ATKINS

Member of the SNC-Lavalin Group

Annex 1 : Regional Bus Strategy

Study Report

England's Economic Heartland

09 May 2022

5208100

Notice

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Executive Summary

A number of important factors have come together to create a window of opportunity for change for bus and coach services across England's Economic Heartland (EEH). The scale of forecast population and economic growth across the region, and the urgent need to decarbonise travel, both mean that substantial shift away from private car journeys will be needed to secure a sustainable future for the region. This will require a significantly enhanced role for public transport in meeting travel needs across the region.

In some cases, this will be supported by improved rail services or new rail connections, including East-West Rail. However, in most cases, this will require significant improvements to bus connectivity. This will include major improvements to local bus services within cities, towns, and rural areas. However, the geography of the EEH region means that many journeys cross Local Transport Authority (LTA) boundaries, which will require the development of a strategic regional bus and coach network. This report sets out the principles for this regional bus and coach strategy.

In March 2021 the Government published Bus Back Better, the national bus strategy for England which sets out the vision and opportunity to deliver better bus services through reform of how services are planned and delivered. The National Bus Strategy offers considerable funding in return for a reinvigorated, collaborative approach between LTAs and operators to the delivery of bus services. Each LTA has developed its own Bus Service Improvement Plan, which sets out the approach to transforming bus services in each area. However, there is also a requirement for a more strategic regional approach to bus networks to enable people to connect with employment, education and leisure opportunities across a wider geography.

Thorough analysis of mobile phone data, which allows the identification of volumes of movement across the region, gaps in the bus network and uncompetitive journey times are apparent between some of the region's settlements and major employment sites. This lack of an attractive public transport alternative for these movements means that public transport use for these journeys is likely to be limited, contributing to network congestion and car emissions.

Addressing the identified issues will remove barriers to accessing regional opportunities, promoting economic growth and a more sustainable transport system for all residents. The regional bus strategy aims to address the following key points:

- Bus journey times are increasing due to congestion and some are not competitive with car journey times making them an unattractive alternative to travelling by private car.
- There are gaps in the bus network where factors influence bus service provision, to the detriment of those wanting to make longer-distance connections.
- There are numerous 'travel exclusion hotspots': places that are not well served by bus services, with changes in travel habits and employment mobility making it more difficult for bus services to sustainably serve the range of destinations demanded.
- Fares and payment methods are complicated and make it difficult for potential passengers to work out their best fare option and acceptable methods of paying.
- Some bus operators are often not focused on their customers, resulting in a gap between what bus operators offer and what bus users need.
- The bus network is not considered an option for many people, due to both lack of services available to them and the poor reputation of bus travel.
- The forecast scale of population growth, hence travel demand, means that large-scale growth in the bus market will be needed to sustainably achieve the growth ambitions of the region.
- Much more needs to be done to tackle the climate challenge including encouraging modal shift to bus and ensuring that buses are as green as possible.
- Sustained funding is required to support network stabilisation, providing a solid basis on which future network growth can occur.

Aims and ambitions

Drawing from the themes used by the LTAs in their Bus Service Improvement Plans, regional cross-boundary collaboration will further support the development of the bus network and strengthen key links. The delivery of initiatives within an authority's area, with cross-boundary support from EEH can maximise the benefits of

investment in services and infrastructure, enabling local ambitions to be achieved whilst also demonstrating the wider regional gains from removing barriers to non-car journey opportunities. The key aims and ambitions are:

More frequent and reliable services: The delivery of more frequent and reliable services will improve intra-regional connectivity and encourage modal shift. Bus journey times should be examined where more than twice the comparable car journey, to determine where buses can be made faster. This may be through the roll-out of mobility hubs and Demand Responsive Service to remove trunk service diversions. Funding support to 'kick-start' service improvements should be sought, such as BSIP or Section 106 planning contributions, whilst patronage builds to sustainable levels.

Improvements to planning and integration with other modes: Long multi-modal public transport journeys are unattractive due to journey time, perceived ticketing complexities and uncertainties of being able to complete journeys if service delivery fails. Improved ticketing, more regular services (removing long interchange waits) and a clear regional passenger charter will help provide reassurance to passengers.

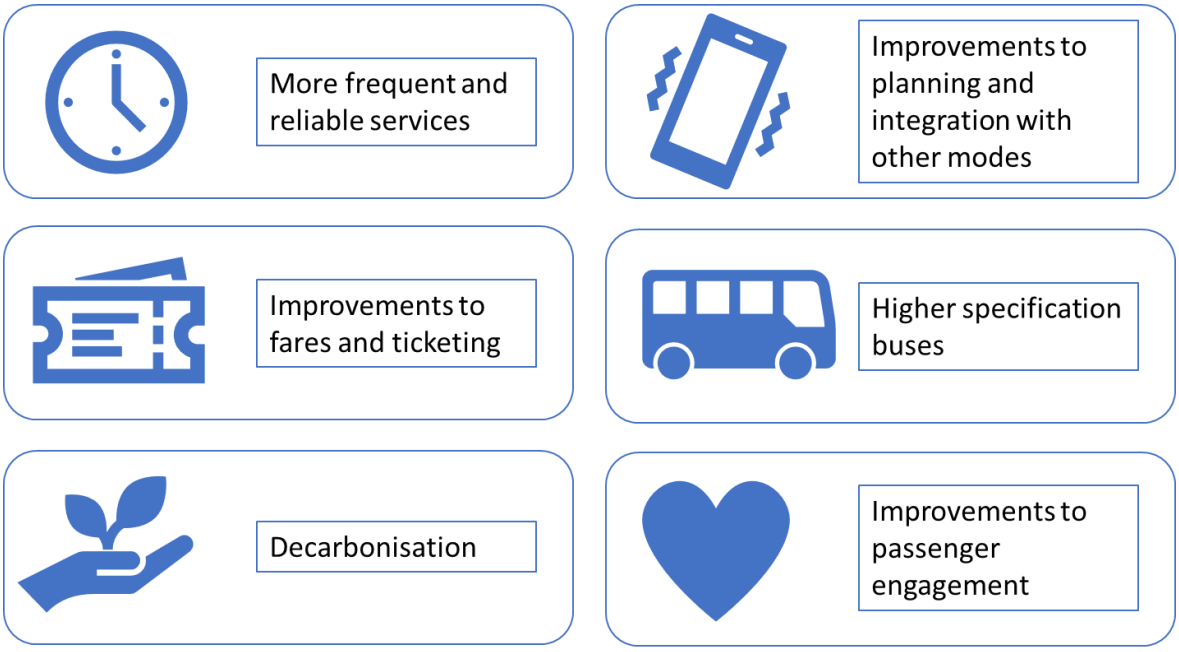
Improvements to fares and ticketing: Supporting the DfT's coordination of the national ticketing back-office will help to speed introduction of multi-operator and multi-modal ticketing products, capping fares and simplifying interchanges. Simplicity allows clearer marketing of fares, promoting public transport as affordable and value-for-money.

Higher specification buses: The improved presentation of buses and infrastructure gives reassurance of attention to delivery and hence pride in the bus network. Attractive onboard passenger facilities promote the use of bus and coach services for business purposes, allowing passengers to work or relax instead of driving. A greater sense of personal safety also encourages the use of public transport services at all times of the day.

Decarbonisation: Delivery of a zero-emission bus and coach fleet will support regional decarbonisation objectives. Working with operators and LTAs, EEH's support with further rounds of zero-emission bus funding bids will demonstrate a coordinated approach to the regional decarbonisation of public transport, encouraging modal shift and further emission reductions for car trips removed from the network.

Improvements to passenger engagement: Coordinating a regional bus passenger charter, ensuring consistent standards and passenger safeguards across the region, will demonstrate strength in the bus and coach network. Ensuring that passengers will always be able to complete their journey despite service delivery failure, provides reassurance and confidence in public transport.

Figure E-1 – Six aims and ambitions



The delivery of these initiatives will require coordination between partners, including organisations such as the EEH Bus Operators Association, to maximise expertise, demonstrate valid business cases and to secure funding. The coordination of key aspects of bus network improvements will bring benefits to the region, supporting EEH's wider ambitions and objectives through alignment with the regional Transport Strategy.

Building on existing good relationships, the more formal Enhanced Partnerships between LTAs and bus operators provides a good platform from which to improve regional bus and coach network connectivity, through strengthened existing links, supporting the introduction of new services where data analysis shows potential demand, and the innovative alternative service solutions to maximise accessibility. Further assessments and development work will be necessary, following on from the initial outputs of this strategy, to identify specific schemes across the EEH region where local stakeholders agree that enhanced bus services will support the regional growth and decarbonisation objectives.

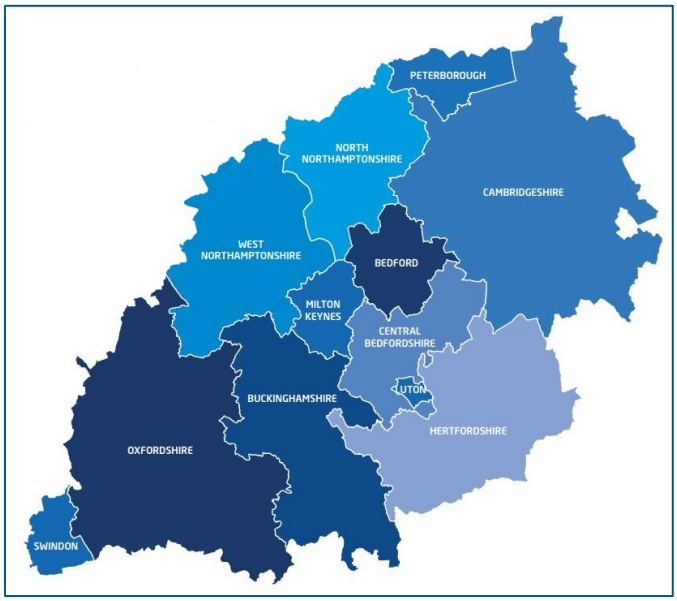
1. Introduction

1.1. About England's Economic Heartland

England's Economic Heartland (EEH) is a sub-national transport body, bringing together the region's Local Transport Authorities in a strategic partnership that works with the region's Local Enterprise Partnerships. Jointly funded through local contributions and the Department for Transport (DfT), EEH provides leadership on transport issues of strategic interest.

The EEH area stretches from Swindon and Oxfordshire in the south-west to Cambridgeshire and Peterborough in the north-east (Figure 1-1).

Figure 1-1 – The EEH area



1.2. An economic powerhouse

1.2.1. The economic opportunity

EEH 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. More than one in 10 of the UK's knowledge sector jobs are located in the region's cutting-edge science parks, research institutions, businesses and incubators, creating an ecosystem of innovation and capability that is globally renowned.

The Heartland economy was valued at more than £163bn in 2018. Economic growth has consistently outstripped the UK average, with GVA growth of 25% between 2013 and 2018 compared to 20% for the UK.

This economic success benefits not only the region's residents, but also the UK more widely as a net contributor to the Treasury. Although the COVID-19 pandemic is having short-term implications for economic performance, the underlying strengths of the Heartland economy make its continued success a national priority.

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. Growth on this scale, alongside the need to achieve net zero carbon by 2050 at the latest, will not be realised without a step change in the way our communities are planned, the way our infrastructure is delivered and the level of investment.

1.2.2. Oxford-Cambridge Arc

The region recognised by Government as the Oxford-Cambridge Arc is a major part of the Heartland and an economic priority area with the potential to be one of the most prosperous, innovative and sustainable economic areas in the world, and making a major contribution to national post-pandemic economic recovery.

The success of the Heartland region includes bringing the strengths of individual areas together to give the long-term potential to transform the region into a world-leading economic area and hot-bed for innovation. Such transformation requires substantial additional infrastructure ahead of planned growth, including the necessary transport infrastructure, utilities, digital connectivity, health and education.

The critical importance of infrastructure linkages beyond the Arc has also been highlighted. EEH's geography, which is wider than the Arc, ensures that the wider economic and infrastructure linkages are fully reflected in the planning and delivery of strategic infrastructure to benefit all residents, communities and businesses across the Heartland.

1.3. The need for decarbonisation

The UK is committed to achieving net zero carbon by 2050. However, EEH, in developing its transport strategy (section 1.4), wishes to be more ambitious and achieve zero carbon sooner. The transport strategy therefore sets out a stronger ambition, challenging the region to achieve a net zero carbon transport system by 2040.

This net zero requirement is a key driver. As stated in the Transport Strategy, transport-related emissions are a particular challenge in EEH, having risen 10% between 2012 and 2017 compared with 5% nationally. In 2017 transport represented 47% of the Heartland's total carbon dioxide emissions, compared with 37% nationally. 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.

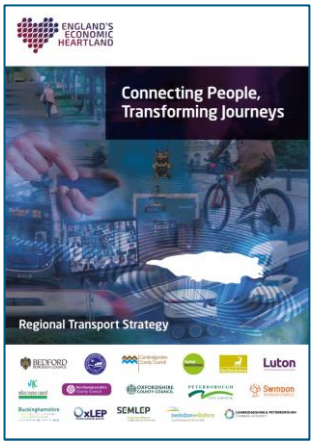
Two key strands of this decarbonisation requirement are particularly relevant to the regional bus study:

- Decarbonising the bus and coach network itself, as part of the overall decarbonisation of the vehicle fleet
- Mode shift of trips from higher-carbon modes to lower-carbon modes including buses and coaches

1.4. The transport strategy

EEH's transport strategy provides the context and policy basis for this regional bus strategy. The strategy, titled *Connecting People, Transforming Journeys*, was published in 2021 (Figure 1-2). It sets out the region's priorities to shape investment decisions, and is the foundation for EEH's work with partners, growth boards and national initiatives, including the Oxford-Cambridge Arc.

Figure 1-2 – The EEH transport strategy: *Connecting People, Transforming Journeys*



Its overarching aim is to support sustainable economic growth with an ambition to achieve net zero carbon emissions from transport by 2040, ten years ahead of the 2050 legal requirement. This aim, enabling growth in a way that improves the environment, requires a fundamental switch in the way the region's transport system is planned and delivered.

It sets the policy framework, supported by an initial investment pipeline, and is guided by four key principles:

- Achieving net zero carbon emissions from transport no later than 2050, with an ambition to reach this by 2040
- Improving quality of life and wellbeing through a safe and 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, in a way which lessens its environmental impact.

1.5. Why have a regional bus strategy?

Buses and coaches have an important role in the regional transport strategy. They are today a vital part of the transport system for many people, and they have potential to grow their role and support many of the objectives and policies set out in the strategy.

While much of the future development of the bus and coach network will be on a place-specific basis for each local transport authority, there is a need for a consistent regional vision and approach that defines 'what great looks like'. This will support provision of consistently high-quality services across the region, as well as giving users and potential users more confidence in the public transport 'offer' and more confidence that it can meet their travel needs. Origin-destination pairs with existing high travel demand but poor public transport connections are of concern, with suppressed demand for non-car journey opportunities restricting regional growth and development. The strategy therefore frames the coordination that is needed at the sub-national level to deliver a transformed bus offer and the standards in bus travel required to support it.

This is relevant for the many travel needs that cross local authority boundaries, such as when residents live in one authority's area and work in another. A particular role of this strategy is to identify these cross-boundary

flows and set out a framework within which the authorities can work with EEH and operator partners to address them.

1.6. How the regional bus strategy was developed

Development of this regional bus strategy has taken place in parallel to Local Transport Authorities developing their Bus Service Improvement Plans (BSIPs). Drawing on the broad themes of the National Bus Strategy (NBS), and framing them in the context of regional cross-boundary bus services, has required consideration of the problems, challenges, opportunities and ambitions to deliver world-class bus and coach services to support EEH's economic growth and future mobility needs.

The funding period of the NBS is three years: this strategy seeks to extend regional ambitions well beyond this timeframe to achieve and influence key objectives. The need to decarbonise the transport network is of growing importance, and as such requires a longer-term policy framework within which the EEH and partner authorities are able to pressure for additional funding for scheme delivery, if decarbonisation targets are to be achieved.

This strategy has been developed collaboratively between EEH, Local Transport Authorities, the EEH Bus Operators Association and Atkins. Analysis of cross-boundary corridor demand mobile phone data and public transport journey time competitiveness has provided insights into the efficiency of public transport services against the private car. Gaining an understanding of where bus links are uncompetitive, or completely absent, indicates where support needs to be provided to LTAs and operators, to identify interventions which will enable the introduction and establishment of new links to enhance public transport connectivity across the region and into neighbouring areas.

1.7. What does it include?

Following on from this introduction, the Strategy comprises:

- Section 2 which sets out the current opportunities for the bus and coach network;
- Section 4 which discusses the context of the problem;
- Section 4 describes the challenges and the supporting policy framework;
- Chapter 5 sets out the objectives and vision;
- Chapter 6 provides case studies of relevant transport schemes across the country, and identifies where these may be relevant for EEH;
- Chapter 7 sets out the ambitions and interventions; and
- Chapter 8 focuses on EEH's Asks and Promises.

