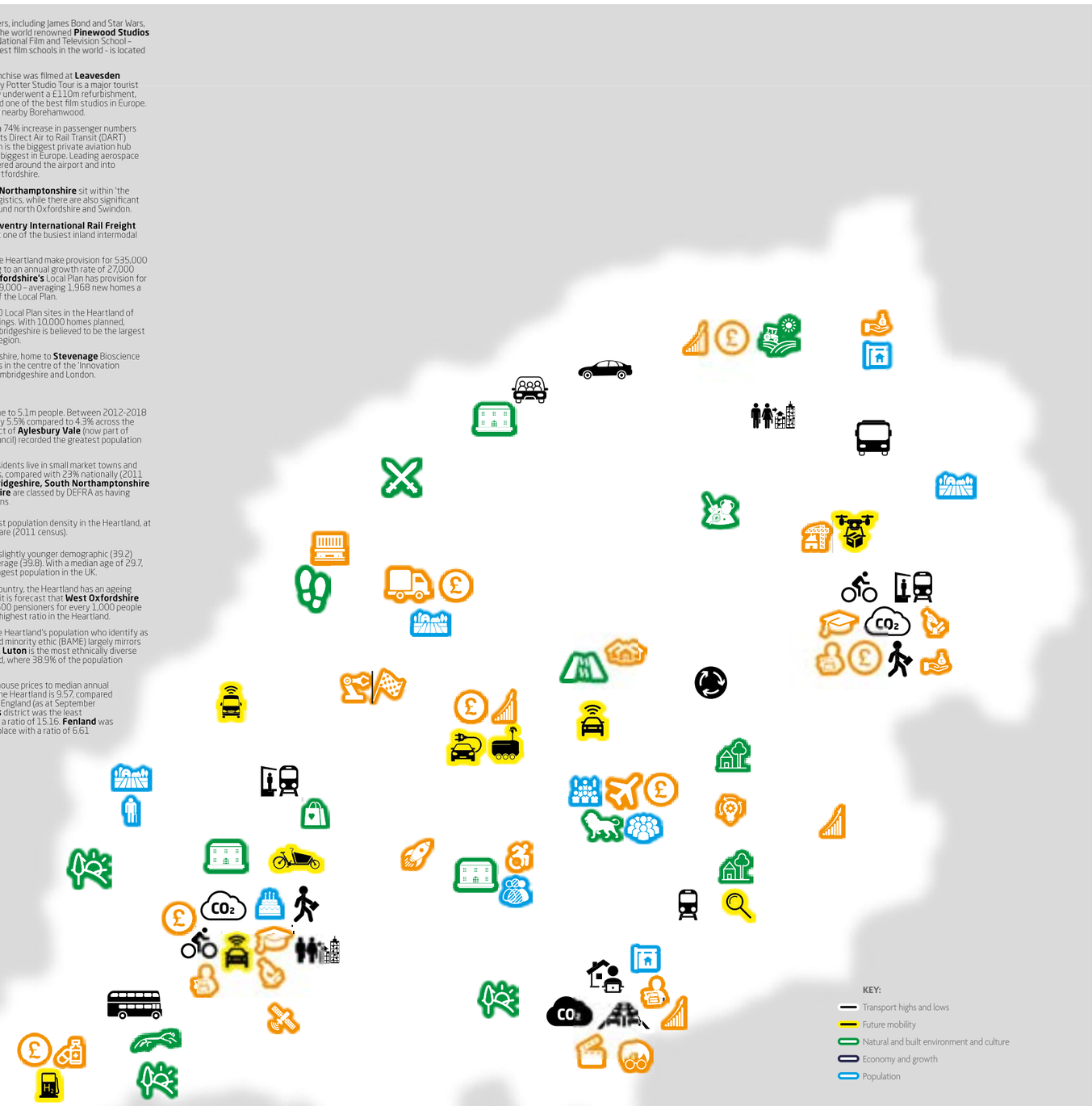
Luton has the highest population density in the Heartland, at 40.5 people per hectare (2011 census).

The Heartland has a slightly younger demographic (39.2) than the national average (39.8). With a median age of 29.7, **Oxford** has the youngest population in the UK.

Like the rest of the country, the Heartland has an ageing population. By 2043 it is forecast that **West Oxfordshire** will have more than 500 pensioners for every 1,000 people of working age – the highest ratio in the Heartland.

The proportion of the Heartland's population who identify as being black, Asian and minority ethic (BAME) largely mirrors the national average. **Luton** is the most ethnically diverse place in the Heartland, where 38.9% of the population identify as BAME.

The ratio of median house prices to median annual residentearnings in the Heartland is 9.57, compared to a 7.57 average for England (as at September 2019). **Three Rivers** district was the least affordable place with a ratio of 15.16. **Fenland** was the most affordable place with a ratio of 6.61



INTRODUCTION

Our Region

England's Economic Heartland is one of the world's leading economic regions. Its success is founded on science and technology 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. However, as the National Infrastructure Commission highlighted, our continued economic success cannot be taken for granted.

There is a need to invest in maintaining our existing infrastructure assets, deliver planned investment in additional capacity to meet future connectivity needs, and plan for the additional investment that enables sustainable growth. Investment is required to both support the existing economy and enable delivery of planned economic and housing growth, while at the same time preserving our natural and historic environment.

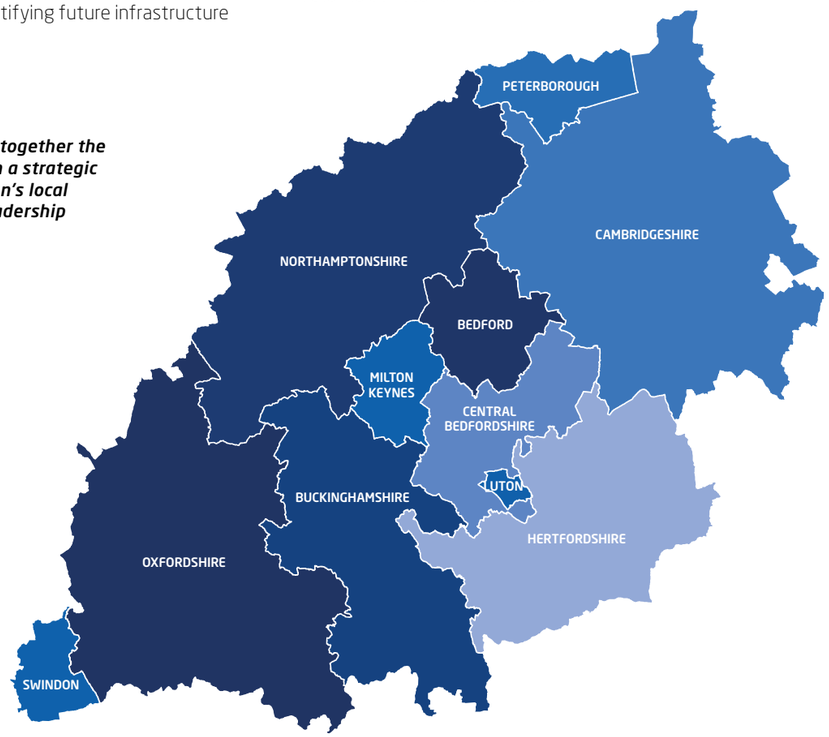
With the rise of e-commerce, digital services and new enabling technologies (such as voice recognition technologies or digital road technologies), our transport system needs to be considered part of a wider system of connectivity – one that embraces both physical and digital access when identifying future infrastructure requirements.