1.8. The impact of Covid-19

At the time of this study, the region's transport networks are beginning to recover from the effects of the Covid-19 pandemic. The availability of government financial support has been critical in maintaining much of the bus network during the pandemic. Ridership has been recovering but remains below pre-pandemic levels, and uncertainties remain over the long-term impacts on travel patterns and the economics of individual bus services. In particular the situation regarding changes to the Bus Recovery Grant (financial support whilst patronage levels are suppressed) will have impacts on the bus network provided commercially post-pandemic, and the patterns of travel available and desired.

However, the underlying challenges and opportunities, as set out in this study, remain valid. The objectives and vision for regional bus and coach services presented in section 5 therefore also remain valid. The impacts of Covid-19 will be taken into account in considering the next steps and funding position as set out in section 8.

Whilst the mobile phone network data (MND) used in the movement analysis was collected by National Highways in 2019, the patterns of travel, if not the absolute numbers, provide an indication of demand between origin and destination pairs, and therefore identify where locations of regional importance have strong travel catchments crossing local authority boundaries.

2. The opportunity

2.1. Introduction

A number of important factors have come together to create a window of opportunity for change. This section describes those factors and how the regional bus strategy relates to them. It covers:

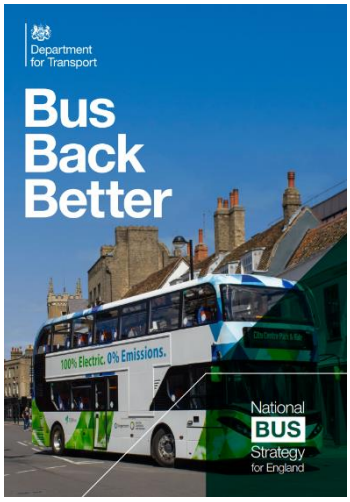
- The National Bus Strategy (section 2.2)
- EEH's programme of connectivity studies (section 2.3)
- The planned OxCam Arc spatial framework (section **Error! Reference source not found.**)
- Opportunities to transform bus marketing (section 2.4)
- Future mobility and innovation (section 2.5)

2.2. National Bus Strategy

2.2.1. The strategy

In March 2021 the Government published *Bus Back Better*, its national bus strategy for England (Figure 2-1). This sets out the vision and opportunity to deliver better bus services through reform of how services are planned and delivered. It aims to rejuvenate local bus series, making them attractive for passengers, cheaper, simpler, faster, more reliable and greener. It acknowledges the years of decline in bus patronage and has committed £3 billion of investment over three years to achieve this.

Figure 2-1 – The National Bus Strategy: *Bus Back Better*



The focus of the strategy is a reinvigorated, collaborative delivery of bus services, using existing powers for Enhanced Partnerships as a minimum standard for all areas of England outside London, and with central government funding tied to this process.

2.2.2. BSIPs and the need for collaboration

The strategy places a requirement on local transport authorities (LTAs) to develop Bus Service Improvement Plans (BSIPs) and establish either an Enhanced Partnership or develop a bus franchising assessment. A BSIP will set out a vision for bus improvements and the key interventions needed to deliver it. Plans need not include an exhaustive list of specific interventions, but might, for instance, identify that a bus lane or bus priority is needed along a corridor. The BSIP must reflect, and be reflected in, the authority's Local Transport Plan and other relevant policies such as Local Cycling and Walking Infrastructure Plans (LCWIPs). Competing priorities for space by bus priority, walking and cycling measures will need to be considered.

LTAs are encouraged to work collaboratively with neighbouring authorities, to recognise cross-boundary travel patterns and network extents. Schemes identified may be jointly promoted, or only part of a corridor in one authority's area may require specific attention.

Since July 2021, the Covid-19 Bus Services Support Grant (CBSSG) which has supported the continuation of existing bus services during the pandemic, and successor recovery funding (the Bus Recovery Grant, BRG), has been provided only to LTAs that have committed to an Enhanced Partnership or have started the statutory process for franchising. CBSSG/RBG will also only be provided to operators who cooperate with the process.

Each LTA published its BSIP by 31 October 2021, and in 2022 they will need to have their Enhanced Partnership in place or following the statutory process to develop a bus franchising assessment. It is understood that, as of January 2022, all EEH authorities published a BSIP and all except Cambridgeshire and Peterborough Combined Authority (CPCA) are following the Enhanced Partnership process. CPCA has published a notice confirming that it is preparing an assessment of a proposed bus franchising scheme.

2.2.3. Cross-boundary aspects of the BSIPs

As a region, EEH's spatial/economic geography and pattern of travel give rise to a high number of journeys made between LTA boundaries. It is therefore essential that BSIPs take account of the demand for intraregional bus provision to enable people to connect with employment, education and leisure opportunities across a wider geography.

With respect to improving the quality, accessibility and reliability of bus services, the guidance to LTA's and bus operators responsible for developing BSIPs is primarily focused on the need to strengthen local bus provision within LTA boundaries. Arguably less consideration has been given to the need to plan and invest in longer distance, cross-boundary public transport connectivity that is not currently served by rail. The guidance advises that where there is significant bus network overlap, LTAs are expected to collaborate to resolve cross-boundary issues and/or develop a multi-LTA BSIP. In the EEH region, the regional bus strategy and the analysis of cross-boundary flows can act as a basis to support those discussions where applicable.

2.3. EEH connectivity studies

EEH will be leading a programme of connectivity studies for different parts of the region. These are a key part of implementing the EEH transport strategy outlined in section 1.4.

In each study, EEH will work with partners to identify the strategic questions relating to connectivity in each study area (both in the present and with planned growth), to agree the outcomes required of the transport system, and to then identify the investment required to achieve those outcomes. Opportunities created by transformational public transport schemes will be incorporated into analysis for relevant corridors. Study outputs will feed into the investment pipeline associated with the transport strategy.

Each study will be co-designed with partners. This will enable the partners to use the connectivity studies to identify the implications of future growth scenarios they are considering as part of their longer-term ambition for their communities. The studies will also enable the transport implications of choices in other areas of public sector policy to be considered. This is particularly important where new models of service delivery are being considered that would have the potential to significantly change future travel demand.

These connectivity studies are an opportunity to take account of both existing bus-related needs and the contribution that the bus network can make to transport and wider goals, as part of a coordinated connectivity package for each corridor.

2.4. Transforming the bus: marketing

Marketing is not just 'publicity': it is the overall focus on customer needs and positioning the bus network to meet these needs.

The focus on collaborative working through BSIPs, and the funding linked to them (section 2.2), is an opportunity to take a fresh approach to marketing of the bus network. Until now, funding streams and regulatory structures have not always provided the opportunity to approach this area holistically. There is now the opportunity and potential funding to develop an enhanced and customer-focused approach to marketing across all operators. This would be delivered by operators and authorities working together. As well as branding and publicity, this could also cover:

- The ability for staff and customers alike to offer, understand and choose appropriate fares. There is an opportunity to move away from the traditional (regulatorily constrained) approach of operator-specific fares overlain by multi-operator tickets, towards a simpler and more integrated fare system.
- The fares themselves. Again, there are new opportunities for local authorities to make more active use of fares as a policy tool – for example in addressing concerns over rural accessibility to education and jobs by working collaboratively with operators and delivering through the mechanisms available with Enhanced Partnerships.
- Integration. The opportunity to better integrate fares between different modes and for journeys involving different operators.

2.5. Future mobility and innovation

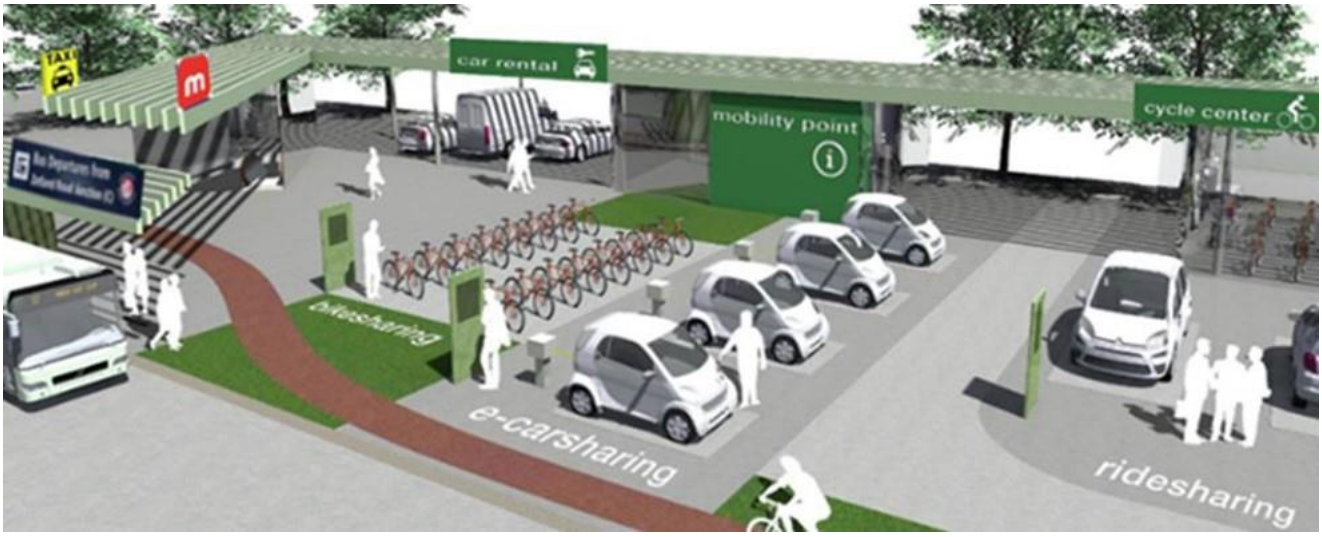
New forms of mobility are emerging as technology meets changing needs and consumer demands, alongside new ideas for ownership and business models. Developments include:

- App-based demand responsive transport
- Greater focus on existing 'last-mile' modes and new modes such as e-scooters
- Shared mobility including micro-mobility and car clubs
- The concept of Mobility as a Service (MaaS), drawing together existing and innovative modes of transport and enabled by technology that integrates the available options across all modes

Alongside these is the concept of mobility hubs: locations where demand for movement can be concentrated in a way that supports local public transport services, primarily via bus provision, ensuring greater opportunity to run services where they otherwise may not have been viable. Park and ride facilities are an example of mobility hubs, but they can also be viable ways of improving connectivity between district centres in larger urban areas.

Mobility hubs that serve local communities within a larger urban area offer the opportunity to offer 'frictionless' interchange between modes, primarily bus, rail and active travel. In addition, mobility hubs provide an opportunity for integrated planning of modes, integrating not just public transport but future mobility solutions and a comprehensive network of pedestrian and cycling routes. Adequate provision at hubs will be needed for disabled parking, drop-off zones and taxi provision.

Figure 2-2 – Mobility hub concept



Onward connectivity from the hubs into local communities creates opportunities to encourage active travel to/from local public transport services. These should be considered as part of a comprehensive approach to improving local connectivity in areas of regional significance.

These developments present a range of opportunities for the bus network. Technology provides new customer-facing opportunities for journey planning, integration with other modes and fare payment. It also offers less visible but equally useful benefits in areas such as scheduling of demand-responsive services.

Mobility hubs and their connecting modes also mean the bus network is no longer standalone, but part of a combination of modes and facilities, allowing core bus routes to focus on what they do best. In some cases, the local access they provide may reduce the need for inter-urban routes to make time-consuming diversions into residential areas along the route.

EEH has a role to play in identifying and spreading these innovations – and indeed other areas of best practice across the range of issues covered in this regional bus strategy. LTAs and operators, through their BSIPs, will be able to draw on and implement these, as appropriate to their individual areas and on a consistent basis without 'reinventing the wheel'.

As a focus for science and technology-based innovation in the UK, EEH is already working with partners, particularly 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 EEH transport strategy commits to continuing this, and to working with the private sector to develop proposals that encourage the scaling up of trials to the regional level.

2.6. Summary

A number of important factors have come together to create a window of opportunity for change for bus and coach services across England's Economic Heartland (EEH). The scale of forecast population and economic growth across the region, and the urgent need to decarbonise travel, both mean that substantial shift away from private car journeys will be needed to secure a sustainable future for the region. This will require a significantly enhanced role for public transport in meeting travel needs. In some cases, this will be supported by improved rail services or new rail connections, including East-West Rail. However, in most cases, this will require improved bus connectivity.

The National Bus Strategy offers considerable funding in return for a reinvigorated, collaborative approach between LTAs and operators to the delivery of bus services. Each LTA has developed its own Bus Service Improvement Plan, which sets out the approach to transforming bus services in each area. However, there is also a requirement for a more strategic regional approach to bus networks to enable people to connect with employment, education and leisure opportunities across a wider geography.

At the regional level, the emerging OxCam Arc spatial framework and the programme of EEH-led connectivity studies are opportunities to position the future bus network at the heart of a coordinated approach to sustainable development, meeting travel needs, and provision of public services.

At a practical level, the National Bus Strategy offers new freedoms to focus on the marketing and retail offer presented to customers. Technology and innovation, such as Mobility as a Service and the development of mobility hubs, can help to position bus services as part of a credible, integrated alternative to car use as well as allowing the bus network to focus on what it does best. EEH will support authorities and operators by spreading best practice and innovation, and by working with partners to deliver trials at pace and encourage scaling-up to regional level.

3. Context: the problem

3.1. Introduction

This section sets out the problems which the regional bus strategy aims to address – that is, why action is needed.

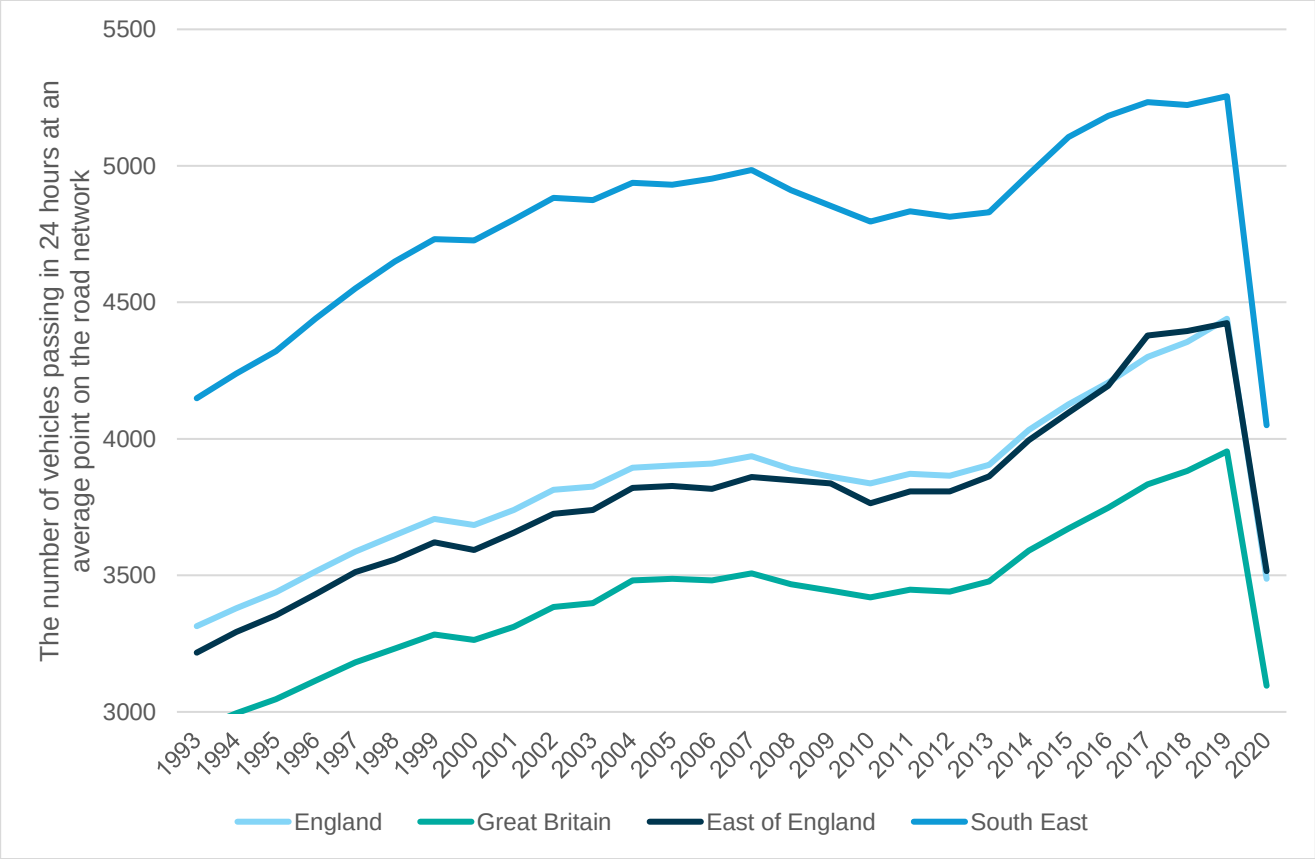
It is a regional overview of the problems. Individual parts of the region may find some problems to be more acute than others in their own area, but the overall set of problems is applicable across the whole region.

3.2. Traffic growth is affecting journey times and service quality

Traffic levels in the UK have been growing over the long term. According to the DfT's 2019 Road Traffic Estimates, since 1949; motor vehicle traffic has increased more than twelve-fold from 28.9 to 356.5 billion vehicle miles, largely driven by steady growth in car traffic[1].

Figure 3-1 shows average motor vehicle flows in specific areas of the UK between 2009 and 2020. The table shows that average motor vehicle flows in the East of England and South East have increased year-on-year since 2013, in line with national levels. The table also shows that average motor vehicle flows in the South East region are significantly higher than national levels. The sudden decline in 2020 is due to the Covid-19 pandemic. Traffic patterns have subsequently grown back as travel restrictions have been eased, with general traffic growing more quickly than bus patronage return.

Figure 3-1 – Average Motor Vehicle Flows (2009 – 2019)



Source: Department for Transport statistics (TRA8907)

[1]https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/916749/road-traffic-estimates-in-great-britain-2019.pdf

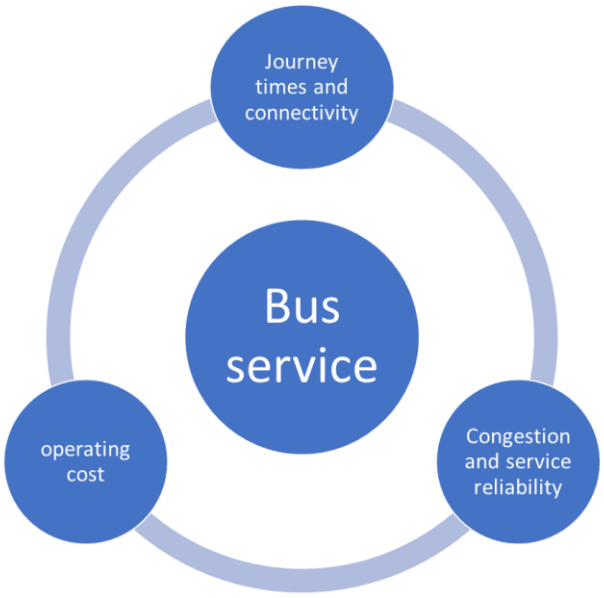
In the EEH region, the proportion of the workplace population travelling to work by car is higher than the national average (67% compared to 60%). In addition, people in the region are more likely to further to work than the national average meaning that many journeys made to work are likely to be long distance car journeys.

In stark contrast, more than half of car journeys in the region are under five miles. Short journeys by car, particularly in urban areas, result in congestion on the local road network impacting bus journeys.

Traffic has been growing for decades, and despite investment in highway capacity, congestion has also increased. This is adversely affecting the bus network in several ways:

- Longer journey times, hence reduced connectivity
- Less reliable service, with buses affected by congestion and incidents that make it harder for operators to deliver consistent and predictable journey times and to run to the timetable
- Operators are forced to invest resources in maintaining existing levels of service – by, for example, adding vehicles to a route to maintain service frequencies despite longer journey times. These resources could otherwise have been used to improve the service.

Figure 3-2 – Bus service influences



The combination of these factors leads to a potential downward spiral of increasing costs and fewer passengers to cover them. The overall long-term effect is to make routes less viable.

3.3. Journey times can be uncompetitive with car travel

The reliability of bus and coach services is dependent on a well-performing road network. Professor David Begg has estimated that over the last 50 years, bus journey times in the UK have risen by almost 50%[2] in the more congested urban areas. This is an average of a 1% increase in bus journey times per annum.

Professor Begg surmises that slower bus journeys result in the following downward spirals:

1. Slower speeds leading to higher costs, higher fares, fewer passengers, service decline, fewer passengers.
2. Slower speeds leading to increased journey time, fewer passengers, service decline, fewer passengers.
3. Slower speeds, punctuality and reliability decline, fewer passengers, service decline, fewer passengers.

[2] . Professor David Begg (2016) 'The Impact of Congestion on Bus Passengers' (https://www.cpt-uk.org/media/swmhzxwe/prof-david-begg-the-impact-of-congestion-on-bus-passengers-digital-final-1.pdf)

Figure 3-3 – Spiral of bus use decline

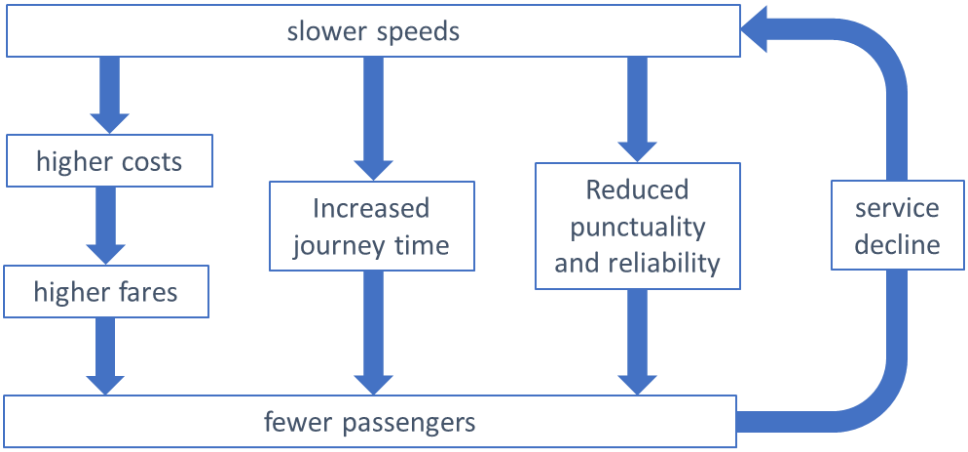


Table 3-1 presents average journey times to work via car and bus in 2009 and 2019 in different areas of the UK. The table shows that the average time taken to travel to work by both car and bus / coach in Great Britain increased by an average of two minutes between 2009 and 2019. In addition, the table shows that in 2019, journeys to work by bus / coach in the East of England and South East were 25-29% longer than average car journeys to work. This suggests that in the EEH region, bus journey times are uncompetitive compared to car journey times and do not provide an attractive alternative to travelling by private car.

Table 3-1 – Average time taken to travel to work by region of workplace and usual method of travel

Area	Average travel time (minutes) *2009*		Difference between car and bus *2009*	Average travel time *(minutes)* 2019		Difference between car and bus *2019*
	Car	Bus / coach		Car	Bus / coach	
Great Britain	25	36	+46%	27	38	+42%
England	25	37	+47%	27	38	+42%
East of England	24	34	+42%	26	33	+25%
South East	25	32	+29%	28	36	+29%

Source: Department for Transport statistics (TSGB0111)

In addition to journey time competitiveness, other cost differentials also impact on the image of bus travel. Parking costs are levied on a per-vehicle basis, whereas bus fares are individual, so for two or more people travelling together, the perception might be that driving is cheaper than the bus fare, even if the actual journey cost (incorporating items such as fuel, insurance, servicing etc) is significantly higher.

3.4. There are gaps in the bus network

Bus networks continually evolve, in response to changes in travel patterns and wider demand. Many routes still exist from early days of bus services, generally principal links between neighbouring towns and cities, whilst other services have been introduced or discontinued as demand increases or decreases in different locations. This network evolution applies across local, district and regional contexts.

External factors have significant influence on bus service provision, for example the upgrade of railway services has seen many medium-distance bus and coach services withdrawn, with those remaining links not served by rail, or with poor journey opportunities. This withdrawal of bus services is often to the detriment of intermediate settlements which benefited from strong end-to-end demand providing them with regular bus services to key education, employment, leisure and health opportunities. If provided, the replacement service for these smaller settlements is likely to be far less frequent and potentially not an ‘all day’ or even an ‘every day’ service, meaning that passengers are lost from the opportunities afforded by a comprehensive bus network.

As the region has developed and grown, new travel patterns have emerged. Funding constraints have often meant that new bus services have been limited in their scope, targeting key movements but not able to fully meet all suppressed and/or potential demand. In particular for major specialised employment sites outside of urban centres, dispersed travel patterns for employees means that a sustainable and competitive bus network is difficult to maintain. This is similarly the case for edge-of-town retail parks, where wider travel catchments make effective access more difficult by public transport. Challenges on LTA budgets has meant that support for socially necessary services has often been reduced or even withdrawn completely.

Finally, general population behaviours strongly influence travel habits. The travel demand catchments of key centres often are not neat concentric rings, with local loyalties influencing decisions to travel to one location over another, potentially closer. These behaviours may be due to limitations of the highway network, meaning that journey times for certain trips are comparatively longer than potentially should be expected.

All of these factors, and others, give rise to gaps in the region's frequent bus network of services which are hourly or better, forming the principal connections across the region for non-car transport opportunities. Gaps in the network have been assessed as part of the cross-boundary movements study, with summary outputs reported in section 4.4 and full details in Appendix A.

> Gaps in the bus network are apparent to some of the region's major employment sites, such as Millbrook Technology Park and Cranfield. Slow links between settlements such as Milton Keynes to Towcester or Dunstable to Hemel Hempstead, both trip pairs with estimated more than 5,000 two-way trips per day, means that public transport use for these journeys is likely to be limited.

3.5. Current services do not always serve exclusion 'hotspots' well

The nature of Great Britain's bus environment (outside London) means that operators necessarily have to focus on developing commercially viable routes, with the local transport authority then determining whether it wishes to procure other journeys and services if deemed 'socially necessary'. In recent years, funding pressures on local transport authorities has often meant that budgetary pressures restrict the number of services which can be procured, leaving gaps in the network which might otherwise be filled.

These gaps in network coverage can lead to travel exclusion hotspots. These may arise where, although the LTA acknowledges the potential demand and key demographic influences, the combined factors of total demand, potential revenue and operational parameters means that a bespoke service cannot be justified. Minimal provision may be offered to meet local accessibility objectives, but circumstances prevent more than a basic level of service, particularly if new locations for housing and economic growth do not factor bus and active travel connections in from the outset.

Exclusion hotspots can also exist within urban areas, again where combinations of factors mean that providing an area with more than a basic service cannot be achieved within current constraints. The tradition of 'good bus territory' – areas of housing with traditionally lower levels of car ownership – is now becoming rarer. Employment mobility, rising car ownership and changing travel habits make it more difficult for bus services to meet the widening journey demands.

3.6. Fares and payment methods are complicated

Intending passengers can have difficulty finding out the best fare option, the amount and the acceptable payment methods. Although online and app-based journey planners have now transformed passengers' ability to find an itinerary for a trip, fare information is much harder to find. It can be particularly difficult to navigate the options for multi-leg or multi-operator journeys. Fare information is rarely posted at bus stops and often passengers simply ask the driver for advice, which eats into journey times.

The forthcoming national requirement for operators to provide open fares data (for use in journey planners) will help, but that still leaves the underlying complex system. Fares instead need to operate seamlessly, requiring coordination and systems designed around customer needs. There is also a need for greater simplicity, to help make it easier to market bus travel and to simplify the point of sale. Multi-operator tickets are needed as a minimum but ideally the system should be fully integrated across operators. Fare coordination or mutual acceptance on competitive provision on the same corridor or route is a further complication, with direct competition and fare liberalisation being a key feature of the deregulated bus market.

The success of London's more integrated fare system, with pay-as-you-go and daily/weekly capping via contactless cards and smartcards, is held up as a model for other regions to follow. The London model in fact

highlights the need for both an integrated fare structure and a convenient payment medium supported by a back-office system.

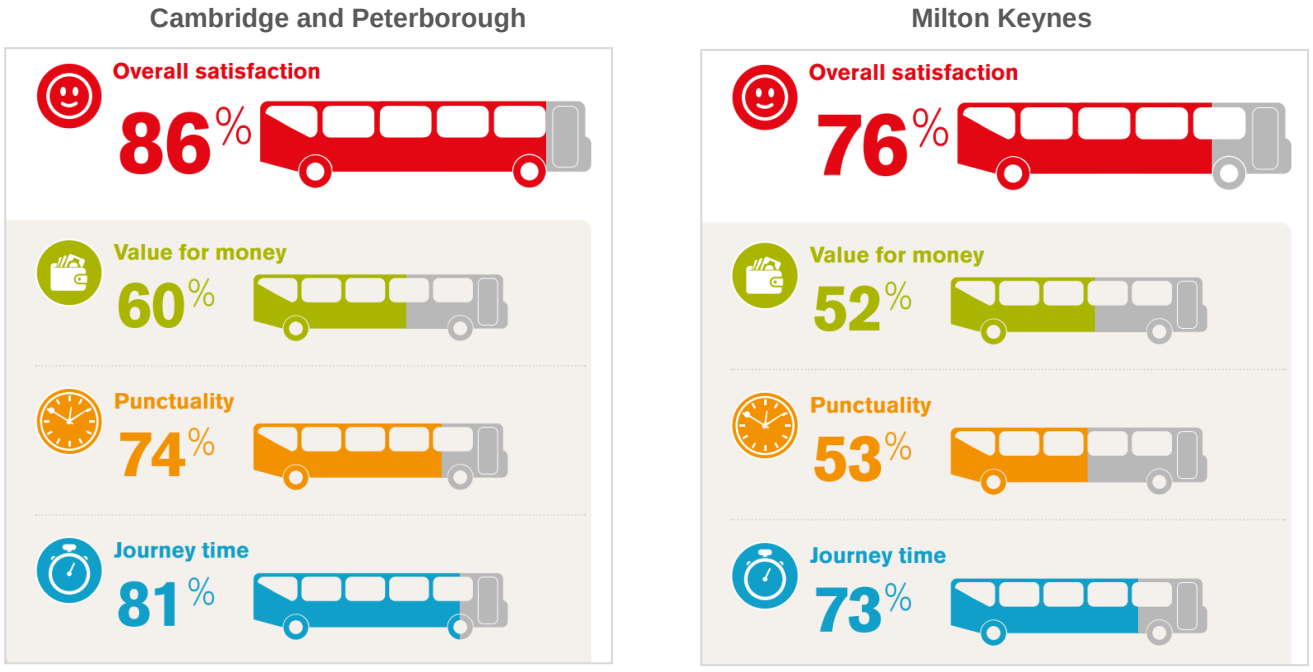
A further weakness in the current fares system is that it is difficult for local authorities to use fares to support local policy initiatives – for example supporting access to education for longer trips from rural areas – although bus service improvement plans (described in section 2.1) are an opportunity to look at this.

3.7. There is more to do on customer focus

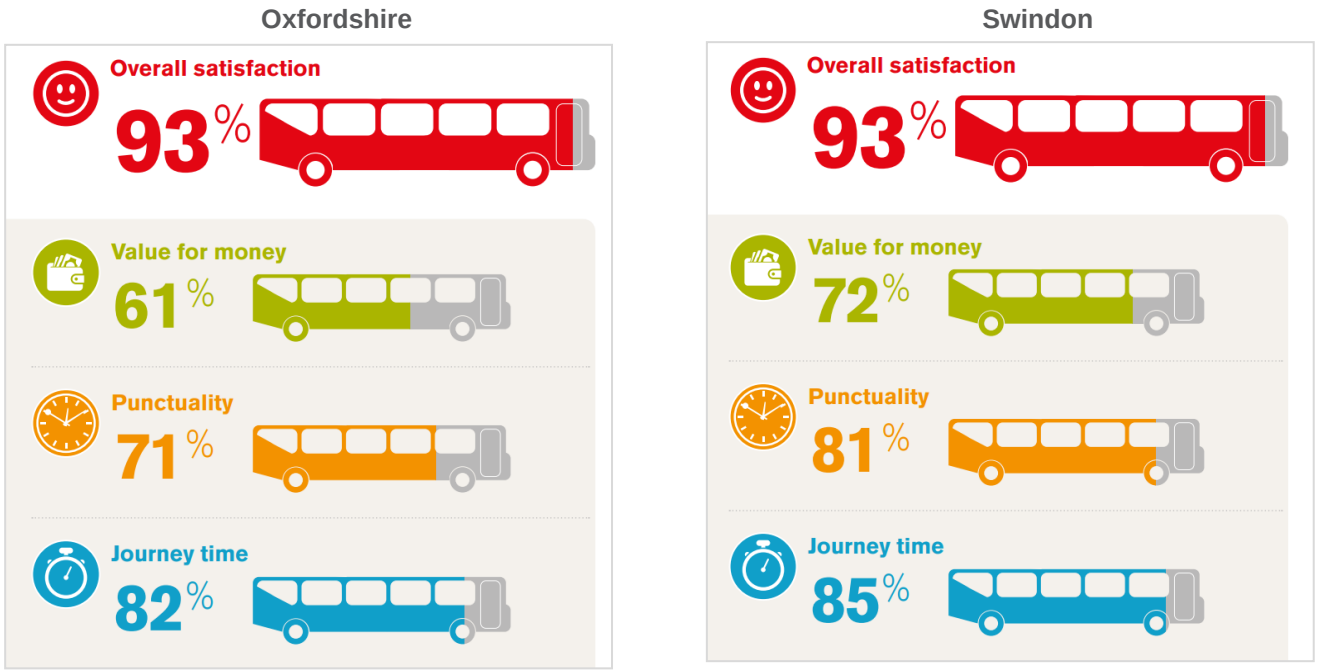
Some bus operators are seen as not being focussed enough on their customers and are therefore operating services that do not fully meet the needs of existing or potential users, but are carrying enough passengers to maintain the service. Public transport systems should offer passengers an excellent experience, all of the time, but in many instances; there is a large gap between what bus operators offer and what bus users need. According to KPMG's 2019 Global Customer Experience Excellence Report; "customer experience is one of the main factors to drive engagement, satisfaction, loyalty and profitable growth."[3]

Figure 3-4 illustrates satisfaction rates for bus services in four local authority areas in the EEH region. The figure shows that satisfaction rates vary across the region with the lowest overall satisfaction observed in Milton Keynes (76%) and the highest observed in Oxfordshire and Swindon (93%). However, across all four local authority areas presented; value for money received the lowest satisfaction rate compared to punctuality and journey time. In Milton Keynes, only 53% of customers agreed that bus services provided value for money.