It is only by planning and delivering investment in strategic infrastructure (transport, digital and utilities) as a whole that we will have the connectivity that will allow us to realise the region's economic potential in a way that respects both our commitment to the environment and the national legal requirement to achieve net-zero greenhouse gas emissions by 2050.

Our ability to effect change to the transport system is dependent on the way we, collectively with partners and central government, incorporate connectivity as part of a co-ordinated approach to the development of communities, including integration with land use planning.

Whilst the region as a whole is an economic success, there are areas of social inequality and deprivation, where opportunities for individuals to realise their full potential are limited. Within rural communities the connectivity options, both physical and digital, available to residents and businesses are often limited, bringing with it implications that extend beyond the transport sector.

Improving connectivity is at the heart of ensuring that the Heartland realises its economic potential, but that cannot be at the expense of the region's environment - the quality of which – built and natural, urban and rural – is often cited as a key contributory factor to our economic success.



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.

Our current pattern of travel and consumption of resources is incompatible with delivering the national requirement to achieve net-zero greenhouse emissions by 2050 and ensuring the long-term sustainability of the region. Harnessing our world-leading experience in clean, green and smart growth will enable us to effect change in ways that retains our attractiveness as a place to live, work and play.

The region's political and business leadership is committed to realising its economic potential and doing so in a way that delivers environmental net gain.

The Transport Strategy is the response to this task. It sets out the scale of the challenge we face, the need for change and the opportunities that exist to effect that change. It provides the policy framework that will enable all those with an interest in securing the future of the Heartland to work to a shared ambition that brings benefits to its residents, its businesses, its natural environment and the UK as a whole.

England's Economic Heartland

The challenge facing the Heartland requires a response capable of delivering transformational change when it comes to strategic infrastructure and services.

The need for strong political and business leadership in order to deliver such a response was recognised in 2015 with the establishment of what became England's Economic Heartland (EEH).

Underpinning the partnership is the leaders' commitment to harness the power of collaborative working on strategic issues to deliver their shared ambition – realising the economic potential of the region. By working together on issues of strategic importance, they are better able to plan for:

- Strategic infrastructure issues and solutions that extend beyond any one single area
- Issues that are common to one or more local areas that benefit from a co-ordinated response
- The case for investment in strategic infrastructure that is strengthened by having a single voice at a scale that has influence and impact.

The strength gained through collaborative working underpins the work of England's Economic Heartland and led to the establishment of the Sub-national Transport Body for the region.

Wider Strategic infrastructure

Central to the work of EEH is the understanding that any consideration of strategic transport infrastructure and service requirements must also take into consideration the linkages with investment in digital infrastructure, both fixed and mobile, as well as utilities.

Business delivery models used by the majority of retail, commercial and professional service companies continue to undergo significant and rapid change, powered by the digital economy.

The COVID-19 pandemic has demonstrated the potential for remote working to enable business activity to be maintained in different ways. It is already clear that improved digital infrastructure will be critical moving forward, becoming absolutely integral to the way companies operate and services accessed. Planning for our future transport needs must be taken forward alongside that for digital infrastructure. There is an opportunity now to shape the future in ways that might otherwise have taken considerable time to achieve.

This strategy sets out a new approach to the planning, development and implementation of strategic infrastructure and services at the regional level. It highlights the critical importance of considering future investment requirements for digital and utility infrastructure alongside that for transport, creating a co-ordinated approach to the planning, development and implementation of strategic infrastructure that together delivers connectivity that the region needs.

Oxford-Cambridge Arc

The Oxford-Cambridge Arc (as defined by Government) forms a significant part of the Heartland and EEH is an active member of the initiatives underway at national, regional and local level to improve collaboration on issues of strategic significance in order to deliver long-term sustainable growth.

The National Infrastructure Commission's 2017 report, *Partnering for Prosperity: a new deal for the Cambridge-Milton Keynes-Oxford Arc,* found that the Oxford-Cambridge Arc is home to some of the UK's most productive and fast-growing cities and has significant potential for transformative growth. However, it said poor east-west infrastructure and a lack of suitable housing hinders the continued success of the area.

The Commission warned that the region's continued success cannot be taken for granted. Just as a business requires constant investment to maintain its competitiveness, so a regional economy requires continual investment in its infrastructure and services to remain competitive.

Responding to the Commission's report the Government identified the Arc as a national economic priority. The March 2019 'joint declaration' between Government and partners in the region set out how by bringing the strengths of individual areas together at the regional level there is the long-term potential to transform the region into a world-leading economic area, one that acts as a hot bed for innovation.

Robotics engineering developed at the Joint European Torus nuclear fusion experiment at the Remote Applications in Challenging Environments centre in Culham

The declaration recognises the need to plan for and deliver substantial additional infrastructure ahead of the arrival of planned growth, including the necessary transport infrastructure, utilities, digital connectivity, health and education.

England's Economic Heartland provides leadership on strategic infrastructure in support of the Arc initiative through the connectivity work stream, working closely with other Arc related activity.

The critical importance of infrastructure linkages beyond the Arc was highlighted by the National Infrastructure Commission.

England's Economic Heartland's wider geography, incorporating Hertfordshire and Swindon, and our strong working relationships with neighbouring Sub-national Transport Bodies, ensures these wider linkages are fully considered in the planning of strategic infrastructure and services.

At the Heart of the UK

The Heartland's location within England makes its relationships with neighbouring regions of particular strategic importance.

Historically there has always been a strong economic relationship between the Heartland and London, and with the region to the south of London. Many of the strategic transport linkages are radial in nature, centred on the capital. Even where linkages have evolved to reflect the more diverse pattern of travel – through services such as Thameslink and the Elizabeth Line – these continue to be centred on London.

All freight, from the ports on the south coast and the Port of Felixstowe traverses the Heartland, by road or rail if it is to reach the Midlands or the north of England.

The operational resilience and capacity of our transport system is therefore integral to the UK economy as a whole. Improved inter-regional connectivity will not only support the other regions and nations within the UK, it will contribute to the levelling up of the UK economy as a whole.

Punting on the River Cam Cambridge

OUR VISION AND KEY PRINCIPLES

At the heart of this strategy is our commitment to harness the region's economic potential, and improve quality of life, health and well-being in a way that is inclusive, and which improves the environment and enables our transport system to meet the requirement to be net-zero no later than 2050.

Whilst opening up economic opportunities and housing options is fundamental to ensuring the continued success of the region, our approach must address the need to 'level up' within the region, ensuring that issues of social inequality and economic deprivation are addressed to the wider benefit of our region, its communities and businesses.