Figure 3-4 – Bus Satisfaction Results for authority areas in England (2019)



[3] https://assets.kpmg/content/dam/kpmg/xx/pdf/2019/10/global-customer-experience-excellence-report.pdf



Source: Transport Focus 'Bus Passenger Survey' (Autumn 2019 report)

Interchanges are a key issue for bus operations and often result in customer dissatisfaction. Many bus journeys will require passengers to transfer from one service to another during the trip, particularly journeys that pass through town or city centres. Some interchange facilities where a high number of passengers transfer between services are of a high-quality with shelters, seats and excellent lighting as a minimum. However, poor interchange facilities are common which inconvenience passengers and make bus services less attractive.

Bus operators and authorities need to better engage with current and potential customers to understand what can be done to improve their services and customers experiences. Stagecoach for example operate a 'Meet the Manager' initiative where a selection of executives and directors are available to meet customers at stations twice a month to discuss customers' concerns and priorities[4]. Feedback sessions such as this help to bridge the gap between bus operations and customer experiences and can help to make bus services more attractive to potential users. The opportunities presented by the new Enhanced Partnerships and their associated user and stakeholder engagement processes now provides a structured process for exploring customers' experiences.

3.8. Many potential users currently do not consider travelling by bus

Potential bus users include those for whom the network is simply not there for the journey they need to make (as described in section 0) – for example, in rural areas that have an off-peak shopping service but not a commuter service. They would use the bus if there was one when they needed it.

But for many people, travelling by bus is simply not a possibility they consider – or they consider but reject it. Some will have memories of buses of yesteryear or their own school buses, and not be aware of the quality and comfort that today's services can offer. Others might be interested but have the apprehension factor: how do I actually catch a bus? Where does the route go? Will I need coins? How will I know where to get off? To counter these will require a step-change in the level of outreach and the approach to marketing bus services.

[4] https://www.stagecoachgroup.com/media/insight-features/improving-customer-service-on-buses-and-trains.aspx?frommobile=true&p=1

3.9. The scale of forecast growth in the EEH region will require a step-change in how people travel in future

The EEH region is home to some of the UK's fastest growing towns and cities. If this translated into similar patterns of travel to those at present, this would cause multiple problems: increased congestion, longer journey times, increased collisions, and worse air quality. This would impact on business performance and competitiveness through reduced productivity and worsening access to labour markets, and it would cause a reduction in accessibility to opportunities. It would also create further environmental impacts through increased pressure to build new highway infrastructure to mitigate the impacts of additional traffic.

It will be critical to plan new communities to reduce the need for car-based travel. This should include high-speed digital connectivity to enable remote working, planning of communities to place everyday shops and services within a 20-minute walk or cycle from home, and high-quality walking and cycling facilities for local (and first mile / last mile journeys). High quality public transport links should also be provided to enable people to travel easily into the nearest towns and cities, with effective interchange to enable longer-distance public transport journeys. Whilst improved rail links (e.g. East-West Rail) will support the needs of some communities, most journeys will depend on high quality bus services.

The scale of planned population growth, and the need to deliver a transformative bus network to support this growth, will mean that this strategy should set ambitions for transformational growth in the bus market across the region. This ambition should be addressed in more detail in forthcoming work to develop the OxCam Spatial Framework and sub-regional spatial planning work in other parts of the region.

3.10. The climate challenge requires a green bus network and transformational mode shift

The UK is committed to achieving net zero carbon by 2050. Considering that transport in the largest source of UK greenhouse gas emissions[5], providing genuinely attractive alternatives to travelling by private car will be essential to ensuring that the UK meets its carbon targets. The light-touch approach encouraging people to leave their car at home for the day and occasionally use the bus or the train is not enough to achieve net zero. Local public transport must be developed to a level where people are comfortable enough to switch to a car-free lifestyle knowing that their travel needs can be met easily through public transport. A very broad estimate is that public transport demand will need to double over current levels to help meet the regional decarbonisation pathway.

In addition, the public transport that we use also needs to contribute to net zero carbon emissions. There are around 32,000 buses in the UK; the majority of which are fuelled by petrol or diesel. According to Wired UK[6], electric buses are the future of local mass transport:

> *'Buses could power the shift to electric vehicles, revitalise public transport – and even help operators rebuild revenue after suffering fare losses during the pandemic'*

The replacement of old bus fleets with low and zero emission vehicles is already taking place across the UK. According to the independent advisory firm Accuracy, the UK's electric bus fleet is set to be the largest in Europe by 2024[7]. By 2024, there is forecast to be 2,800 electric buses in the UK representing a 180% increase from 2021 levels. However, this will only represent a small percentage of the estimated 32,000 buses in the UK showing that more must be done to create a green bus network.

The estimated cost for replacing the entire UK bus fleet with new zero-emission vehicles, allowing for unit prices to fall as volume production builds and technology is perfected, along with the installation of new charging and fuelling infrastructure, is of the order of £8-10 billion. This assumes that a one-for-one replacement of the existing vehicles becomes possible, potentially through a combination of the need for less day-to-day maintenance (a smaller engineering float of vehicles is required) balanced by operational changes necessary due to some vehicle range constraints not being overcome. The cost of investment is likely to be from a mix of private and public sources, with operator fleet investment supported by targeted funding for major incremental costs such as power supply upgrades or hydrogen fuelling infrastructure. However, current

[5] https://www.local.gov.uk/systra-lga-bus-report
[6] https://www.wired.co.uk/article/bc/hitachi-electric-buses
[7] https://airqualitynews.com/2021/05/18/uk-set-to-have-largest-e-bus-fleet-in-europe/

experience with the Zero Emission Regional Bus Area schemes, where the DfT is part-funding the cost difference between zero emission and diesel buses, shows that getting positive business cases for investment is still challenging.

3.11. Summary

This section has set out the problems which the regional bus strategy aims to address and why action is needed. The key points set out in this section can be summarised as follows:

- The high level of traffic growth in the region (mostly due to the number of people who commute by car) is resulting in longer bus journey times, less reliable bus services and increasing fares for passengers.
- Bus journey times are increasing due to congestion and are not competitive with car journey times making them an unattractive alternative to travelling by private car.
- There are gaps in the bus network where factors influence bus service provision, to the detriment of those wanting to make longer-distance connections.
- There are numerous ‘travel exclusion hotspots’: places that are not well served by bus services, with changes in travel habits and employment mobility making it more difficult for bus services to sustainably serve the range of destinations demanded.
- Fares and payment methods are complicated, making it difficult for potential passengers to work out their best fare option and acceptable methods of paying.
- Some bus operators are often not focused on their customers, resulting in a gap between what bus operators offer and what bus users need.
- The bus network is not considered an option for many people, due to both lack of services available to them and the poor reputation of bus travel.
- The forecast scale of population growth, hence travel demand, means that large-scale growth in the bus market will be needed to sustainably achieve the growth ambitions of the region.
- We need to do much more to tackle the climate challenge including encouraging modal shift to bus and ensuring that buses are as green as possible.

4. Policy framework: the challenge

4.1. Introduction

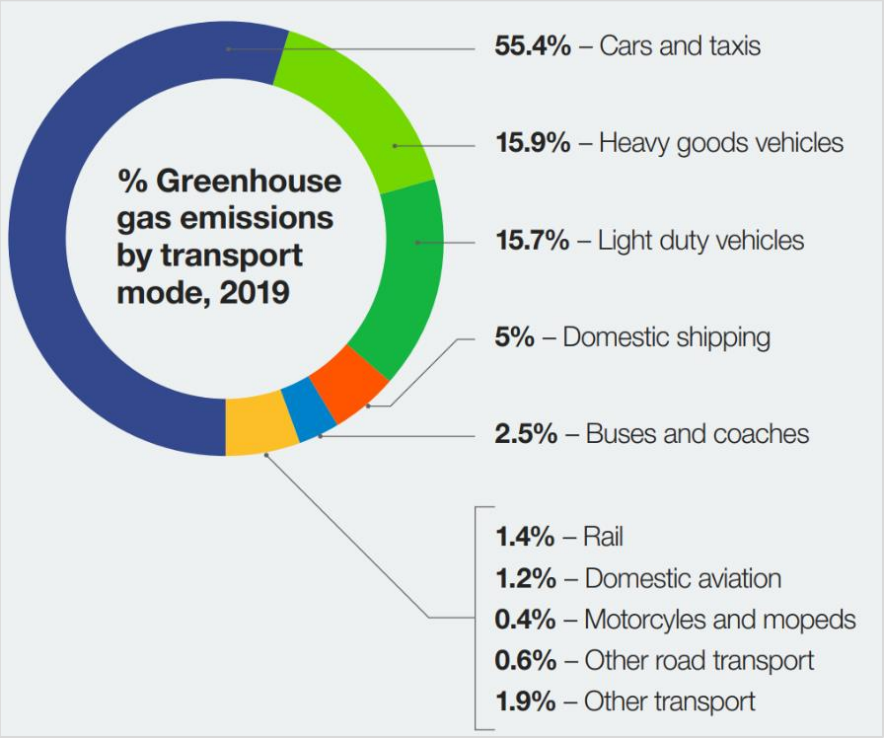
This section sets the policy framework within which this regional bus strategy will need to fit. This section provides a review of the key regional and national policies that this bus strategy will seek to meet and the challenge associated with meeting the policy requirements.

4.2. Delivering Net Zero

The UK is committed to achieving net zero carbon by 2050. In response to this target and the challenges associated with achieving it, the government has produced decarbonisation plans and strategies for different sectors. For the transport sector, the Department for Transport (DfT) has produced a Transport Decarbonisation Plan which sets out the government's commitments and the actions needed to decarbonise the entire transport system in the UK. The Transport Decarbonisation Plan was supported in its development by reports including the report on Decarbonising UK Transport – Final Report and Technology Roadmaps, which was published in March 2021.

Transport is the largest contributor to UK domestic greenhouse gas (GHG) emissions, responsible for 27% in 2019[8], and as noted in Section 1.3, 37% of UK carbon dioxide emissions in 2017..

Figure 4-1 – Greenhouse gas emissions by transport mode in 2019 (%)



Source: DfT (2021) 'Transport decarbonisation plan'

Figure 4-1 shows that of the greenhouse gas emissions emitted by transport in 2019, 55.4% were from cars and taxis whilst only 2.5% were from buses and coaches.

The DfT's Transport Decarbonisation Plan states that benefits of better engine efficiency have been cancelled out by increasing numbers of journeys, and the benefits from the growth of electric and hybrid vehicles have

[8] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1009448/decarbonising-transport-a-better-greener-britain.pdf

been cancelled out by the growth in diesel and petrol SUVs. A step change is therefore required in the breadth and scale of the ambition for transport emissions to reach net zero.

The DfT's Transport Decarbonisation Plan sets out its six strategic priorities to decarbonise the UK's transport system before 2050, as follows:

1. Accelerating modal shift to public and active transport
2. Decarbonising Road Transport
3. Decarbonising how we get our goods
4. UK as a hub for green transport technology and innovation
5. Place-based solutions to emissions reduction
6. Reducing carbon in a global economy

Strategic priorities 1, 2 and 5 are most relevant to this bus strategy and will be discussed in more detail below.

Accelerating modal shift to public and active transport

Priority 1 seeks create a more cohesive, integrated, and affordable net zero public transport network, designed for the needs of the passenger, that will empower users to make sustainable end-to-end journeys and enable inclusive mobility. There is an ambition for zero emission buses to link communities with each other, town centres and the wider transport network. To support this ambition, buses must be better value and more competitively priced with cheaper flat fares that can be paid for with a contactless card and daily and weekly price capping across operators. In addition, long distance journeys by car should face competition from zero emission coaches offering affordable alternatives.

Decarbonising Road Transport

The technology transformation kick-started in cars and vans will happen in all road transport. A fleet of fully zero emission road vehicles will remove the source of 91% of today's domestic transport GHG emissions. Infrastructure will be no barrier with plans for an extensive network of charging and refuelling infrastructure for all vehicles. Low carbon fuels will continue to play a crucial role in maximising carbon savings from road vehicles during the transition.

The Decarbonising UK Transport report concludes that the full removal of direct emissions is achievable by 2050 for cars, light goods vehicles and buses, with near full if not full removal for coaches, rail and heavy goods vehicles. It notes, however, that battery technology, particularly energy density, needs to improve for battery-electric buses to be nearer to equivalent to diesel fleets. Supporting this, it is recommended that urgent steps are taken to advance hydrogen's technology readiness as an alternative fuel option. The need to consider the required steps necessary to make hydrogen production net zero is identified as a critical element of the overall roadmap for transport decarbonisation.

Place-based solutions to emissions reduction

Every place in the UK will have its own net zero emission transport network before 2050, serving the unique needs of its communities. Local authorities will have the power and ambition to make bold decisions to influence how people travel and take local action to make the best use of space to enable active travel, transform local public transport operations, ensure recharging and refuelling infrastructure meets local needs, consider appropriate parking or congestion management policies, initiate demand responsive travel, as well as promoting and supporting positive behaviour change through communications and education.

The DfT's Transport Decarbonisation Plan notes that buses and coaches have a crucial role to play in transport achieving net zero and driving the green transformation. The document states that the share of journeys taken by public transport must increase, particularly in congested areas.

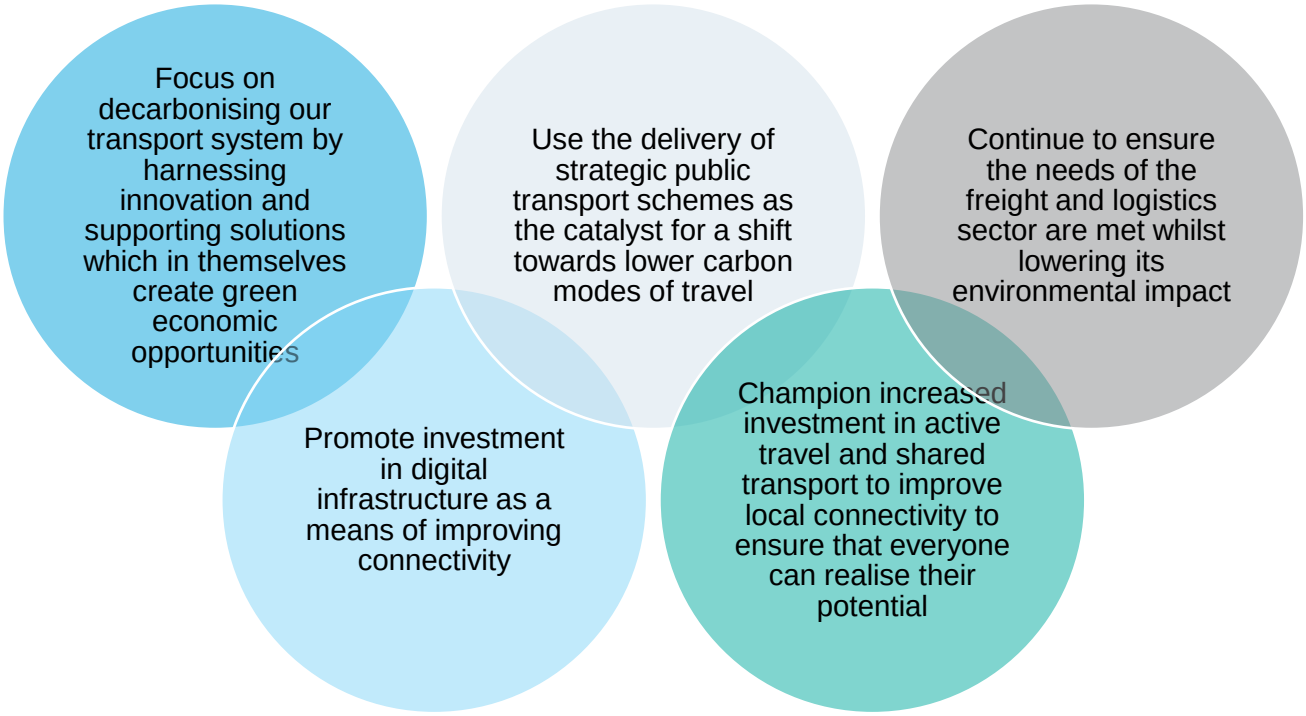
4.3. Supporting the EEH transport strategy

EEH published its Transport Strategy entitled 'Connecting People, Transforming Journeys' in 2021. The Transport Strategy is ambitious with an overarching aim to support sustainable economic growth and achieve net zero carbon emissions from transport by 2040, ten years ahead of the legal requirement of 2050.