In order to achieve this, the strategy needs to place the user – whether it is a business or the individual – at its heart. Our approach to the development of our transport system must sit alongside and complement the interventions made in other areas of public policy to enable a more sustainable pattern of development.

This philosophy is captured in this strategy's vision and accompanying key principles:

Vision:

To realise sustainable growth opportunities and improve the quality of life and wellbeing for Heartland residents and businesses, by harnessing the region's globally renowned centres of innovation to unlock a world class, de-carbonised transport system.

Key Principles:

- Achieving net-zero carbon emissions from transport no later than 2050
- Improving quality of life and wellbeing through an inclusive transport system accessible to all which emphasises sustainable and active travel
- Supporting the regional economy by connecting people and businesses to markets and opportunities
- Ensuring the Heartland works for the UK by enabling the efficient movement of people and goods through the region and to/from international gateways.

THE HEARTLAND TODAY

An Economic Powerhouse

The Heartland's knowledge-intensive economy is underpinned by a network of 11 universities (and their associated research facilities) of which the universities of Oxford and Cambridge continue to be ranked in the top three universities in the world.

More than one in 10 of the UK's knowledge sector jobs are located in the region, creating an ecosystem of innovation and capability that is globally renowned. The network of cutting-edge science parks, research institutions, businesses and incubators provides the capacity and capability to harness this potential to the benefit of the region, its communities and businesses.

The Heartland economy was valued at more than £163bn in 2018. Economic growth (as expressed by GVA) has consistently outstripped the UK average: with GVA growth of 25% recorded in the five-year period between 2013 and 2018 (compared to the UK average of 20%).

However, notwithstanding the headline economic success, businesses continue to face a number of challenges:

- In significant parts of the Heartland, productivity levels remain consistently below that of our global competitors, a consequence in part of increasing congestion on and reduced resilience of the transport system
- Investment in enabling and supporting infrastructure takes longer to secure and deliver than planned, acting as a constraint on new economic opportunities developing as planned in a timely and cost-effective manner
- The funds available to invest and maintain the existing infrastructure asset fail to keep pace with identified needs (including those arising as a consequence of planned growth), increasing the vulnerability of the transport system to disruption by extreme weather events.

The Local Enterprise Partnerships, through their Local Industrial Strategies, have identified the potential for the region's economy to grow by more than 70% by 2050.

Economic growth on this scale alongside the need to meet the legal target to achieve net-zero carbon by 2050 will not be realised without a step change in the way our communities are planned, including the infrastructure that supports them.

Our current patterns cannot be sustained, with journey lengths longer than the national average. And yet economic growth will require continued access to labour, as well as access to markets.

A co-ordinated approach across a number of policy areas – including but not limited to transport and land use planning – is essential to achieving the step change that will deliver sustainable economic growth.

Silverstone Park is at the centre of the Heartland's high performance technology cluster

Adopting this approach needs to benefit the region's existing communities as well as enabling delivery of planned growth. It needs to be delivered in an inclusive way that creates opportunities that enable individuals to realise their potential. It needs to provide the support for the more vulnerable within our communities, addressing not just physical barriers to connectivity but also issues such as loneliness and social isolation.

Freight and Logistics

All too often the freight and logistics sector is overlooked in transport strategies. This strategy recognises that planning for and meeting the freight and logistics needs of the business community are pre-requisites for economic and environmental success.

Notwithstanding the rise of the digital economy, catering for and managing the flow of freight associated with the deep-sea container traffic transiting through the UK's global gateway ports at Felixstowe, London Gateway and Southampton remains a key strategic priority for the Heartland.

The clusters of national distribution centres located within the region are a key part of our economy and a strategic asset for the UK as a whole. Addressing the environmental footprint of these businesses and their associated vehicle movements is a priority for the region.

The digital economy has changed the scale and nature of logistics, both in terms of business to business activities and business to end user.

A heavy goods vehicle passes the Waterside Theatre in Aylesbury

The use of conventional road vehicles is increasingly under scrutiny because of their environmental and social impact. We will work with the freight and logistics sector to develop and deploy innovative solutions that enable the servicing and support needs of the business community and public to be met in ways that respond to our environmental responsibilities, locally and nationally.

The Importance of Connectivity

Our traditional approach to identifying our future transport requirements is no longer fit for purpose. The rise in e-commerce, enabled by investment in digital infrastructure, is changing the way people access services and facilities.

And as the experience during the COVID-19 pandemic showed, there is considerable scope for the business community to increase its use of flexible and remote working while continuing to function, with consequential implications for the transport system.

Increasingly the focus is about our ability to 'connect' with a service, be it to better plan a journey through the use of intelligent transport systems, journey planning technologies or removing the need to travel at all. The future of our transport system is as much a consideration of digital infrastructure as a way of connecting as it is physical infrastructure.

A bus approaches the magic roundabouts in Hemel Hempstead

The rolling Chiltern hills

A focus on connectivity serves to emphasise the importance of a co-ordinated approach to shaping the future of our places, one that aligns decision making across policy areas to achieve a common vision of the future. By working with partners to adopt a vision-led approach to place-making at the local level, we will be able to embed the philosophy of 'decide and provide' as a cornerstone of this strategy.

As a centre for science and technology-based innovation, we will harness the region's capacity to use 'living laboratories' as the means of developing and trialling new transport solutions, ones that provide the user with choice and which secure modal shift. We will work with our partners to encourage the widespread adoption of innovative approaches at the regional and national -wide scale.

A Quality Environment

The Heartland is blessed with a highly attractive environment – built and natural, urban and rural. The full extent and quality of the Heartland's environment is captured in the baseline underpinning the Integrated Sustainability Appraisal.

Over 10% of the region is designated as being part of Areas of Outstanding Natural Beauty. The Chilterns on its own comprises 6% of the region's total area and typifies some of the rural connectivity challenges that many parts of the Heartland face. A healthy, well-managed and accessible natural environment contributes to people's physical and mental health, and wellbeing. It is also a significant factor in making the region an attractive location in which to do business.

Around 35% of the region's population live in small market towns and rural hinterlands, significantly above the national average. Connectivity in rural areas is therefore a strategic issue for the Heartland.

The decline in the viability of traditional public transport solutions, combined with continued challenges in accessing reliable digital connectivity, emphasises the need to encourage new models of connectivity for rural communities and the businesses that operate in them.

More generally, the current approach to the delivery and management of the transport system is unsustainable, as demonstrated by the number of Air Quality Management Areas declared within the region.

At the regional level transport emissions are responsible for 46.8% of the Heartland's total carbon dioxide emissions (compared with 36.6% nationally). More worryingly transport emissions are increasing at a faster rate than elsewhere (9.4% between 2012 and 2017 compared to the UK average of 4.9%).

With people in the Heartland more likely to travel longer distances to work than the national average, and with over 67% of the workplace population travelling to work by car (compared to 60% nationally), the need for intervention is already clear.

The scale of the existing environmental challenge serves to emphasise the need for this strategy to be the catalyst of change, and to do so at pace.

Addressing Social Inequalities

Whilst the region as a whole is an economic success, within it there are areas of social inequality and deprivation — areas where the opportunities for individuals to realise their full potential are limited.

Over 812,000 people in the region live in the top third most deprived local authority areas of England – accounting for 15% of the region's population.

The implications of failing to address inequality are only too evident: within Oxford, life expectancy amongst young adult males varies by 15 years across the city. More worryingly, evidence shows that social inequality continues to grow.

Improving access to opportunities for individuals is fundamental to helping address issues of inequality. Access to services and opportunities in local areas and across the wider region enables individuals to realise their full potential, bringing with it consequential improvements in health and well-being, as well as making a significant contribution to the economic success of the region.

We continue to work closely with the EEH Bus Operators Association, local enterprise partnerships and local authorities to ensure that measures to create opportunities for individuals are taken forward in such a way as to support the requirements of this strategy.

We will also use our understanding of the diversity of the region's population to develop, design and implement solutions that respect the societal norms and needs of our diverse communities.

Key Issues for Residents and Businesses

In July 2019 our Outline Transport Strategy started a conversation with the region's communities and businesses. The output of this forms an important part of our evidence base, providing an insight on the key issues that our residents and businesses consider the Transport Strategy needs to address. These are:

a) ***The imperative to respond to the climate emergency*** – the most significant message to come out of the engagement, with the requirement to achieve net zero carbon by 2050 identified by many as being a target that could be bought forward

b) ***The importance of harnessing technology and innovation*** – the knowledge-intensive economy was seen by many as unique selling point for the Heartland, one that enables the region to be bold and ambitious in its approach

c) ***The need to work closely with local planning authorities*** – ensuring that the strategy complements and supports the delivery of planned growth, as well strengthening the linkage between transport, land use planning and other areas of public sector policy in order to align decision making to realise sustainable patterns of activity

d) ***Putting the environment at the forefront*** – reinforcing the need to achieve environmental net gain in collaboration with partners, as well as improving the resilience of the transport system to the consequences of climate change

The redeveloped Wellington Street in Swindon

e) ***The need to be bold: not business as usual –*** a recognition of the inevitability that the shift from 'business as usual' will require the adoption of ambitious proposals, some of which will be radical and transformational

f) ***The need to reduce travel –*** responses were clear as to the importance of reducing the need to travel and the opportunity that the growth in digital connectivity provides to achieve this

g) ***The need to increase the emphasis on sustainable modes –*** whilst recognising the role of the car, the engagement emphasised the importance of basing this strategy on making the case for greater use of sustainable transport modes (including active travel)

h) ***To support health outcomes –*** responses emphasised the need for the Transport Strategy to ensure that policy priorities reflect the need to develop an inclusive and accessible transport system that supports better health outcomes

i) ***The importance of placing greater emphasis on wider strategic linkages –*** responses highlighted the need for the strategy to set out the important of linkages with adjoining regions, including London and working collaboratively on developing solutions

An early evening rainbow in Otmoor Oxfordshire

j) ***Encourage use of 'nudges' and demand management -*** there was overwhelming support for the use of 'nudges' which seek to change user behaviour, but there was also recognition that demand management policies may also be required

k) ***The importance of smaller schemes and maintenance -*** responses highlighted the importance of smaller, local schemes and maintenance of existing assets in meeting future connectivity requirements

l) ***The importance of implementation –*** a recognition by respondents as to the importance of the strategy setting out how it will be implemented, and how this will complement the activities of local transport authorities.

Constant throughout the engagement, and expressed consistently in the responses received, was the need for change in the way we plan for, and use our transport system of the future, and the need to do so at pace.

The Regional Evidence Base

Complementing the output from engagement, our Regional Evidence Base provides the evidential basis for the development of this strategy. It comprises:

- GIS-based Databank – containing up to date information on known plans for growth (economic and housing). The databank is updated annually using information supplied by local planning authorities and local enterprise partnerships
- Policy Scenario Model – a regional model that is used to assess the relative implications of alternative scenarios. The model has the ability to consider both alternative development scenarios (scale and distribution of future growth) and alternative policy scenarios. Its 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 this 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.

The Northamptonshire village of Flore

- Outline Transport Strategy – the responses submitted provide insight on the key issues this strategy needs to address for our residents and businesses
- Technical Studies – the output of technical work commissioned to explore specific aspects of our transport system.

Our approach ensures that this strategy is founded on a detailed understanding of the here and now. The databank provides a consistent baseline for our region built from the bottom up, thereby ensuring this strategy complements and supports the work underway at the local level, and within the sub-regional Growth Boards.

The output from our modelling tools has established the need for change in our approach to planning, developing and implementing investment in our transport system: a change that this strategy is designed to achieve.

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 our partners, and in light of continuing changes in the national policy context.

There are a significant number of National Trust properties throughout the Heartland

Opportunities Mapping

A key output of the Regional Evidence Base has been mapping the scale and geographical extent of planned growth (economic and housing) against the backdrop of today's current situation. The opportunities mapping has led to the identification of the following areas as being of strategic importance for our region:

- 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.

Canoeing in Leighton Buzzard

Place of strategic importance	Regionally Significant Hubs	Area of Economic Opportunity	Area of Significant Change	Area of Potential
Aylesbury	■			
Aylesbury Woodlands (Enterprise Zone)		■		
Banbury	■			
Bedford/ Kempston	■			■
Bicester		■	■	
Bishop's Stortford/ Stansted Airport		■		
Borehamwood				■
Cambridge	■			
Cambridge South		■		
Cambourne		■	■	
Corby	■			■
Daventry			■	■
Dunstable/ Houghton Regis	■			
Elstree Studios/ Leavesden Studios		■		
Ely		■		
Eynsham			■	
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	■			■

Place of strategic importance	Regionally Significant Hubs	Area of Economic Opportunity	Area of Significant Change	Area of Potential
Pinewood Studios		■		
Princes Risborough			■	
Science Vale/Didcot		■	■	
Silverstone		■		
St Albans	■			
Stevenage	■			
St Neots			■	
Swindon	■			■
Waterbeach		■	■	
Watford	■			
Wellingborough	■			■
Westcott		■		
Wisbech				■

In order to maintain the success of our region whilst addressing its challenges we are adopting a whole system approach, one that ensures investment in individual transport networks is aligned to form a single transport system that supports of our strategic ambition.