The Transport Strategy recognises that 'business as usual' is not sufficient to meet this target. Therefore, a step change is required to address the challenges that the transport system already faces and enable sustainable economic growth in order meet the expectations of residents, communities and businesses.

Figure 4-2 outlines the five-point plan of action in EEH's Transport Strategy.

Figure 4-2 – EEH's Transport Strategy Five-Point Plan of Action



Source: EEH Transport Strategy

The bus network in the EEH region has an important role to play in helping to achieve the ambitions of the Transport Strategy and the five-point plan of action. The Transport Strategy suggests that a highly connected transport system is integral to the pathway to decarbonisation.

The bus network can help to achieve the ambitions set out in the Transport Strategy in the following ways:

- Assist in the repurposing of existing transport infrastructure and assets to low or zero carbon alternatives.
- Invest in interurban and local bus services to ensure that they provide an attractive alternative to travelling by private car.
- Support the creation of mobility hubs where demand for movement can be concentrated in a way that supports local public transport services, primarily via bus provision, ensuring greater opportunity to run services where they otherwise may not have been viable.
- Encourage measures that support coordination between strategic public transport locations, including mobility hubs, and onward local bus services, both to residential areas and areas of economic activity.

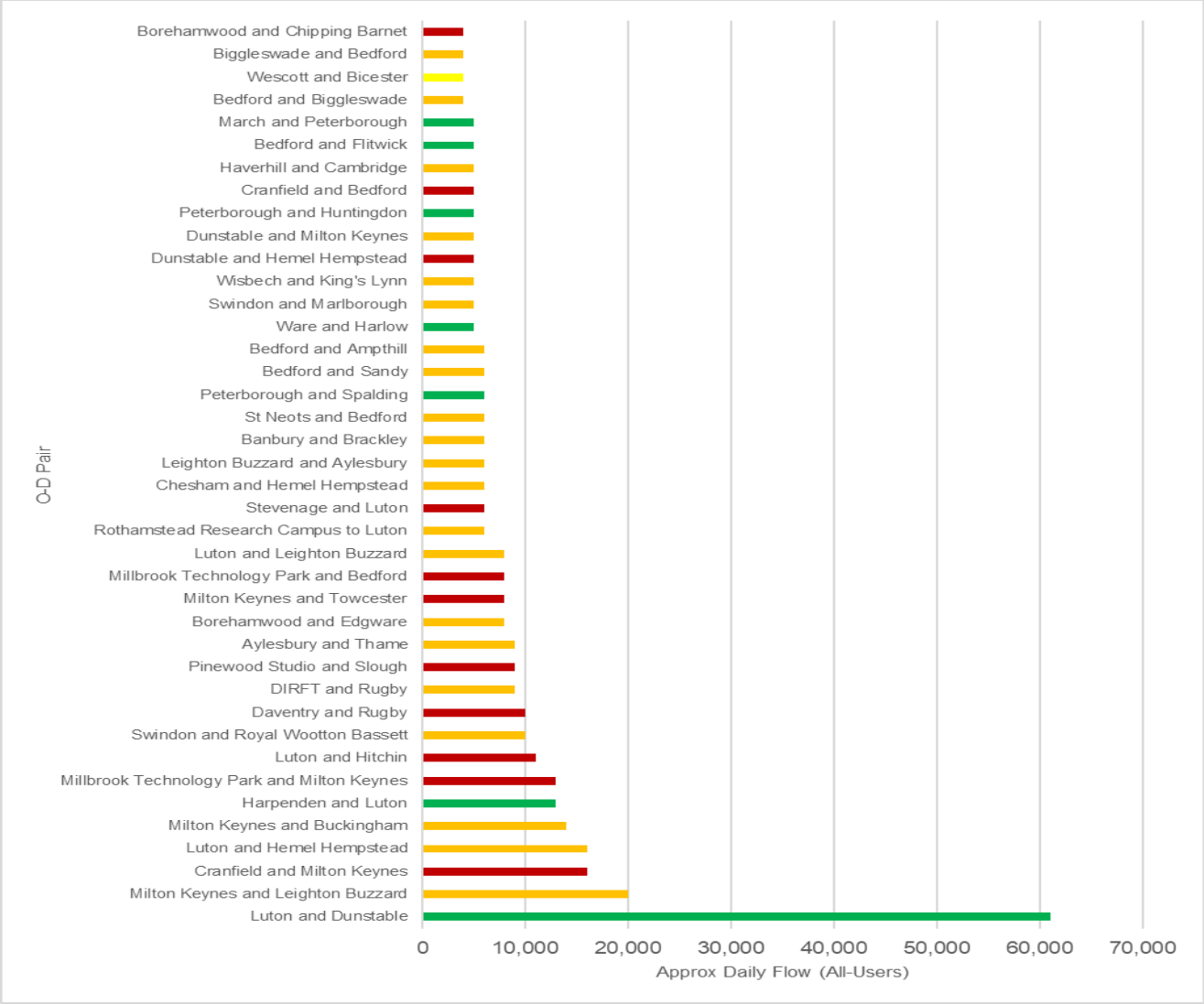
The BSIPs developed by Milton Keynes and the Cambridgeshire and Peterborough Combined Authority identify ambitions to achieve zero-emission bus fleets by 2030, with both authorities securing awards from the DfT for Zero Emission Bus Region Area (ZEBRA) fast-track funding to support these ambition. Oxfordshire has been successful with its ZEBRA bid in the second round of funding. The other authorities are monitoring the development and roll-out of zero-emission bus technologies to determine how these can be adopted for their local fleets.

At a more strategic level, most of the national bus groups have declared they will have full zero-emission fleets by 2035 at the latest. (Stagecoach Group[9], Go-Ahead Group[10], National Express Group[11])

4.4. Why? Where? When? Purpose? Time? OD?

Analysis of regional travel patterns, using National Highways' TIS mobile phone data, has shown that most journeys are within the user's lower tier authority area, or potentially into the neighbouring borough, with longer-distance cross-region journeys forming a smaller proportion of the overall pattern. The top 40 cross-boundary flows originating in the EEH region are shown in Figure 4-3 below.

Figure 4-3 – Top 40 cross-boundary flows in EEH region



Comparison of demand flows with the public transport network shows that whilst many public transport options are reasonably competitive with car trips (journey times up to double the car time), there are a few links where journey times are significantly longer, involve multiple interchanges, or are not available all-day.

[9] https://www.stagecoachgroup.com/~/media/Files/S/Stagecoach-Group/Attachments/pdf/stagecoach-group-sustainability-strategy-2021.pdf
[10] https://gog-11615-s3.s3.eu-west-2.amazonaws.com/live/6316/2625/3122/GOG_Climate_change_strategy_interactive.pdf
[11] https://www.nationalexpressgroup.com/media/news-releases/2020/national-express-group-sets-out-zero-emission-vision/

The data analysed does not identify journey purpose, although it is assumed that trips in the peak hours are generally for commuting, whilst inter-peak journey purposes are more varied including commuting, business, leisure/retail and education. The provision of a consistent bus network throughout the day and evening improves opportunities for using the bus, with a broader range of options to make trips and return travel.

A strong region-wide network, with attractive interchanges, means that some of the perceived journey time penalties from changing between services can be overcome, allowing operators to concentrate of service provision between hubs whilst maintaining service viability and reliability.

4.5. Consistent level of service throughout the day and information provided

Inter-urban and cross-boundary service provision across the region varies by time of day and day of week, with some strategic location pairs connected only a few times a day. This variability in service availability restricts travel options for those without a car or wishing to use more sustainable modes of transport. These poor or missing links are adding barriers to movement, meaning that regional economic activity and growth is constrained.

Of the region's 62 Places of Strategic Importance, analysis has shown that Millbrook Technology Park/Proving Ground and its surrounding area is particularly poorly connected, with bus services currently only provided on one day per month. Access by public transport to this site is likely to by train to Millbrook station, a 25-minute walk away. Millbrook is a significant destination for journeys from Milton Keynes, Bedford, Luton and Dunstable.

Journey planning information is available on channels which are universally available across the UK: Traveline, Google Maps, and a variety of open-source websites such as Citymapper, provide the most comprehensive information, in particular for multi-operator and multi-modal journeys, but fares information is more difficult to ascertain. Where multi-operator tickets are available, whether bus only or fully multi-modal, information is often complex for infrequent users and may lead to a loss of confidence in undertaking a journey by public transport for fear of a fares penalty for having purchased the wrong product on not understanding exclusions.

4.6. Summary

This section has set out the policy framework which the regional bus strategy seeks to fit within. The key points set out in this section can be summarised as follows:

- The DfT plans to decarbonise the transport system before 2050. The DfT's Transport Decarbonisation Plan notes the crucial role that buses and coaches will play in transport achieving net zero and driving the green transformation.
- The EEH's Transport Strategy has an ambitious plan to achieve net zero carbon emissions from transport by 2040, ten years ahead of the legal requirement of 2050. The Transport Strategy recognises that 'business as usual' is not sufficient to meet this target and that the bus network will play a key role in achieving its ambitions.
- While most movements are within a single local authority area, there are a large number of movements crossing local authority boundaries, which required a more coordinated regional approach.
- The provision of bus service information varies across the region, with fares information particularly difficult to ascertain prior to travel.

5. Objectives and Vision for regional bus and coach services

5.1. Introduction

Building on the initiatives developed collaboratively between each LTA and operators, this Regional Bus Strategy seeks to promote a consistent vision and approach as a framework for further place-specific work by LTAs and partners. This will support the delivery of enhanced bus and coach services to a shared common standard, setting out aspirational but achievable standards for public transport opportunities.

Aligned to the National Bus Strategy key themes, and EEH's Transport Strategy, these objectives and the vision will support increased bus use and boost passenger confidence that the bus network is adapting to their needs.

Relevant policies from the EEH Transport Strategy are:

- Policy 1 – prioritised investment contributing to a reduction in car journeys.
- Policy 2 – support the decarbonisation of the road fleet.
- Policy 4 – reduced reliance on the private car.
- Policies 22 and 25 – improving intra-regional connectivity.
- Policy 23 – realise decarbonisation commitments.
- Policy 24 – investment in the road network to enable delivery of sustainable transport linkages.
- Policy 26 – sustainable growth through aligned infrastructure, land-use and economic development planning.
- Policy 27 – development and delivery of mass rapid transit.
- Policy 28 – establishment of 'mobility hubs' to enable frictionless, affordable travel using a combination of modes.
- Policy 29 – develop tailored solutions for smaller market towns and rural areas that improve access to services.

5.2. Reduced journey times

For prospective passengers, journey time competitiveness is a key consideration, with extended journeys or ones requiring multiple changes reducing the attractiveness of public transport. Long interchange wait times, due to poorly-coordinated timetables, particularly add to feelings of frustration amongst passengers – waiting time at stops is perceived to be two-to-three times longer than actual. When adding in service unreliability, these waiting times can become a significant proportion of the perceived total journey time.

Efforts to reduce journey times, therefore, will encourage patronage. This can be achieved in one of two ways:

1) Reducing the impact of congestion on public transport journeys; or
2) Reducing stop dwell times.

Delivering EEH policy: 1 4 22 25

5.2.1. Reducing the impact of congestion on buses and coaches

The reduction of congestion impacts on bus and coach services provides several benefits. A reliable journey time means that timetables can more closely reflect actual likely journey times, and therefore remove recovery time often put into timetables to ensure schedule compliance. It also reduces operating costs for the service to the operator, meaning lower fares or an enhanced level of service can be provided using the same resources.

Journey time reliability can be achieved in several ways:

1) Physical priority measures providing segregated routes for buses and coaches through congestion hot-spots
2) Virtual priority, using vehicle tracking technology to ensure that buses and coaches efficiently pass through traffic signal-controlled junctions with minimal delay
3) Providing bus-only access to key routes or links, allowing them to completely by-pass problem locations
4) Bus-friendly highway geometry, ensuring buses and coaches can safely perform manoeuvres without delays.

Each of these measures, or a combination of them, provides buses and coaches with known journey times between key junctions. Consistency of journey time simplifies service scheduling and assists in simplifying timetables making them easier for passengers to remember.

Delivering EEH policy: 1 4 24 22 25

5.2.2. Reducing boarding and alighting times

Extended bus stop dwell times can be frustrating to passengers already on the vehicle, although many of the reasons for such delays are gradually disappearing. Interactions between drivers and boarding passengers focus on fares collection and ticket issuing.

If passengers have to enquire about the fare for their journey and then pay cash and potentially wait for change to be given along with their ticket, then the transaction time becomes protracted. Progress within the bus industry with the acceptance of contactless or smartcard payments means that cash handling is rapidly becoming rarer on the platform.

Provision of information regarding fares, prior to boarding, varies widely across operators and the region. By improving the quality of information provided at bus stops and online, so that passengers are able to board the bus and ask for the correct fare or ticket type, means that boarding times can be reduced further.

Vehicle layout will also influence boarding and alighting times. For local services, dual-door buses may be beneficial in reducing bus stop dwell times, although they have specific infrastructure requirements in order to work most efficiently. For medium and long-distance services, the trade-off between dwell time and vehicle capacity/passenger comfort is more finely balanced, with passenger turnover then being a further consideration when considering the number of doors and internal layout.

To promote a higher-quality service, such as Stagecoach's Gold or Arriva's Sapphire premium brands, greater emphasis is placed on passenger comfort and desired features, using single-door vehicles to maximise passenger capacity.

Finally, bus stop design and usability is a further factor influencing dwell times. A well-laid out stop, where the bus is able to arrive cleanly, stop close to the kerb for step-free access, and then able to depart without delay, is the ideal. External factors often mean that such ideals are not practical, but basic actions such as the enforcement of bus stop clearways to prevent parked vehicles blocking the stop or its approach and departure routes, and the review of locations of bus stop poles and shelters, so as not to block passenger boarding and alighting movements, all combine to reduce stop-related delays.

Working with operator and authority partners, reduction of stop delays can provide quick wins in service reliability.

Delivering EEH policy: 4 24 22 25

5.3. Enhance the network

Analysis of the mobile phone movement data has shown that gaps exist in the public transport network, where connections between EEH-defined Strategic Locations are significantly longer than the comparable private car trip, do not run frequently or are even missing completely.

Drawing on the outputs of the analysis, working collaboratively with operators and local transport authorities, and within funding constraints, options should be considered for addressing these potential gaps, or understanding what other requirements are needed before service improvements can be considered (for

example new developments to generate patronage). For rural areas, different service provision options should be considered, drawing on experience gained from recent and previous transport pilot schemes.

Where links are currently well established, reviews could identify when further frequency enhancements might be feasible, and determine whether interventions to reduce bus journey times might be able to deliver benefits to passengers more quickly. These could include new priority measures to reduce journey times, meaning that enhanced frequencies can be delivered within existing resources, increasing the attractiveness of the service. Reviews of directly competing services would ensure on-going commercial viability, which would boost passenger confidence in network stability.

Delivering EEH policy: 1 4 24 22 25 26 27 28

5.4. Enhance service quality

Consistent delivery of higher-quality services brings improvements in passenger satisfaction. Comfortable and clean vehicles, with passenger facilities such as USB charging, next stop audio-visual announcements and clear route information, provides a strong visual statement of paying attention to detail and looking after passengers.

Working collaboratively with operators, and within funding constraints, new or refurbished vehicles improve the overall appearance of the bus network and can be used to promote service improvements and sustainable travel benefits. Acknowledging that vehicles used on urban services may have different features to those used on inter-urban routes, consistent presentation, quality of interior features and overall passenger ambience will promote the bus network as a whole.

In addition to vehicle quality, the consistent provision of good customer service standards will further increase the attractiveness of the network. Driver training programmes in elements beyond the basic key skills will play a role in encouraging use by all demographics, and with particular emphasis on support for vulnerable users, passengers will feel safer and more comfortable on the bus.

Delivering EEH policy: 1 4 22 25 28 29

5.5. Clearer, simpler fares

Passenger surveys for bus services often record that fares are considered by many to be complicated. Value-for-money is a relative matter, but clear information regarding fares will assist in demystifying bus travel for many potential users. The fear of not knowing the correct ticket name, or whether contactless payment methods are available, can cause anxiety for occasional passengers.

Flat fares, or simpler fare structures are more difficult with longer-distance services, such as cross-boundary routes, but the provision of clear fares information at the bus stop and online will make it easier for passengers to understand and determine the correct ticketing product prior to travelling.

Simpler and clearer fare products will be easier to publicise, both online and on roadside information displays. Recognising that fares information can quickly go out of date, the presentation of sample and maximum fares will do much to assuage concerns regarding how much a passenger may be charged. The provision of such information on the operator's own website, and any other providing timetable information, will mean that all required information can be researched by a prospective passenger before arriving at the bus stop.