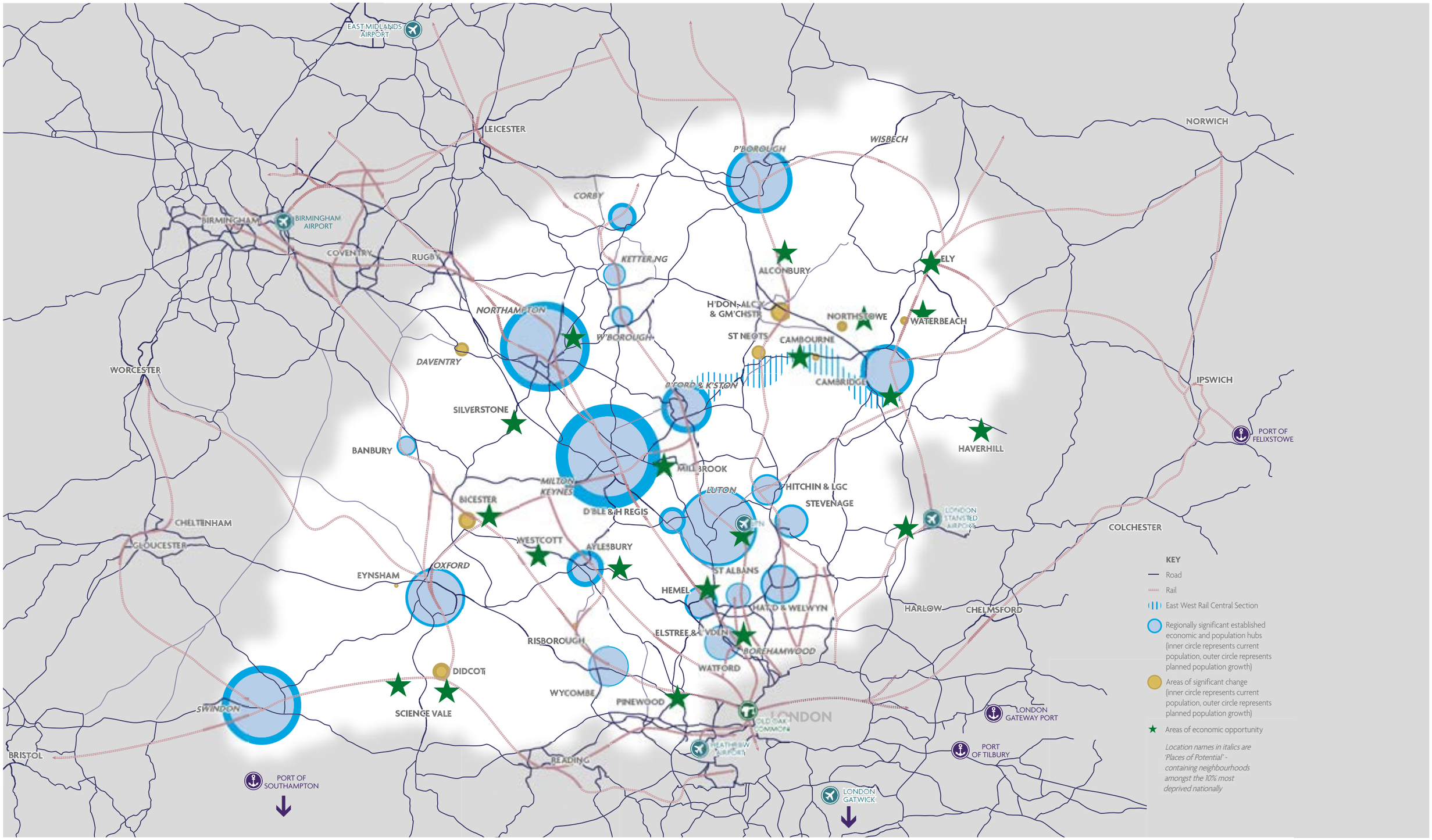
It requires the development of detailed proposals to be integrated with decisions taken in other areas of policy that affect the planning, development and delivery of services for residents and businesses. This means ensuring:

- Our regionally significant hubs are connected – both digitally and physically. Investment made in inter-urban and intra-regional connectivity should be a foundation on which to build when identifying future economic and housing growth proposals, with opportunities to improve local connectivity prioritised
- Our areas of economic opportunity have the right level of connectivity – both digitally and physically – that enables businesses to access both local labour markets and the markets for their products and/or services
- Our areas of significant change are supported by investment in local connectivity and inter-urban and intra-regional connectivity
- Our areas of potential are supported by investment in local connectivity that enables residents to gain access to opportunities and services.

At the same time there is a need to ensure that our approach to the transport system supports the role of our market towns and their rural hinterland.

// Places of strategic importance

Map created for Illustrative purposes only.



A STEP-CHANGE IN APPROACH

Harnessing our Potential

As one of the few regions that is a net contributor to the Exchequer, continuing to invest in our region will contribute significantly to the Government's wider ambition for the UK. Investing in strategic infrastructure not only supports the delivery of planned growth within our region, it benefits other regions which are dependent upon that infrastructure for access to markets and international gateways. Investing in improved inter-regional connectivity therefore benefits the UK economy as a whole.

A squirrel in Bedford

Achieving our strategic ambition for the region will not be achieved using a 'business as usual' approach. It requires difficult choices to be made about the future of our economy and our businesses, and the way we design communities and our approach to land use planning. It will require the co-ordination of public sector policy to shape the nature and scale of future travel.

The delivery of planned economic and housing growth represents an opportunity to deliver sustainable growth that benefits new and existing communities and businesses. However, this will continue to be dependent upon investment in strategic infrastructure and services, the right provision for public transport and active travel and a shared commitment for better co-ordination at all levels of decision making.

Improved connectivity within and beyond the region will help realise a significant uplift in economic performance – indeed, the opportunity presented by the region is greater than the sum of its parts.

Improved connectivity plays a key role in widening labour markets, providing access to housing markets and housing supply options and, supporting new opportunities for economic growth. The result will be increased economic capacity of employment hubs, increased levels of interaction and integration across the region, the ability to retain and attract high value-added business and improved affordability of business and residential space.

We will harness the potential of our knowledge-intensive economy and use the focus provided by the four Grand Challenges in the Government's Industrial Strategy to maximise the opportunity for innovation-led solutions and businesses to support sustainable growth and provide the UK economy with a competitive edge in global markets.

However, technological solutions will not on their own deliver the wider ambition encapsulated by the place-making agenda. Decarbonising vehicles will not address concerns in relation to congestion on the network, nor the impact of that congestion on our communities and businesses.

We start from a position where our transport system is under strain – a consequence of our economic success and reductions in Local Authority funding. Congestion is increasing, reliability is decreasing and together these factors act as a barrier to the delivery of planned growth. They also exacerbate the environmental impact of our transport system.

Part of the Varsity line in north Buckinghamshire which will be reopened by East West Rail

An aerial view of Cambridge Biomedical Campus

But we also start from a position of opportunity:

- Responses to our Outline Transport Strategy highlighted increased acceptance within our community of the need for change and the need to do so at pace
- The digital economy creates opportunities for new ways of accessing services and facilities that will change the scale and nature of travel demand
- The region's unique knowledge economy generates innovation that provides opportunities in their own right to put the user at the heart of our transport system and effect further change to the nature of travel demand
- Investment in transformational infrastructure – such as East West Rail, supported by high quality bus and active travel provision and to rail stations – will fundamentally change socio-economic geography of the region. What was previously a series of individual economic and housing market areas will become one.

The opportunity to effect change is amplified by ongoing wider changes in societal expectations and attitudes. Our future investment choices must reflect the needs of our existing communities and businesses, the needs of future generations and the needs of an ageing population.

Changes to the way in which businesses provide access to services and opportunities are having their own influence. The traditional town centre has declined as a consequence of changes in retail business models, driven by consumer choice. The choices made by consumers can – and do – have significant implications for travel choices and behaviours.

Continued change in travel behaviour creates its own opportunities to repurpose our existing infrastructure in favour of public transport and active travel modes, but this must be done in a way that enables safe journeys and a sustainable future for our urban areas and their communities.

In setting the long-term policy framework for our transport system this strategy both supports local authorities with the delivery of current Local Plan proposals, and provides the framework within which to plan for the sustainable development of our communities in the longer-term.

Bikes outside Radcliffe Camera Oxford

Milton Keynes railway station

The Climate Change Imperative

As a region, the current pattern of travel and consumption of resources gives rise to a number of environmental challenges:

- Carbon emissions – emissions from transport are higher than the national average, and more worryingly the rate at which emissions are increasing is almost double the UK average
- Air quality – the environmental implications at a local level of our current transport choices is reflected by the number of Air Quality Management Areas in the region. There is a need for urgent action to address poor air quality and reduce the number of avoidable deaths
- System resilience – extreme weather events are the new normal. There is a need to invest in adapting existing infrastructure assets to improve the resilience of our transport system to reduce the impact on individuals, communities and businesses.

In Oxford the average temperature is already 1.6°C higher than the average recorded in the previous century. This is already above the 1.5°C target agreed at the 2015 Paris Climate Change talks.

In this context, we welcome Government's commitment to bring forward the end to the sale of new petrol, diesel and hybrid cars and vans from 2040 to 2035, or earlier if a faster transition appears feasible. We also support Government's ambition to remove diesel traction on the rail network by 2040.

However, the evidence is clear: these changes will not be sufficient to enable our region to meet the requirement to be net zero by 2050. Further action is required to change the scale and nature of existing travel demand. The need for action is heightened further by the scale of the region's growth ambition.

Environmental Net Gain

Whilst the requirement to achieve a net-zero target by 2050 serves as a key driver for change, it is part of a wider commitment, shared by the region and Government, to ensure that planned growth is delivered in a way that demonstrates net environmental gain. Net environmental gain is not yet defined by Government but in the context of this strategy encompasses both elements of natural capital and biodiversity net gain.

The Government's 25-year Environment Plan provides the context within which this strategy must demonstrate its ability to achieve the ambition to leave the environment in a better state than we found it.

The region's attractive natural and built environment is often cited as a factor of its success. Maintaining and, wherever possible, enhancing the natural environment through measures such as landscape led design, greening of the transport estate and ensuring there is no direct loss of habitat and will help sustain the integrity and attractiveness of the Heartland's environment.

New transport development in the region is expected to achieve net environmental gain in line with (or greater than) levels set out in current and future environmental legislation. We will work with partners to promote the principles of net environmental gain within transport proposals.

Swans swimming along the River Great Ouse in Bedford

The Hamptons - new housing development in Peterborough

Linkages with decisions taken in other policy areas are significant in this context. Proposals that support the re-imagining of our urban areas will create opportunities to effect change in travel demand and behaviour. The application of a natural capital approach to the development of transport infrastructure will help create attractive transport corridors for both people and wildlife; maximise the positive impact of the transport soft estate; improve the quality of habitats; and encourage active lifestyles.

Caution will need to be exercised in applying this ambition to individual investment proposals. Increasingly, we will need to assess the merits of individual proposals as part of a wider package of measures, the cumulative effect of which will achieve net environmental gain. Whether gains and losses can be 'traded' across sites depends on the benefits in question. This may be appropriate for carbon storage but not necessarily for publically accessible greenspace sites.

In line with emerging regulatory and policy requirements, new transport developments will be required to achieve biodiversity net gain and natural capital net gain. In due course, as the new regulatory regime is developed, it is expected that all new transport-related development will be required to achieve environmental net gain.

The Scale of our Ambition

The purpose of this strategy is to support the delivery of the region's shared ambition with Government of:

- Enabling the region to realise its economic potential – with an ambition of a 70% increase in GVA by 2050
- Delivering that growth in a way that is sustainable for the long-term and achieves environmental net gain – with our transport system net zero-carbon no later than 2050
- Designing a transport system tailored to meet the needs of its users, targeting behavioural preferences and responding to the needs of their individual lifestyles, now and in the future.

Achieving this will require a whole-system approach, one that brings together the need to invest in:

- Digital infrastructure (both fixed and mobile) – to enable business growth, improve access for residents to services and opportunities, in ways that also reduce the need to travel (where appropriate)
- Our existing infrastructure asset - to improve its resilience and connectivity, thereby improving business productivity and supporting our communities
- Long-term repurposing of existing infrastructure and services, particularly within our larger settlements – to encourage active travel modes, prioritise local bus journeys and user-centred services, increase choice and reduce reliance on the private car
- Greening travel routes will encourage walking or cycling and therefore improve both physical and mental health whilst at the same time acting as green corridors for wildlife
- New infrastructure capacity and capability – to enable delivery of planned economic and housing growth
- Improved connectivity for rural communities – to enable small market towns to support their rural hinterlands.

The policy framework in this strategy enables such an approach to be pursued with vigour and at the pace required. In this way it responds to the requirements of national policy, harnesses the inherent strengths of our region, and does so in a way that embeds a new approach to the development of our transport system as a whole.

A TRANSPORT SYSTEM FOR THE FUTURE

Autonomous vehicle testing at RACE in Culham

Our current pattern of travel and consumption of resources is not compatible with the need to deliver the national legal requirement to achieve net zero greenhouse emissions by 2050 and the long-term sustainability of the region. It is therefore necessary to effect both a change in travel patterns (in particular reducing the need to travel) and travel behaviours (increasing use of active travel and public transport, reducing reliance on the private car).

The experience of the COVID-19 pandemic has highlighted the extent to which rapid and widespread use of digital connectivity can act as an effective and efficient means of maintaining business activity. It also illustrates the extent to which change can be effected at pace when the circumstances require it, providing the imperative for change is compelling.

The Pathway to Decarbonisation

This strategy must enable our region to deliver on the legal requirement for net-zero greenhouse emissions by 2050.

The Paris Agreement enshrines a commitment on the signatories to restrict the increase in global average temperature to 'well below' 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels.

The UK Government is under a duty to ensure that the net UK carbon account for 2050 is at least 100% lower than the 1990 baseline (the 'net zero target' which was enshrined into law in June 2019).

Transport is now the largest sector for UK greenhouse gas emissions (28%), of which road transport accounts for over 90%. Transport's contribution towards carbon emissions is significantly higher in our region than the national average and the rate at which emissions is increasing is almost double that of the UK.

EEH is committed to addressing decarbonisation and as part of our work on this strategy commissioned a study on the strategies to deliver robust pathways to decarbonisation by 2050. The outcome of that work, published as part of the Regional Evidence Base, has reinforced the need for bold decision making and long-term planning.

The majority of EEH local authority partners have passed resolutions declaring a 'climate change emergency' and have targets to deliver organisational net zero emissions by 2030.