Understandably with the number of bus operators within the region, fares will vary between locations and according to route length. However, promoting cross-boundary regional journey opportunities will increase the number of trips which involve more than one operator's services. In such cases, the coordination of multi-operator tickets should ensure that the aspiration of the National Bus Strategy:

> *"to see multi-operator ticketing everywhere, covering all bus services at a price little if at all higher than single-operator tickets"*

is achieved for the benefit of passengers.

Removing the need to buy separate fares for multi-section, multi operator journeys will encourage greater use of buses for such trips, benefiting all operators.

Supporting the provision of revised ticketing products, the move to Tap On Tap Off will facilitate fares capping and multi-modal ticketing initiatives (including expanding existing shared ticketing schemes such as the Wycombe SmartZone), further reducing cost as a barrier to using bus for some passengers.

Improved marketing of existing bus/rail tickets, such as PlusBus, may be a simple start to the promotion of multi-modal journey opportunities. Further working between EEH, rail operators and bus operators to identify where this product could be strengthened might achieve quick delivery.

Simplified fares will also contribute to reductions in boarding times, as discussed previously.

Delivering EEH policy: 1 4 22 25 28

5.6. More awareness of the bus network and willingness to choose bus travel

Changes in travel habits have increased as a result of the Covid-19 pandemic. Many employers have encouraged their staff, where possible, to work away from the office for a number of days of the week, whilst other roles may have changed location or working patterns. The journey patterns arising from these revisions means that some people are accessing core centres less frequently, and bus travel may not therefore be as current in their minds than might have been previously. Furthermore, some bus services have been withdrawn or diverted as networks are reshaped as a result of the impact of these changing travel patterns, meaning that travel opportunities may now have been lost. This may be more significant in rural areas.

Vehicle cleanliness from Covid-19 may also be a concern for some potential and previous passengers, despite reassurances that the virus has not been found on buses due to the increased standards of cleaning undertaken to keep buses safe.

Real-time data on patronage are showing, at the time of writing, that fare-paying passenger numbers are returning strongly, whilst concessionary travel, principally using the English National Concessionary Travel Scheme, is responding more slowly. It is likely that several factors are influencing these trends:

- some people are still shielding and are not travelling
- people are making fewer trips out, preferring to concentrate all activities on one trip rather than spreading them over several journeys/days
- people becoming eligible for concessionary passes have not been making trips, and therefore have not yet applied for their pass
- people are continuing to drive for longer, with the pandemic giving the excuse to continue owning a car
- unfortunately, some users have passed away.

As a result, a proportion of potential users may need reminding of the extent of their local bus services and highlighting positive innovations, such as acceptance of contactless payment methods, regular deep cleaning of vehicles and the improved availability of information regarding crowding on individual services. Reminders of eligibility for concessionary passes may also boost take-up.

Delivering EEH policy: 1 4 22 25 28 29

5.7. Decarbonised bus services

With many operators already investing regularly in their fleets, and newer vehicles having lower emissions, bus travel is already delivering lower carbon journey opportunities than many cars. The declaration of climate emergencies by many local authorities increases the need to accelerate this decarbonisation of all aspects of the bus network.

Technology is rapidly developing with zero emission buses, currently mostly battery-electric but with trials of hydrogen. Knowledge of the capabilities of each vehicle type and technology is allowing operators to understand how they might be able to decarbonise their fleets within current and likely future operating parameters.

Of current concern is the range of battery-electric buses. A good vehicle, new, is potentially able to give around 210 miles on a single overnight charge and without a day-time top-up. However, for many inter-regional and rural services, this range is not enough compared to current duties, and so revisions would be required to operations to allow these vehicles to be used on such services. This might entail potentially reduced frequencies in the middle of the day whilst buses are taken out of service for a boost charge, an overall reduction in service levels to fit daily duties with vehicle capabilities, or an increased number of vehicles to operate the service. All of these increase costs to the operator and/or make the service less attractive to passengers.

Hydrogen removes much of the range anxiety, but current vehicle unit costs and the requirements for refuelling infrastructure means that service economics are negatively impacted at the present time.

It is anticipated that on-going developments will increase battery life and range, and that vehicle prices will come down. At this point, both battery-electric and hydrogen buses will be able to more directly replace diesel vehicles.

Attention is also required on the electricity grid, to ensure capacity is available for bus fleet charging at existing depot locations.

The government has started consultation with the bus industry to determine an achievable end date for the sale of new diesel buses. Many of the national bus groups have already declared their own end dates for purchasing new diesel buses and/or the full decarbonisation of their fleets. The end date may have an impact on smaller operators either through difficulties in securing new zero emission vehicles, or distorting the second-hand vehicle market for purchasing or selling existing vehicles. Such issues will be identified by the consultation.

In addition to fleet decarbonisation, attention should also be paid to other infrastructure to reduce energy requirements. Depots, bus stations/interchanges and waiting infrastructure all use significant amounts of energy, but provide good opportunities to use alternative energy sources. Digital timetable displays and real time information screens, along with LED lighting in shelters means that solar and wind-generated electricity can take these elements of passenger infrastructure off-grid.

Bus stations and depots often have large roofs which could be fitted with solar panels, whilst bus parking and manoeuvring areas could be used for ground source heat pumps and other technologies to reduce energy demands.

Delivering EEH policy: 2 23 22 25 28 29

5.8. Summary

Alignment of the objectives and vision for this Regional Bus Strategy with those of the EEH Transport Strategy and the National Bus Strategy, is vital in ensuring that the delivery of all ambitions is clearly articulated to stakeholders and funders.

Continued collaborative development of initiatives by LTAs, bus operators and other key stakeholders will demonstrate that a region-wide approach to improvements to bus and coach services and infrastructure will deliver benefits for users and non-users.

Table 5-1 overleaf provides a summary of how the six components support the EEH policies.

Table 5-1 – Summary of component contributions to policy objectives

Component: / **Transport Strategy Policy:**	Reduced journey times		Enhance the network	Enhance service quality	Clearer, simpler fares	Network awareness	Decarbonised bus services
	Reducing bus/coach congestion	Reducing board/ alight times					
1: Prioritised investment contributing to a reduction in car journeys.	✓		✓	✓	✓	✓	
2: Support the decarbonisation of the road fleet.							✓
4: Reduced reliance on the private car.	✓	✓	✓	✓	✓	✓	
22 and 25: Improving intra-regional connectivity.	✓	✓	✓	✓	✓	✓	✓
23: Realise decarbonisation commitments.							✓
24: Investment in the road network to enable delivery of sustainable transport linkages.	✓	✓	✓				
26: Sustainable growth through aligned infrastructure, land-use and economic development planning.			✓				
27: Development and delivery of mass rapid transit.			✓				
28: Establishment of ‘mobility hubs’ to enable frictionless, affordable travel using a combination of modes.			✓	✓	✓	✓	✓
29: Develop tailored solutions for smaller market towns and rural areas that improve access to services.				✓		✓	✓

6. Case studies

6.1. Introduction

The aspirations for an enhanced bus network for the EEH region, providing improved connections for its population and removing barriers to accessing jobs, education, health and leisure opportunities, will be delivered through a myriad of local schemes across the area.

Many of the ambitions outlined in preceding sections have been trialled in other locations. By drawing lessons from these schemes results can be delivered more effectively, or shortcomings avoided.

The case studies presented below provide examples of what good looks like, set out risks and issues overcome, and prove what can be achieved through collaborative working between authorities and operators.

6.1.1. Inter-urban services can improve the offer for all bus users: Lincolnshire InterConnect

Lincolnshire is a sparsely populated county where a significant proportion of the population (30%) live in communities of less than 3,000 people. Provision of frequent commercial bus services for all these communities was very difficult and, as a result, car ownership in rural Lincolnshire is very high (82%) when compared to the national average (67%). Many of these small communities have lost many of their basic services (shops, schools, buses), which means that people without access to a car were more likely to suffer social exclusion. The Government's 2000 "The 10 Year Plan" transport policy document set a target for a 30% increase in the proportion of rural households living within a 10-minute walk of an hourly bus service.

To tackle transport poverty, Lincolnshire County Council decided that a new approach was needed to bus services within the county. The ambition to improve the viability of the commercial network, whilst ensuring that provision was improved for as many areas as possible, meant that partnership working with the operators could achieve ambitions within available funding budgets.

A review of bus services determined that strengthened core inter-urban services could attract more passengers with higher frequencies and reduced journey times, achieved by some route deviations away from the main roads being taken over by feeder services into the nearby main town, for interchange with other bus services. This change to a trunk and feeder network allowed resources to be better targeted where needed, and provide the basis for patronage growth.

A number of InterConnect-branded interurban bus routes with regular clock-face timetables are complemented by demand-responsive, flexible CallConnect minibuses, which provide journey opportunities away from the main routes. Many of the InterConnect services are provided by Stagecoach in Lincolnshire; CallConnect services are run by a variety of operators including TransportConnect Ltd which is a wholly owned company of Lincolnshire County Council.

CallConnect buses are designed to meet the fixed InterConnect services at designated 'interchange' points in the larger towns and villages. Journeys on CallConnect must be booked in advance over the telephone, by text message or online. There are two types of CallConnect service: entirely demand-responsive 'dial-a-ride' services which serve an area with no fixed route or timetable; and semi-flexible services which run to a timetable, but which deviate off the route to serve smaller villages.

Investment was made in passenger infrastructure, with interchange hubs provided with much higher-quality waiting facilities and improved real time information. With passengers sometimes waiting to change between services, it was understood that such transfers needed to be made as simple and as comfortable as possible.

Figure 6-1 – Horncastle Interchange, Lincolnshire

From the InterConnect scheme, a step change in the use of and attitudes to bus services has been made through a strategy that addresses the barriers deterring bus travel:

- Co-operation of bus operators has been vital to ensure integrated operation of the network
- Demand responsive services can be highly effective in addressing rural social exclusion
- Strong branding and marketing are essential

The CallConnect services will always require some level of subsidy due to the low population density within the areas they serve, but operating costs have been optimised by using of the demand responsive vehicles to provide education, social care and public transport services.

The route scheduling and real-time information systems are essential components of the service. Route scheduling reduces costs by allowing more flexible routing, while real-time information helps to increase passenger confidence in the service. Additional service funding is brought in from other council sources, such as Home-to-School transport and Adult Social Care. Whilst this may reduce the availability of demand responsive vehicles at certain times, the additional revenue helps to underwrite bus service support funding.

6.1.2. A consistent ‘one network’ offer underpinned by high-quality core inter-urban services: Transport for Cornwall

The bus network in Cornwall had been identified as unstable. Reductions in service subsidies and increasing operating costs have led to bus operators increasing fares to secure revenue. The result is a diminishing bus network with declining passenger numbers that does not meet the needs of Cornwall today or in the future.

Intervention was deemed to be required to trial a new bus delivery model that provides a sustainable future for bus services and links with rail to create an improved overall public transport system for Cornwall. Buses are disproportionately used by people on lower incomes and Cornwall has been chosen as a county with significant deprivation and social exclusion. For many people, the cost and difficulty of travel is a major barrier to getting work. The Superbus service will connect people with jobs, education and evenings out.

The following statistics provide an illustration of the problems associated with the bus market in Cornwall:

- 45% of Cornish households have access to one car
- 17% of Cornish households have no access to a car
- 25% of bus commuters have turned down a job because of the availability and frequency of bus services
- 11% of employees who commute by bus would be forced to look for another job if they no longer had a bus service.

The Cornwall Bus Network Scheme is intended to make the core network more viable allowing the subsidy to be redirected, reducing rural economic and social isolation. To achieve a high-quality network, investment in infrastructure, vehicles, branding and information is required. The following elements are the foundation for creating the high-quality core network.

- Bus shelters Scheme includes:
  - New attractive and accessible bus shelters
  - Recognisable and consistent branding of stops
  - Upgrade of bus infrastructure at stops
  - **Local outcomes:**
    - Improved safety
    - Reduced occasions of anti-social behaviour
    - Pleasant waiting environment
- Real Time Information Scheme includes:
  - Provide real time passenger information on street and on the internet and mobile devices.
  - **Local outcomes:**
    - Improved passenger confidence
    - Improved information provision at all stages of the journey
- Integrated ticketing Scheme includes:
  - Multi-operator ticketing
  - Multi-journey tickets
  - Integrated tickets with rail and ferry
  - **Local outcomes:**
    - Reduced boarding times
    - Cashless transactions
    - Removal of barrier of not knowing the fare
- New vehicles Scheme includes:
  - New vehicles that are modern, comfortable, clean and accessible.
  - Recognisable and consistent branding of vehicles
  - **Local outcomes:**
    - Increased service appeal to attract new passengers
    - Higher quality service

The wider project builds on Cornwall's existing One Public Transport project, which aims to provide integrated public transport by joining up the bus and rail networks and demonstrate whether and how such an approach works in a rural area.

Funding for the initiative was secured as part of a wider Growth Deal, negotiated with the Treasury and other government departments.

Seen as an opportunity to trial the various elements of the Superbus concept, in relatively controlled conditions, the objectives were determined to be:

- Successful trial of a new bus delivery model that improves rural transport provision and creates a long term, sustainable future for bus services in Cornwall.
- Improved accessibility to services and employment.

- Enabling better use of local network capacity. Increased access for businesses to new and existing markets.
- Relieving the local road network and providing increased capacity through modal switch. Improved links with rail services at interchanges.

The business case estimated a Benefit:Cost Ratio of 11.5 and GVA benefits of £32.4m per annum.

The Covid-19 pandemic delayed the introduction of all elements of the initiative, although some individual schemes have been implemented. At this stage it is too early to determine whether the benefits identified will be achieved, particularly whilst patronage is suppressed from the pandemic. It is anticipated that once all elements are in place, the wider opportunities will be realised and the public transport market will grow. Additional funding has been secured by Cornwall Council from the DfT to introduce significant fares reductions, to promote bus use and support the wider benefits of the initiative.

6.1.3. Lessons from the past: United Counties Coachlinks

The United Counties Omnibus Company established the Coachlinks name in the mid-1980s (pre-deregulation and privatisation) as the brand for its longer-distance inter-urban services. Primarily the network provided links that at the time were not well served by the rail network. However, as the rail network was developed and improved, modal shift ensued and many Coachlinks services saw reducing patronage. Ultimately some of the links ultimately lost their relevance and were withdrawn (e.g. Northampton - Birmingham; Corby - London), with these principally losing out due to journey times and frequency.

In 1986, the network of services comprised:

- X1 Peterborough – Huntingdon – St Neots – Bedford – Luton – Luton Airport – Heathrow – Slough – Windsor
- X2 Northampton – Bedford – Luton – Luton Airport – Heathrow – Slough – Windsor
- X3 Northampton – Bedford – St Neots – Cambridge
- X32 Northampton – Milton Keynes – Buckingham – Bicester – Oxford
- X49 Corby – Kettering – Wellingborough – Newport Pagnell – London – Heathrow
- X50/X72 Kettering – Rushden – Bedford – London
- X61 Nottingham – Loughborough – Leicester – Market Harborough – Northampton (Leicester-Northampton now X7, from May 2000)
- X64 Birmingham – Birmingham Airport – Coventry – Rugby – Northampton – Wellingborough – Kettering – Corby
- X65 Northampton – Kettering – Corby – Peterborough
- X94 Northampton – Wellingborough – Rushden – Raunds – Peterborough

Some of the links above have survived, although mostly now renumbered and truncated or altered in some other form. Stagecoach operates the X7 Leicester – Northampton, the descendant of the X61, operating every 30 minutes, albeit the linkage further north to Nottingham has not survived. Stagecoach X5 Oxford – Bedford – Cambridge started in September 1995, covering many of the links above, although for reasons of journey time reliability the service has now been split at Bedford. Other routes have similarly been split into shorter sections to counter the effects of congestion and other delays. For example, Bedford - Peterborough is still possible but now involves three services.

Whilst operators have reduced through journeys to ensure service reliability, they are still keen to re-introduce the longer journeys should circumstances allow. Post-pandemic travel patterns are being monitored, both for existing services and to establish whether new connections are becoming apparent, so operators are welcoming opportunities to review longer-distance links and (re)provide some of these missing connections.

6.1.4. Lessons from previous government transport initiatives/challenge funds

In 2015, the Department for Transport held a competition to allocate funds for pilot schemes under the Total Transport initiative. Funding of £7.6 million was allocated to 37 separate schemes run by 36 local authorities in England to pilot Total Transport solutions in their areas. These pilots were focused on rural areas.

Total Transport involves integrating transport services that are currently commissioned by different central and local government agencies and provided by different operators. This allows existing resources to be allocated and co-ordinated more efficiently, resulting in services to passengers that are more effective at meeting their needs.

Although previously cited as opportunities for providing higher standards of service using combined resources, very few projects had been tried in reality. Services considered suitable for integration included non-emergency patient transport, supported local bus services (socially necessary services and devolved BSOG funding), and home to school transport.