Harnessing this level of ambition, and building on evidence from the Pathways to Decarbonisation Study, there is a viable pathway to achieving zero carbon in the transport system by 2050. This requires a wholescale change to the way we view and plan connectivity. The factors considered and policies set out in this strategy contribute towards the wholesale change required, and taken together they will set us on the path to meeting our ambitions.

Electric buses in Milton Keynes

Flexible working at the Jam Factory in Oxford

The evidence shows that to achieve zero carbon by 2050 will require an ongoing commitment to decarbonisation. There are several ways to achieve this. However, EEH has chosen to follow two main pathways of activity. Both pathways assume that there will be 100% zero-emissions cars, light goods vehicles (LGVs), heavy goods vehicles (HGVs) and public service vehicles (PSVs, for example buses and coaches) on the network by 2050. But in addition they include:

i) Creating a highly connected transport system that provides better transport information to the user, better management of the transport network, and the rapid deployment of connected and autonomous vehicles, which in combination supports changing work and travel patterns

ii) Enabling a policy-led behavioural shift where levers are applied to reduce the number of car trips. This approach will require careful consideration in the application of demand management measures. In parallel, it requires a commitment to ensure local communities have real choice in the way they travel – with bus, rail and active travel options to the fore.

The proposition set out here is deliverable and viable. It provides an affordable alternative to traditional, large-scale road projects that take many years to plan, fund and deliver.

To succeed, it needs to be wholescale. We will prioritise, as part of delivering the Transport Strategy, the development of an east-west 'smart spine'. In time this will form the backbone of a highly connected, intelligent transport network. It will allow vehicles and services to operate efficiently around the region, making better use of emerging and established technologies, enabling the Internet of Things (IoT) and big data analytics to manage our transport networks as a single system. Delivering on digital infrastructure will enable us to realise the potential of Intelligent Transport Systems (ITS) and connected vehicles to encourage innovation in our transport system.

We are committed to working with partners to implement the required actions within this strategy as they develop proposals that are consistent with the Government's legally binding commitment to reach net zero emissions by 2050. Further, we are committed to supporting partners as they respond to any future changes in legislation relating to new infrastructure proposals. Together with partners we will monitor and review policies, programmes and infrastructure proposals for compliance with the need to deliver carbon reduction.

We will also actively promote the opportunities created by change in the scale and nature of travel demand to repurpose our existing infrastructure assets (with their embedded carbon) so they give priority to active travel and public transport, primarily through bus and coach services.

We will work with our academic partners and local enterprise partnerships, to ensure we harness the capability of our knowledge-intensive economy to develop new user-focused services that directly reduce our carbon emissions to levels consistent with the legal requirements.

The guided busway in St Ives

Decarbonising our Transport System

Policies

1. We will support and plan for the decarbonisation of the rail network with priority given to securing:
   - Completion of the Midland Mainline electrification
   - Delivery of East West Rail as an electrified route
   - Infill electrification schemes that enable electric haulage of rail freight services, in particular those to/from the international gateway port of Felixstowe and to/from national and regional distribution centres
   - Delivery of a long-term solution for the electrification of the Chiltern Main Line between Birmingham and London Marylebone.
2. We will support and plan for the decarbonisation of the road fleet, working with the private sector, the energy sector, local authorities and Highways England to ensure the infrastructure required to support an electric fleet (including buses and freight) is available.
3. In identifying future investment requirements we will prioritise those which contribute to a reduction in single occupancy car journeys of 20% (of total traffic flow) by 2040 (compared with 2020).

Implementing these ambitions will require a continued and focused approach to ensure all the factors that support a decarbonised, highly-connected, demand-managed, transport system are delivered.

We will work with Government to decarbonise our transport system in keeping with the ambition set out in *Decarbonising Transport – Setting the Challenge*. Through our hierarchy of modes we look to make active travel and public transport the first choice for travel. Working with partners, we will look to ensure decisions around land use planning have sustainable travel at the forefront of their decision making process. We recognise the challenges this brings and will work with regional and national partners to support the deployment of green infrastructure and low carbon services to enable residents to make better, low carbon travel choices.

Electrification offers a significant opportunity to decarbonise our transport system. We will continue to support our partners in the deployment of renewable energy generation in our region and beyond; and the opportunity that new technology such as Vehicle to Grid and Hydrogen Electric Vehicles bring.

We will build on the leadership being provided by Milton Keynes, Oxfordshire, and Cambridge and Peterborough on electrification of the local transport network and use that knowledge to see it applied across the region at scale. We will work the infrastructure owners in the energy sector to ensure that this ambition is enabled by the necessary investment in the electricity supply and distribution networks.

Whilst electrification of the road fleet – actively encouraged by national and local policy – is supported, it will form part of a co-ordinated approach to investment in local connectivity.

Lessons learned in our region about the deployment of Ultra Low Emission Vehicle enabling infrastructure and the behaviour of users is already shaping national policy. We will continue to support our partners to scale this activity.

Substitution of electric vehicles for Zero Emission Vehicles will make a positive contribution towards reducing carbon emissions. However, it will not address wider concerns that arise from overall volumes of vehicles in our communities and poor journey time reliability for intra-urban connectivity.

Electrification of our road fleet must therefore be taken forward as part of an approach that seeks to reduce the overall number of vehicles in our urban areas. Giving greater priority to active travel modes and multi-occupancy vehicles will be supported.

Cycling in Welwyn Garden City

We will work with partners to redress the decline in average private vehicle occupancy and encourage the deployment of new mobility solutions to increase the efficiency of passenger movement.

We will work with the rail sector to build on their traction decarbonisation business case to develop a rolling programme of electrification for our rail infrastructure. The timescales associated with the planning, development and implementation of electrification projects makes the need for a rolling programme of electrification an urgent requirement.

Particular priority will be given to ensuring the early electrification of those key rail corridors that are essential for strategic rail freight movements, reducing the carbon emissions of existing movements. It also serves to improve the business offer for long-distance freight by rail compared with road haulage, the latter being a particular concern in terms of its carbon emissions.

As the sole remaining non-electrified main line route serving London, we will continue to work with Network Rail, Midlands Connect and TfL to prepare the business case in support of a long-term solution for the Chiltern main line.

On those routes where electrification is not a practical or viable solution we will work with the rail sector to identify alternatives that decarbonise the rail network.

Mobility for the Future

Policies

4. We will work with infrastructure owners and operators to ensure that proposals brought forward for the development of the transport system reduce reliance on the private car by considering the needs of users on the basis of the following hierarchy:
   i) Active Travel Modes (pedestrians and cyclists)
   ii) Public transport and shared modes (bus, scheduled coach and rail)
   iii) Low emission/ zero carbon private vehicles, including two wheeler vehicles
   iv) Other Motorised modes

   All proposals to be prepared on the basis that they provide inclusive and accessible travel options for all users .
5. In identifying future investment requirements we will prioritise proposals on the basis of value for money, their contribution towards achieving net-zero carbon targets, and their contribution to wider sustainability and environmental net gain outcomes.
6. We will continue to work with partners, universities, operators, and the private sector to leverage our regional 'living laboratories' to trial innovative solutions and apply new business models at scale.