Perceived benefits of Total Transport were expected to include:

- Avoiding duplication of commissioned services
- Allowing networks to be designed so that they complemented each other
- Reduction in administrative overheads by centralising commissioning
- Enabling professional staff skills, such as network schedulers, to be used across all the services
- Achieving overall cost efficiencies

Pilot schemes were spread across the country and included different mixes of stakeholders and outcomes as part of the local schemes selected for funding. Revised bus networks allowed interchange between different routes, boosting commercial services and allowing resources to be redeployed for supported routes, whilst other schemes brought in community groups to better coordinate transport services in their area.

Monitoring of the schemes brought to fruition identified the following challenges:

- Priorities – local authorities and health sector had different priorities.
- Data sharing and availability – personal information, up to date information, integration across systems.
- Driver co-operation and availability.
- Restructuring and reorganisation of partner bodies.

Lessons learnt were identified that:

- Engagement is essential
- Project funding is a catalyst but there are things that can be done without it
- Bus Services Act measures could help
- There is a role for the DfT in considering how the legislative framework can allow new models of transport to be delivered. Some of the delivery models proposed do not easily fit the existing legal framework of bus services, taxis and private hire vehicles (PHV) and have required careful development to allow them to operate.

Eligibility criteria when delivering health transport services was also a challenge highlighted.

South Gloucestershire pilot project (Transport for health, South Gloucestershire Council)

This pilot project was established to:

"aid the NHS in transporting patients and visitors from the rural areas to health facilities to complement the patient transport services and to investigate the potential for NHS appointment making processes to be revised to aid the facilitation of enhanced patient transport."

Its objectives were:

- Increase the number of passengers to primary and secondary healthcare sites by Community Transport providers
- Enhance customer experience in accessing healthcare sites
- Reduce the amount of Did Not Attend and late appointments caused by transport-related issues.

It considered the following options:

- Delivery Option 1 – Enhanced Information Provision
- Delivery Option 2 - Enhanced Community Transport Communication and Coordination

- ‘Supplementary’ Option – Voluntary Car Scheme and Taxis

Information on the implementation of the selected option not available. Following a two-year trial, research suggests the scheme has not been continued, although no post-trial monitoring report can be found publicly to identify any successes or reasons for discontinuing the trial.

Other research

The 2018 “Local Authority funded rural transport: achieving cost effective connectivity” study focused on rural transport services open to the public and supported by local authorities in England (other services were considered where relevant). This included:

- Commercial bus services;
- Tendered/supported bus services;
- Demand responsive transport / flexible shuttle buses / Dial-a-Ride;
- Volunteer driving services / voluntary car schemes;
- Wheels to work and similar schemes;
- Use of taxis/ Uber/ shared taxis;
- Travel training; and
- Mobile services (e.g. mobile clinics)

It identified that “Key challenges facing rural local authorities aiming to support independent lifestyles for those without access to a car include:

- Further budget reductions, with some authorities making the decision to cease all support to conventional bus services from local authority transport budgets, relying on devolved BSOG funding, ENCTS reimbursements and cross-subsidies from other contracts (such as home to school and adult social care) to support remaining services;
- Difficulties faced by many authorities in their efforts to integrate networks and services and deliver further efficiencies, due to a lack of interest and cooperation from partners (highlighted by the experience of authorities involved in the Total Transport trials); and
- Uncertainty over the licensing regime applicable for the community transport sector, leading to concerns about the ability of the sector to continue delivering valued services if community transport organisations are required to meet public service vehicle (PSV) licensing (and associated driver training) requirements in the future.”

A separate piece of research by the Campaign for Better Transport, also in 2018, examined transport provision in rural areas (‘The Future of Rural Bus Services in the UK’) which examined trends in rural public transport services and drew conclusions regarding possible approaches to improve these vital transport links. It stated:

“that rural transport should be built around six principles which are known to work. They are:

- Having a framework of inter-urban buses on main routes (and/or rail routes);
- Using demand responsive provision in areas of low demand;
- Involving communities in the development of transport services;
- Harnessing wider provision, including taxis and private hire, as part of the network;
- Using integrated ‘network’ approaches to achieve efficient provision; and
- Using technology to improve service information, ticketing and booking.”

Drawing together the overall themes from all these pieces of research, a common thread is that opportunities exist for improving public transport connectivity, particularly in rural areas, but the lack of sustained funding and some transport industry regulatory structures limit opportunities to better coordinate service provision and seamless interchange.

The success of Lincolnshire’s InterConnect is partly down to the continued funding of the service elements, with the operators of the inter-urban trunk services being encouraged to collaboratively develop the services in conjunction with the council, recognising the relative strengths of organisations involved. The multi-strand funding streams used to sustain the CallConnect elements of the service have provided efficiencies within the

authority and maximise the benefits of statutory requirements to support wider transport and inclusion objectives.

6.2. Summary

Changes in travel patterns, investment in transport infrastructure and new technologies, have all had significant impacts on the provision of bus and coach services across the region. Drawing on lessons learnt from projects within the EEH region and elsewhere in the UK, further pilot projects can identify where similar circumstances exist to merit consideration of trialling the initiatives, or where broad approaches can be applied to different scenarios.

Recent attention on rural transport, and ambitions for mobility hubs and investment in small market towns, provides an impetus for working with bus operators to trial a scheme similar to Lincolnshire InterConnect. Corridors where the mobile data analysis has shown that public transport journey times are uncompetitive against the car could be prime examples. Working with all available local authority budgets (education, social care and transport) value-for-money solutions could be trialled to improve end-to-end journey times whilst improving access to services and facilities in more rural areas.

7. Ambitions and Interventions

7.1. Introduction

Drawing from the themes used by the LTAs in their Bus Service Improvement Plans, regional cross-boundary collaboration will further support the development of the bus network and strengthen key links. The delivery of initiatives within an authority's area, with cross-boundary support from EEH can maximise the benefits of investment in services and infrastructure, enabling local ambitions to be achieved whilst also demonstrating the wider regional gains from removing barriers to non-car journey opportunities.

The initiatives suggested are part of a consistent regional vision and approach as a framework for the place-specific work developed and delivered by LTAs in partnership with operators and other stakeholders.

Following the broad structure of the BSIPs, initiatives are grouped under the headings of:

- Improvements to bus services and planning
  - More frequent and reliable services
  - Improvements to planning and integration with other modes
  - Improvements to fares and ticketing
- Improvements to bus passenger experience
  - Higher specification buses
  - Improvements to passenger engagement
- In addition, decarbonisation of the bus fleet will be a critical theme in the strategy

7.2. Improvements to bus services and planning

7.2.1. More frequent and reliable services

The delivery of more frequent and reliable services will improve intra-regional connectivity and encourage modal shift. Bus journey times should be examined where more than twice the comparable car journey, to determine where speeds can be improved. This may be through the roll-out of mobility hubs and Demand Responsive Service to remove trunk service diversions. Funding support should be identified to 'kick-start' service improvements, whilst patronage builds to sustainable levels.

Service frequencies

Continuing from the key demand corridors identified from the data analysis, ongoing data-led reviews of the network will identify ambitions regarding improving coverage and filling gaps. The connectivity enhancements needed, particularly cross-boundary, will be supported by EEH to facilitate improved journey opportunities across the region. This will be achieved through the ongoing connectivity studies, examining issues and opportunities along each corridor, but supported by specific local assessments where movements fall outside the broad arcs of a connectivity study area.

In addition to gap identification, work will continue to highlight service improvements to allow the broadest range of journeys to be made during the day and week. The general aspiration of all-day services continuing into evening aims to boost daytime use so that services initially only need subsidy in the evening, but with the ambition of boosting commerciality as far as possible so that subsidy can go further (enhancement pump-priming). Increases in service hours offered, meaning that journey opportunities are available across the day and outside of traditional peak hours will also support decarbonisation initiatives, through the encouragement of bus use at all times of the day, including evening use for socialising.

Increased priority measures

Collaborative reviews of cross-boundary services, examining all aspects of the route (including congestion points) and operational matters, will allow investment priorities to be determined where they support regional objectives. It is anticipated that authorities will undertake route reviews within their boundaries, but joint reviews with neighbouring authorities, and including operators, National Highways, district/borough council representatives, will allow all elements affecting service operations to be identified and discussed. These

reviews will also be important for services identified for improvements, so that the enhanced operation is afforded the best possible start, in order to maximise the potential of the improvements.

The consistent design of bus priority measures, and standardised hours of operation (and permitted/exempted vehicles) will also support reduced infringements by general traffic. Consistency of enforcement will also ensure the effectiveness of measures provided across authority boundaries.

Demand Responsive services

Focused improvements of inter-urban services may require the collaborative operation of in-fill services, potentially on a demand responsive basis similar to Lincolnshire's CallConnect, to ensure that journey opportunities are maximised. Agreement on the joint provision of services where travel-to-work catchments encompass more than one authority's area will be essential if barriers to movement are removed, allowing opportunities to be taken by all residents between the main centres. Further consideration of opportunities in rural areas will support communities with non-car travel options.

The support of EEH with the coordination and implementation of multi-authority demand responsive services will demonstrate the benefits of such solutions within the wider public transport network, affording efficiencies to the core inter-urban services whilst maintaining travel opportunities for all areas. Lessons learned will be drawn from the three local initiatives awarded funding through the Rural Mobility Fund in March 2021. The two initiatives in Buckinghamshire and one in Hertfordshire will provide valuable insights into modern DRT, alongside the experiences gained from the Oxford Bus Company's PickMeUp scheme within the urban area of Oxford.

Rapid Transport networks

Experience gained within the region from the Luton to Dunstable and Cambridge busways provides strong evidence for other rapid transport schemes across the area. Support from EEH in matters of cross-boundary planning and coordination, where travel catchments and journey patterns merit the provision of prioritised bus infrastructure on a broader basis, allows lessons to be applied from the two existing schemes and greater certainty of business case development for submission to the relevant funding bodies.

Furthermore, bringing in the expertise of the EEH Regional Bus Operator's Forum, with their experience of providing high-quality inter-urban links, means that benefits can be realised more quickly from an integrated planning approach to more extensive systematic bus priority and rapid transit schemes.

7.2.2. Improvements to planning and integration with other modes

Long multi-modal public transport journeys are unattractive due to journey time, perceived ticketing complexities and uncertainties of being able to complete journeys if service delivery fails. Improved ticketing, more regular services (removing long interchange waits) and a clear regional passenger charter (aligned to those of individual authorities) will help provide reassurance to passengers.

Modal integration

As identified in the movement data analysis, many high-volume movements are served directly by bus, with fewer links purely served by rail. This is particularly apparent where movements are along axes not aligned to the principally London-focussed rail network. As such, improved modal integration, with reduced barriers to interchange such as simplified ticketing, enhanced interchange facilities and the implementation of mobility hubs to cater for all potential access and onward travel modes, will support improved journey opportunities across the region for all users.

The provision of clear information, including correct timetables, fares and delay notifications, will increase confidence in undertaking multi-modal journeys. The adoption of clear passenger charters, setting out rights of redress (particularly when first or last journeys do not operate, regardless of the time of day of the scheduled trip) will allow users to start their journey knowing that they will be able to complete it. The passenger charters will need to cover all potential modes where covered by ticketing options, existing or yet-to-be-introduced, and remove potential failure points in the provision of excellent, standardised, customer service. EEH will work with all transport operators and authorities to ensure that a consistent customer-focussed approach is taken to multi-modal journey integration.

Simplify services

In line with the desire to improve cross-boundary connectivity, the opportunities afforded by reducing journey times through the transfer of route deviations from the core trunk services to feeder routes will also help to simplify the public transport network.

Standard clock-face timetables with consistent service routeing means that passengers do not need to learn timetables to ensure they catch the correct journey. Working with authority and operator partners, EEH will support the continued data-led review of the bus network to identify where cross-boundary services can be simplified and where specific investments, such as interchange hubs, will benefit operations across a wider area.

7.2.3. Improvements to fares and ticketing

Supporting the DfT's coordination of the national ticketing back-office will help to speed introduction of multi-operator and multi-modal ticketing products, capping fares and simplifying interchanges. Simplicity allows clearer marketing of fares, promoting public transport as affordable and value-for-money.

Simpler fares

Clearer, simpler fares are easier to advertise across all information channels, including roadside displays, and remove one of the main uncertainties cited by non-users as to why they are reluctant to try bus services (lack of knowledge of fares and payment methods). Recognising some of the complexities of fares, particularly when distance-based and across longer routes or multiple operators or modes, new communications techniques and promises regarding fare capping to prevent over-charging can help to reduce these concerns.

Industry moves towards daily, weekly and longer fare caps for account-based ticketing will assist in faster ticketing transactions, reducing stop dwell times and helping to maintain schedules. The DfT's coordination of a new national bus ticketing back-office, to support multi-operator ticketing, will bring benefits to the EEH region where services are provided by a number of operators. This is particularly important for inter-urban services, where local bus services may be used to access the longer-distance route, potentially involving more than one operator. EEH will continue to work with the DfT on this ticketing initiative, supporting operators and authorities in ensuring that the final solution is focused on simplicity of use for passengers.

The subsequent expansion of the ticketing back office to support multi-modal journeys is much-anticipated, particularly, as previously noted, where many strong corridors of demand are reliant on multi-modal journeys for public transport users.

7.3. Improvements to bus passenger experience

7.3.1. Higher specification buses

The improved presentation of buses and infrastructure gives reassurance of attention to delivery and hence pride in the bus network. Attractive onboard passenger facilities promote the use of bus and coach services for business purposes, allowing passengers to work or relax instead of driving. Greater feelings of personal safety also encourage the use of public transport services at all times of the day.

Improved vehicle specifications

The region's BSIPs all identify that investments in vehicle quality improvements are attractive to passengers, particularly for longer-distance services. Ambitions for certain authorities to have fully zero-emission fleets by 2030 will mean that the local fleets are fully renewed by that date, with other areas working with operators to bring vehicles up to minimum emission standards (initially Euro V, then progressing to Euro VI) by a combination of exhaust treatment retrofit and investments in fleets. As part of this investment, refurbishments of vehicle interiors are expected, with features such as audio-visual next stop announcements (giving reassurance to -irregular travellers or some with mobility impairments as to when to alight) and USB charging, to provide a more attractive travelling environment. EEH will continue to work with operators and authorities to ensure that audio-visual announcement equipment is funded and installed across the region, if possible more quickly than mandated by the Accessible Information Regulations (when published).

In addition, working with the EEH Bus Operators Association, more general presentational matters will be reviewed and minimum standards sought to be established. With the ambition of setting an attractive quality approach to on-board experiences for passengers, all operators will be encouraged to regularly inspect each

vehicle internally to ensure that notices are succinct, legible from a reasonable internal distance and in-date, and where possible other key messages, as agreed with the EEH Bus Operators Association, are communicated clearly.

Accessible, inclusive and safe bus services

Bus stop infrastructure acts as a major visual representation of the quality of the local bus network. The presence of up-to-date timetable information, clear contact details for the operator or Traveline (or equivalent), and accessible stop layouts with hard-standing passenger waiting areas and clean, well-maintained shelters (where provided), demonstrates confidence in the bus network and provides reassurance that bus services operate along that route.

It is recognised that, particularly in rural areas, compliance with accessibility or Equalities Act standards can be hard to achieve, but EEH will work with authorities to bring all stops up to a minimum standard developed and agreed between authorities and operators, to ensure that the region's bus network is fully accessible and safe to use. The ambition of the NBS can only be fully realised when each stop, and passenger access route to and from the stop is of a consistent minimum standard. Lobbying the DfT for additional funds to support enhancements to bus stop infrastructure, drawing parallels from the rail industry's Access for All initiative, will help to reduce social mobility and isolation issues, and remove physical barriers to accessing the bus network.

Building on the outcomes and recommendations of EEH's First/Last Mile International Best Practice Review (2019), collaboration will be supported between authorities on interurban corridors to give sensible interchange where needed, and speed up end-to-end interurban journey times by using mobility hubs to achieve improved local connectivity. Harnessing the potential of scooters, e-bikes, and active travel initiatives, improved access to the bus network will encourage more sustainable travel options and further remove barriers to movement.

Working with authorities and operators, implementing the outcomes of the corridor connectivity studies will provide demonstration projects where re-shaped bus services and infrastructure investment (including mobility hubs) show the potential for such schemes and determine the success factors for application elsewhere.

Improvements to the quality of waiting facilities also provides benefits through increased feelings of personal safety for bus passengers. Upgraded stop infrastructure with good sightlines for passive surveillance, removal of surrounding vegetation and safe waiting areas will reduce fears for some passengers. The provision of clear timetable and contact information at each bus stop will also give reassurance that the stop is served by buses, with the passenger charters setting out expectations as to rights and obligations of all parties (including when services fail to operate). Giving passengers the reassurance that they will be able to safely complete their journey will provide a more accessible bus network.

Further reassurance to passengers regarding the cleanliness and safety of buses, following from poor messaging during the pandemic, will restore confidence that vehicles are very regularly cleaned and disinfected.

7.3.2. Improvements to passenger engagement

Coordinating a regional bus passenger charter, ensuring consistent standards and passenger safeguards across the region, will demonstrate strength in the bus and coach network. Ensuring that passengers will always be able to complete their journey despite service delivery failure, will provide reassurance and confidence in public transport.

Passenger charter

As previously outlined, the introduction of passenger charters across all parts of the region will be broadly welcomed, clearly setting out expectations and obligations on authorities, operators and passengers. The inclusion of rights-of-redress when first or last journeys fail to operate is a key element in building confidence in the reliability of the bus network, ensuring that passengers are always able to complete their journeys. Care will be required to align charter elements across the region, building on existing operator charters.

Improved bus information

The quality of information provision across the region varies markedly. Working with operators and authorities, EEH will ensure that examples of best practice are identified and lessons learned applied across the area, including improved online accessible information provision. Recognising local ambitions for higher-quality information standards, through the Bus Operators Association and authority fora, EEH will seek to develop an

information standard to provide a minimum level of provision across the region. This standard will not preclude more expansive provision, but the agreement of a basic minimum will provide passengers with certainty as to the information they can expect at any bus stop across the EEH geography.

7.4. Decarbonisation

Delivery of a zero-emission bus and coach fleet will support the regional decarbonisation objectives. Working with operators and LTAs, EEH's support with further rounds of zero-emission bus funding bids will demonstrate a coordinated approach to the regional decarbonisation of public transport, encouraging modal shift and further emission reductions for car trips removed from the network.

As outlined in Section 5.7, several authorities have stated their ambitions to have fully zero-emission bus fleet by 2030, with other areas working towards later dates. The need to decarbonise the bus fleet as quickly as possible, so as to work towards the region's ambitious targets for reducing and removing transport network emissions, means that further support is likely to be required from EEH to coordinate and implement initiatives more quickly.

Providing a strong regional voice to local discussions regarding decarbonisation activities, the narratives provided by EEH to officers, members and the public regarding the major changes needed to be delivered to achieve adopted targets will become increasingly important, if real progress is to be made to achieve the stated ambitions.

Building on the outcomes of the connectivity studies, and drawing on wider evidence bases for travel management and change opportunities, EEH will continue to lobby the DfT for additional funding across the region to support accelerated ambitions for a fully decarbonised public transport network well in advance of national target dates.

Support will be provided to areas submitting bids for bus fleet upgrades through the ZEBRA scheme, with locations such as Milton Keynes and Cambridgeshire and Peterborough's fast-track bids, and Hertfordshire, Oxfordshire and Swindon's standard route applications being supported. EEH will continue to work with other authorities to identify where similar bids can be made to bring-forward zero-emission fleet investments, to decarbonise bus travel and provide more attractive services for passengers.

7.5. Summary

The stated ambitions combine to demonstrate to passengers and non-users that the bus and coach network can provide viable journey alternatives to the private car. Providing reassurances that journeys can be completed despite service delivery failures, for whatever reason, along with simplified fares and shorter journey times, remove many concerns experienced by non-regular bus users.

Building on existing strong partnership working between authorities and operators, some of the identified measures could be delivered as 'quick wins' to provide benefits to passengers across the region and demonstrate ambition to funding providers for further investment in the bus and coach network.

The need to meet decarbonisation targets in the 2020s and 2030s will deliver significant modal shift to public transport services. Current bus network activities are aiming to stabilise services within present travel demand, or deliver local improvements. Future network expansion will require regional coordination of cross-boundary movements to meet anticipated new demand arising from the modal shift and population growth, if the Net Zero targets are to be met.

8. Our Asks and Promises

8.1. Introduction

Having identified opportunities for supporting the strengthening of the bus network across the EEH region, the delivery of these initiatives will require careful planning and coordination to secure maximum benefits. Empowering the appropriate body to lead on scheme development and implementation can best maximise knowledge and skills, and integrate funding opportunities available to individual stakeholders.

8.2. Funding

Delivery of improvements to the bus and coach network will require the coordination of multiple funding opportunities.

Involvement of operators, and their internal finance for vehicles and other specific investments, along with existing local transport authority budgets for capital schemes, will identify where schemes can be funded from existing resources, and where further funding will be required.

The award of funds related to the BSIP requests is awaited at the time of preparation of this strategy. However, it is expected that available funding will not be sufficient to meet the ambitions of all the BSIPs in the region. It is therefore likely that additional sources of funding will be needed: consideration should be given to exploring funding from DfT and other government departments (e.g. Levelling-up funding), devolved funding (e.g. CPCA funding), Section 106 and Community Infrastructure Levy (CIL), and bus operators and local authorities themselves.

It is also recognised that demand management schemes could create important sources of funding to support local ambitions. Nottingham delivered its Workplace Parking Levy in 2012, which has supported travel behaviour change and created a long-term stream of funding to support the operation of link bus services across the city. DfT will be encouraging local authorities to consider demand management schemes in its forthcoming Transport Decarbonisation Toolkit: such schemes could also create new sources of revenue to support transformation of local bus services.

EEH and local authorities should also make the case to DfT for funding of pilot projects to demonstrate longer-term viability of alternative approaches to bus service provision. This may be on the basis of individual authority schemes, potentially as part of wider packages of measures, or on a regionally coordinated basis by EEH to further explore the implementation of initiatives by a number of authorities to test concepts and pilot new technologies.

8.3. Delivery mechanisms

Building on existing strong delivery mechanisms, and the new Enhanced Partnerships being implemented between authorities and operators across the region, it is proposed that cross-boundary measures are coordinated by EEH but supporting the relevant authorities and operators for scheme implementation.

Where items identified are more appropriate at the regional level, such as support for wider funding initiatives or lobbying of central government, these tasks will be undertaken by EEH itself.

8.4. Areas for further study

Further analysis of the corridor demand data will identify where investments could support increased public transport use. It is therefore suggested that all origin-destination pairs are further analysed, in conjunction with authorities and operators, to identify corridors that could benefit from more detailed journey analysis and the trialling of alternative service types such as trunk and feeder/DRT solutions. These should be aligned to the existing connectivity studies and regional work on mobility hubs.

Consideration should also be given to working with planning authorities to better integrate major new development locations with the wider public transport network, and identify where mobility hubs could be provided as part of planning gain elements to the benefit of all users. This is particularly important where sites are close to authority boundaries, where trip movements may be more significant into other authority areas.

8.5. Delivery plan

Recognising that securing funding for many of the initiatives identified may not be immediate, it is proposed that all ambitions are considered in parallel and as part of regular discussions with partner authorities and bus operators. The incorporation of pilot projects into other workstreams, such as the outputs of the connectivity studies, will help to demonstrate the suitability (or otherwise) of the approaches to improving the region's bus network.

Further consideration of the lessons learnt from the case studies provided, and any others deemed worthy of further research by partners, will broaden the range of tools available to transport authorities to improve connectivity, boost the attractiveness of bus services and to encourage modal shift to the benefit of trip decarbonisation.

No specific timescales are given to the suggested next steps, recognising that different interventions will suit individual authority priorities at different points in time.

Table 8-1 – Delivery plan

Theme	Ambition	Interventions	Next steps	Who's responsible	Timescales
Service frequencies	An all-day, every day core network of inter-urban services	Review gaps in service provision (geography, times of operation)	Identify where pump-priming of service enhancements could deliver the ambition quickly, building to sustainable service levels	LTAs and bus operators	Ongoing
Priority measures	Reducing the impact of congestion on buses and coaches	Short-term: Pinchpont and bus priority schemes across the region Long-term: systematic priority measures	Build on outputs of connectivity studies to identify where interventions will support the regional bus network	Individual LTAs and highway authorities	BSIP fund investment. LTP delivery plan cycle
Demand responsive transport	Rollout of DRT to fill gaps in network and provide services to all areas of the region	Understand successes of existing schemes, to determine how to best deliver additional DRT operations	Work with operators and LTAs to identify where DRT schemes could be implemented, and identify potential funding opportunities for these schemes.	LTAs and bus operators	Ongoing
Rapid transit	Faster journeys on key regional links	Build on priority measures to support rapid transit networks	Build on outputs of connectivity studies to identify where interventions will support the regional bus network	Individual LTAs and highway authorities	LTP delivery plan cycle
Modal integration	Seamless multi-modal journeys	Removal of barriers to interchange, to support efficient multi-modal journeys	Review network connectivity, identify locations for mobility hubs and other interchange investment locations. Improved quality of interchange facilities	LTAs, bus operators, rail operators	BSIP fund investment. LTP delivery plan cycle
Simplified services	Delivery of a standardised bus network, with fewer route variations	Review journey opportunities and understand options to simplify service patterns	Work with LTAs and operators to identify routes and corridors where targeted investment could reshape the bus network to make it more attractive	LTAs and bus operators	BSIP fund investment. LTP delivery plan cycle

Simpler fares	Easier-to-understand fare structures, with fare capping	Review journey patterns to understand how fares could be simplified	Work with operators and LTAs to understand local patterns of movement and where fares boundaries could be re-aligned. Support industry ticketing back-office initiatives, including Tap On Tap Off for fare capping	LTAs and bus operators	BSIP fund investment. DfT project timescales
Improved vehicle specifications	Higher-quality, attractive vehicles	Improved standards of vehicle presentation, and enhanced on-board passenger facilities, including audio visual next stop announcements	Encourage investment in new vehicles and upgrades of existing fleet, to provide a higher-quality standard across the region	Principally bus operators	BSIP fund investment. DfT funding rounds
Accessible, inclusive and safe bus services	Safer stops, improved boarding and alighting experience	Minimum standards of bus stop infrastructure, facilitating access to bus services for all	Develop minimum infrastructure standards, ensuring stops are accessible and safe. Operators ensure on-board accessibility, such as real-time information and next-stop announcements	LTAs for infrastructure Lobby DfT for Bus Access for All funds Operators for on-board accessibility	BSIP fund investment. LTP delivery plan cycle
Decarbonisation of the bus fleet	Transition to a fully zero-emission bus fleet	Support existing ZEBRA bids, encourage other areas to apply Develop long-term bus fleet decarbonisation plan	Work with operators to understand where fleet investment could be accelerated, to meet regional decarbonisation targets early. Work with energy suppliers to determine grid capacity across the region as a wider-scale programme	Principally bus operators. Energy suppliers/grid operators	BSIP fund investment. DfT funding rounds
Passenger charters	Comparable bus passenger charters across the region	Review all proposed charters to encourage standardisation and alignment	Work with LTAs and operators to encourage standardisation (or comparability) of bus passenger charters to ensure that consistent rights are provided across the region	LTAs and bus operators	2021/22
Improved information	Minimum standard quality of information at all stops	Determine minimum standards	Review existing information provision best practice, to determine minimum provision for the region	LTAs and bus operators	BSIP fund investment. Ongoing LTA funding

Appendices

Appendix A. Summary of cross-boundary link assessment outputs

Origin-destination flows and journey time comparison

	Daily Flow Between	Origin	Destn	One-way TIS daily flow (all users and modes)	Approx daily flow (all-users)	Public Transport journey: Mode	PT JT	Interchanges	Car journey: Private Vehicle JT	Ratio: PT/Car
1	Luton and Dunstable			30,323	61,000	Bus	9	0	13	0.7
2	Milton Keynes and Leighton Buzzard			10,179	20,000	Train	46	0	21	2.2
3	Cranfield and Milton Keynes			8,199	16,000	Bus	40	0	13	3.1
4	Luton and Hemel Hempstead			7,884	16,000	Multi-modal	40	1	18	2.2
5	Milton Keynes and Buckingham			7,151	14,000	Bus	43	0	19	2.3
6	Harpenden and Luton			6,468	13,000	Train	8	0	15	0.5
7	Millbrook Technology Park and Milton Keynes			6,322	13,000	Multi-modal	92	2	21	4.4
8	Luton and Hitchin			5,675	11,000	Bus	38	0	16	2.4
9	Swindon and Royal Wootton Bassett			5,184	10,000	Bus	27	0	15	1.8
10	Daventry and Rugby			5,048	10,000	Bus	54	0	20	2.7
11	DIRFT and Rugby			4,609	9,000	Bus	29	0	13	2.2
12	Pinewood Studio and Slough			4,391	9,000	Bus	53	1	14	3.8
13	Aylesbury and Thame			4,300	9,000	Bus	33	0	17	1.9
14	Borehamwood and Edgware			4,248	8,000	Bus	20	0	10	2.0
15	Milton Keynes and Towcester			3,988	8,000	Bus	55	0	19	2.9
16	Millbrook Technology Park and Bedford			3,961	8,000	Multi-modal	61	1	19	3.2
17	Luton and Leighton Buzzard			3,766	8,000	Bus	40	0	26	1.5
18	Rothamstead Research Campus to Luton			3,229	6,000	Train	23	0	14	1.6
19	Stevenage and Luton			3,156	6,000	Bus	64	0	26	2.5
20	Chesham and Hemel Hempstead			3,095	6,000	Multi-modal	42	1	17	2.5
21	Leighton Buzzard and Aylesbury			3,089	6,000	Bus	41	0	20	2.1
22	Banbury and Brackley			3,083	6,000	Bus	40	0	20	2.0
23	St Neots and Bedford			2,993	6,000	Bus	42	1	22	1.9
24	Peterborough and Spalding			2,921	6,000	Train	20	0	34	0.6
25	Bedford and Sandy			2,809	6,000	Bus	32	0	19	1.7
26	Bedford and Ampthill			2,758	6,000	Bus	33	0	18	1.8
27	Ware and Harlow			2,648	5,000	Bus	14	0	15	0.9
28	Swindon and Marlborough			2,579	5,000	Bus	38	0	22	1.7
29	Wisbech and King's Lynn			2,555	5,000	Bus	30	0	20	1.5
30	Dunstable and Hemel Hempstead			2,537	5,000	Multi-modal	58	1	20	2.9
31	Dunstable and Milton Keynes			2,517	5,000	Multi-modal	49	1	27	1.8
32	Peterborough and Huntingdon			2,492	5,000	Train	20	0	29	0.7
33	Cranfield and Bedford			2,462	5,000	Bus	52	0	19	2.7
34	Haverhill and Cambridge			2,457	5,000	Bus	58	0	36	1.6
35	Bedford and Flitwick			2,368	5,000	Train	11	0	24	0.5
36	March and Peterborough			2,295	5,000	Train	16	0	36	0.4
37	Bedford and Biggleswade			2,154	4,000	Bus	54	0	23	2.3
38	Wescott and Bicester			2,148	4,000	Bus	24	0	17	1.4
39	Biggleswade and Bedford			2,070	4,000	Bus	46	0	24	1.9
40	Borehamwood and Chipping Barnet			2,043	4,000	Multi-modal	50	1	12	4.2
41	St Neots and Sandy			2,024	4,000	Train	25	0	15	1.7
42	Watford and Luton			2,006	4,000	Multi-modal	62	2	25	2.5
43	Swindon and Calne			1,894	4,000	Bus	49	0	30	1.6
44	Cambridge and Royston			1,873	4,000	Train	24	0	29	0.8
45	Aylesbury and Dunstable			1,870	4,000	Bus	80	1	31	2.6
46	Rushden and Bedford			1,841	4,000	Bus	54	0	21	2.6
47	Northampton and Bedford			1,711	3,000	Multi-modal	76	1	37	2.1
48	Corby and Market Harborough			1,683	3,000	Train	25	1	20	1.3
49	Chesham and Berkhamsted			1,576	3,000	Bus	28	0	10	2.8
50	Harpenden and Dunstable			1,570	3,000	Multi-modal	44	1	18	2.4
51	Peterborough and Wisbech			1,522	3,000	Bus	42	0	42	1.0
52	Swindon and Devizes			1,503	3,000	Bus	55	0	33	1.7
53	Colworth Park and Rushden			1,421	3,000	Bus	35	0	13	2.7
54	Bicester and Brackley			1,404	3,000	Bus	37	0	16	2.3
55	South Cambridge Research Parks and Royston			1,398	3,000	Multi-modal	35	1	24	1.5
56	Millbrook Technology Park and Luton			1,372	3,000	Multi-modal	90	2	28	3.2
57	Princes Rosborough and Thame			1,331	3,000	Multi-modal	24	1	15	1.6
58	Hemel Hempstead and Aylesbury			1,284	3,000	Multi-modal	54	1	25	2.2
59	Kettering and Market Harborough			1,265	3,000	Train	15	0	20	0.8
60	Swindon and Oxford			1,242	2,000	Train	48	1	54	0.9
61	Welwyn Garden City and Luton			1,230	2,000	Multi-modal	80	1	28	2.9
62	Hatfield and Luton			1,221	2,000	Multi-modal	41	1	26	1.6
63	Buckingham and Milton Keynes			1,210	2,000	Bus	25	0	26	1.0
64	Luton and Letchworth			1,147	2,000	Multi-modal	85	2	37	2.3
65	Millbrook Technology Park and Dunstable			1,146	2,000	Multi-modal	128	3	37	3.5
66	Aylesbury and Bicester			1,119	2,000	Bus	50	1	35	1.4
67	Wisbech and Peterborough			1,090	2,000	Bus	42	0	42	1.0

Location is aggregation of one or more MSOAs	Includes long walk (>20 mins)	1 interchange
Location is a single point within one or two MSOAs	Journeys taken as centre-centre	2+ interchange

Appendix B. Methodology used to analyse potential cross-boundary links

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