The strategic ambition of this strategy requires additional measures over and above those already being taken forward to de-carbonise our transport system. Those measures need to both reduce the need to travel and reduce the reliance on the private car.

Given that travel is a derived demand, it is essential that the planning and development of our transport system is co-ordinated with wider policy considerations, including but not limited to land use planning.

The Route 51 cycle route runs from Oxford to Colchester via Milton Keynes and Cambridge

Ensuring that local communities and businesses can safely access locally the services and facilities they need is an important contributory factor to managing future travel demand. Access to good quality services and facilities can both help reduce the length of journeys and encourage greater use of active travel modes. Integrating transport and land use planning and increasing digital connectivity to services will create additional opportunities to effect long-term change in travel patterns.

Where new mobility services are deployed, all possible efforts will be made to ensure equitable access and inclusivity for all transport users.

Walking and cycling is already prevalent in some parts of the region, particularly in Oxford and Cambridge. We support the conclusion of Andrew Gilligan's report for the National Infrastructure Commission – *Running out of Road* – that outlines the need for investment in our region to unlock low carbon economic growth. Through the user hierarchy, and through Local Cycling and Walking Infrastructure Plans, we will work with partners to ensure walking and cycling levels continue to grow across the region.

The transport system plays a key role in allowing communities to access, and to reduce severance to, green spaces. Greening existing transport routes encourages walking and cycling and therefore reduces transport-related carbon emissions whilst at the same time storing additional carbon in trees, green vegetation and corresponding soils.

We support the creation of a pan-regional network of greenways which enhance opportunities for walking and cycling. We are committed to working with Sustrans and Local Authority partners to improve the national cycle network, making it segregated wherever possible. This includes maximising the potential of an Oxford – Cambridge 'Varsity Way' segregated cycling and walking route as a 'green spine' across the Heartland: one that can act as a focal point for developing a region wide network of greenways across the region.

We support the proposed Bedford to Milton Keynes Waterway Park, a 26km canal connecting the Grand Union Canal at Campbell Park in Milton Keynes to the head of navigation of the River Great Ouse at Kempston, west of Bedford. The project, led by the Bedford & Milton Keynes Waterway Trust, will help support sustainable growth by improving options for active travel, supporting the creation of new wildlife habitats, as well as supporting a more varied and attractive built environment, while also providing significant economic benefits.

Interurban and local bus travel continues to be an essential part of our transport system, providing many with their primary means of access, as well as providing an alternative to the private car. Unlike rail, and unless segregated, the reliability of bus and coach services is dependent on a well-performing road network. Through our user hierarchy, we will put the needs of the bus at the forefront of our approach to connectivity, and our associated investment plans.

Concurrently, there is a need to take account of how the continued growth of e-commerce and changing work patterns continues to impact on both the need to travel and the nature of future demand, including consideration of the increase in local delivery services.

Cycling and walking along the canal in Leighton Buzzard

Bikes for hire outside Milton Keynes railway station

Such considerations, when brought together as part of the commitment to deliver sustainable development, need to be reflected in the design of proposals for investment in the transport system.

Application of the best practice set out in documents such as CIHT's *Better Planning, Better Transport, Better Places* should not just be restricted to new developments but used more widely to ensure continuity of approach between existing and new infrastructure.

Where safety or perceptions of safety impair our ability to improve connectivity we will work with infrastructure owners and operators to address this using a safe system approach, where networks are designed to reduce the risk of accidents occurring, and where they do occur, reduce the severity of injuries.

Considering the needs of users in accordance with the hierarchy of modes when developing proposals will help ensure that future investment actively encourages a modal shift. In this way, the hierarchy will encourage an increase in investment in local measures that improve the health and well-being of individuals and help reduce the environmental footprint of our transport system. It also supports partners wishing to pursue the application of 'vision zero' principles at the local level.

This strategy assumes initiatives will incorporate measures for all levels of mobility so as not to exclude people who are unable to participate in active travel.

The hierarchy of modes needs to be equally applied to the existing infrastructure asset. A failure to maintain the existing asset has a direct impact on the productivity of businesses in our region. Investment in maintaining the asset offers the opportunity to use the hierarchy to repurpose the available space in favour of modes that support a more sustainable pattern of development.

Kempston Mill

Walkers in Wittenham Clumps

A key component of the Regional Evidence Base is the analysis undertaken of the behaviour of the region's existing population. The insight this provides enables partners to develop bespoke solutions that reflect the characteristics of their local community.

Through our first/last mile project we continue to capture the experience gained by our partners, and combine that with our benchmarking of global best practice to ensure we can deliver the best possible first/last mile solutions according to different place conditions across the region.

The use of data analytics is driving the growth in user-focused services, typically accessed via smart phones.

We will continue to build on the leadership being provided by Oxfordshire, Cambridgeshire and Milton Keynes on the deployment of user-focused services. Through our Innovation Working Group we will use that knowledge to scale this capability across the region on a consistent basis, establishing better data sharing and interoperability.

As a focus for science and technology based innovation in the UK, we are working with partners, in particular with our universities and research facilities, to maximise the use of 'living laboratories' as a means of trialling innovation in the region at scale and at pace.

The region is a leader in the development of the technology associated with the use of electric vehicles and connected autonomous vehicles, technology that has the potential to be a key part of our transport system moving forward. The work underway in Oxfordshire, Cambridgeshire and Milton Keynes provides the region with access to experience on which it can build.

A key priority for our Innovation Working Group is to work with the private sector to develop proposals that will encourage the scaling up of trials to the regional level at the earliest opportunity possible.

The availability of fixed and mobile digital infrastructure is central to enabling the region to exploit its leadership in innovation to the full. Not only is digital infrastructure critical to the collection and use of the data underpinning user-focused services, it also offers the potential to help reduce the need for travel in the first place.

Harnessing the potential of our business community in the development of new solutions and businesses will not only benefit the region, it will also provide the UK with a competitive edge.

The COVID-19 pandemic experience highlighted the extent to which remote working has the capability to enable a significant proportion of the regional economy to function. What it also highlighted was the extent to which the need to travel can be reduced by the availability of digital infrastructure.

The short-term implications of the COVID-19 on the regional economy potentially offers the opportunity to lock in some of the benefits of the reduction in travel achieved as a consequence of the widespread use of remote working.

It remains important to ensure that investment proposals continue to offer good value for money. We will use an evolution of our multi-criteria framework, originally developed to identify investment priorities for the initial five-year Major Road Network programme as the basis for ensuring that investment priorities taken forward into the investment pipeline are consistent with our vision and principles.

Individual investment proposals will continue to be considered on their own merits. However, our approach also ensures that, where appropriate, a scheme's contribution as part of a wider package of measures is also considered. It is often the cumulative benefit of a co-ordinated package of investment that needs to be captured.

As we develop our shift in the appraisal process, we will work with the Government as part of their 'Green Book' review and other funding decision makers to ensure that the appraisal of investment proposals reflect the importance of wider sustainable development principles as well as achieving the net zero target.

Bicester Village Railway Station